



ROCKY MOUNTAIN WILD

Protecting Wildlands for Wildlife

GMUG National Forests
Attn: Forest Plan Revision Team
2250 S. Main St.
Delta, CO 81416

Via e-mail: gmugforestplan@fs.fed.us

June 1, 2018

Dear GMUG Plan Revision Team,

On behalf of Rocky Mountain Wild, I endorse the GMUG Forest Plan revision comments of Rocky Smith, et al. dated May 24, 2018.

A copy of those comments are included below.

Sincerely,

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Attn: Forest Plan Revision Team
2250 S. Main St.
Delta, CO 81416

Via e-mail: gmugforestplan@fs.fed.us

May 24, 2018

Dear GMUG Plan Revision Team,

The following are the GMUG plan revision scoping comments of Rocky Smith et al. on the following topics: a) Timber and Vegetation Management, b) Fire Management, and c) the need for management areas and strong forest-wide standards and guidelines in the revised plan.

Sincerely,

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TIMBER AND VEGETATION MANAGEMENT

INTRODUCTION. Please see our comments on the draft Timber and Vegetation Management Assessment, dated December 7, 2017. We hereby incorporate that submission by reference.

To prepare these comments, we have reviewed the Revised Draft Timber and Vegetation Management Assessment (RDTVMA), the Revised Draft Assessment for Terrestrial Ecosystems: Integrity and System Drivers and Stressors (RDTEA), the scoping document published in March, 2018, and parts of the Comprehensive Evaluation Report (CER), published in July, 2006 for the GMUG plan revision effort then underway.

Timber cutting has long been controversial on the GMUG NF. Since the late 1950s, about 276,000 acres have been cut on the GMUG, with about 127,000 acres of this by even-aged methods. See RDTVMA, Table 2 at 7. Under the approved Spruce Beetle Epidemic and Aspen Decline Management Response (SBEADMR) project, 112,786 acres could be cut commercially and 77,246 acres non-commercially over the next 8-12 years. SBEADMR Final Record of Decision at 3, 5.

While it is one of the multiple uses, timber cutting can adversely affect many national forest resources, including the other four multiple uses. Timber cutting and other vegetation management require roads, which fragment wildlife habitat and can cause problems for watershed. In fact, a high density of roads “can be an indicator of a degraded ecosystem”. RDTVMA at 17.

The revised plan must carefully integrate timber cutting and removal with needs to protect ecosystem integrity and sustainability. Protection of ecosystems is required by the planning Rule at 36 CFR 219.1(c) and 219.8(a)(1). This includes, but is not limited to, protection of endangered, threatened, proposed, and candidate (for ESA listing) species of plants, animals and fish, plus species of conservation concern and of local concern. It also includes watershed integrity.

The GMUG must thoroughly consider what lands could be suitable for timber production, eliminating lands that are more valuable for their ecological, recreational, and other values than they are for wood products. These lands include but are not limited to: all roadless areas, all areas eligible for designation under the Wild and Scenic Rivers Act, all areas that may be considered for special area designation, and critical or other important habitat for ESA listed, proposed, and candidate species. Also, areas where logging and associated operations may cause permanent or lasting damage, such as steep slopes, must be eliminated from the timber-suited land base.

The GMUG should assume that there will be little to no commercial demand for timber on much of the area affected by spruce bark beetle (SBB), as is discussed below. Aspen does not need to be cut. The revised plan must have provisions for: minimum restocking standards, retaining snags and down wood, and protecting old growth.

CONCENTRATE VEGETATION TREATMENT IN THE WILDLAND-URBAN INTERFACE. The plan revision must identify areas where residences and other infrastructure are within or adjacent to the boundaries of the GMUG National Forest. Some of these areas may benefit from vegetation treatment to reduce fuels and the associated fire threat to the infrastructure. Logging would be more beneficial in such areas as opposed to the backcountry (i. e., well away from human development).

The most beneficial fire prevention treatment would be in the home ignition zone, which is about 100 feet around structures. Direct ignition does not occur at a distance greater than this. See Cohen, 1999 and 2001.

DETERMINING TIMBER SUITABILITY. The plan revision must determine what areas are tentatively suitable for timber production. 16 U.S.C. 1604(g)(2)(A), 36 CFR 219.11(a). This suitability determination is very important, as it determines not only where timber might be cut over the life of the revised plan, but is also used to calculate how much timber can be cut annually, i. e., the long term-sustained yield.

Stands dominated by dead Engelmann spruce without a fully stocked spruce understory should generally be found unsuitable.¹ The amount of land with no or very few live spruce trees is likely to be considerable. The analysis done for the SBEADMR (Spruce Bark Beetle and Aspen Decline Management Response) showed that 28 to 85 percent of the spruce-fir acreage by geographic area was single-storied. SBEADMR FEIS at 4. This could include single-storied spruce stands that are, or may soon be, dead. Or it could mean a live overstory dominated by subalpine fir, a species for which there is little or no commercial use. In any case, these stands are not likely to produce commercial sized timber over the life of the revised plan.

Regeneration of these areas to spruce is at best uncertain, as spruce does not regenerate and grow well in areas with high sun exposure. The Revised Draft Terrestrial Ecosystems Assessment (RDTEA) states that spruce regeneration “takes many years after a disturbance to regenerate fully-stocked stands”. Id. at 36. Increased temperature occurring over time due to global climate change may hinder regeneration and seedling growth.

¹ Much of the dead spruce will not be merchantable, as is discussed in section below.

The high light intensity often inhibits photosynthesis, and even seedlings planted in the open often die. See Alexander, 1987, at 29. The lack of an overstory creates a seedbed that is likely to be unfavorable to spruce seedling establishment. *Id.* at 27. Removing the dead spruce overstory, as has been approved over a large portion of the spruce stands on the GMUG under the SBEADMR project, would increase the sun (and wind) exposure and thus exacerbate these unfavorable conditions.

Seed viability drops considerably after five years (Alexander, *id.* at 22), thus even with a favorable seedbed and sufficient shade, it is questionable that sufficient natural regeneration would occur in any of the stands now dominated by dead spruce that don't already have advanced regeneration. Planting could be done, but it is expensive and realistically could not be done on very many of the acres affected by spruce bark beetle (SBB) that do not have a sufficient spruce understory. And as stated above, even planted spruce seedlings often die.

The National Forest Management Act prohibits timber harvesting where there is no assurance of adequate restocking within five years after cutting. See 16 U. S. C. 1604(g)(2)(D)(ii).

Also, even assuming complete regeneration success with full stocking, these areas would not be able to produce mature commercial timber for more than a century², i. e., well beyond the life of the revised GMUG plan. Thus they should not be determined suitable for timber production. If they were found suitable, an unrealistic long-term sustained yield calculation could result. Since these lands cannot produce merchantable timber over the life of the plan, meeting even a portion of the projected wood sale quantity and the projected timber sale quantity would require too much cutting of lands found suitable that were not affected by SBB.

Other areas that should be unsuitable for timber production include:

--all roadless areas, especially upper tier areas. While the Colorado Roadless Rule allows timber cutting in non-upper tier areas under a narrow set of circumstances (see 36 CFR 294.42(c)), this is clearly for the purpose of protecting at-risk communities and resources like watersheds. Furthermore, cutting is limited to "generally small diameter trees". 294.42(c)(1)(iii). Stands in roadless areas should not be suitable for timber to help ensure that they will not be scheduled for regular harvest, and to help conserve roadless area characteristics.

--river corridors eligible for designation as wild, scenic, or recreational under the Wild and Scenic Rivers Act. These areas must be managed to protect the outstandingly remarkable values

² The National Forest Management Act prohibits the cutting of trees until the trees have reached the culmination of mean annual increment of growth. 16 U.S.C. 1604(m). Alexander, 1987, states that spruce grows very slowly at first, but can "continue to grow steadily in diameter for 300 years". *Id.* at 71, 73, 74.

that make them eligible for designation. See FSH 1909.12 section 84.3. Commercial timber operations would not conserve these values.

--areas that are currently in special areas or where special area designation is proposed. Again, commercial timber cutting would not protect the values that make these areas eligible for designation.

--areas where timber production would be incompatible with the objectives of the alternative. 36 CFR 219.11(a)(1)(iii). This would include much of the GMUG in any alternatives whose theme is to protect and conserve biological diversity, as timber production would not be compatible with such alternatives.

--areas where irreversible damage “to soil, slope, or other watershed conditions” could occur. 36 CFR 219.11(a)(1)(iv). This would include landslides and areas where soil erosion would be significant or unmitigable. Thus all slopes over about 35 percent, plus areas with moderate to high erosion and/or mass wasting potential should be unsuitable. See FSH 1909.12, section 61.12 for further direction.

--areas that have poor reforestation potential, i.e., where adequate restocking within five years is not assured. 16 U.S.C 1604(g)(3)(E)(ii), 36 CFR 219.11(a)(1)(v). This can be determined in part by examining soil types and from on-the ground experience. See FSH 1909.12 section 61.13 and further comments below under Restocking Standards.

--areas with substantial dead spruce, where the spruce has been dead for five or more years, or will have been dead for that long by the time any timber cutting under the final revised plan could be approved. This is discussed further below.

--areas in Engelmann spruce/subalpine fir stands that have, or over the life of the revised plan are expected to have, dense horizontal cover of 35 percent or more. See the section “Protect Lynx Habitat” below. Lynx habitat in these stands would be damaged or destroyed by commercial logging.

Forested land deemed tentatively unsuitable that might be considered suitable if harvested by cable or aerial yarding systems (possibly because of less ground disturbance and erosion on steep slopes, e. g.) should not be considered suitable. Cable systems have not been used much on Colorado. They require trained operators and access to a sizable amount of high-value timber in order to allow the operator to recoup a large investment in equipment. Helicopters are very expensive, and are not likely to be used.

Operators with cable or aerial yarding systems would demand more timber than could be sustainably produced, given all the non-timber values of uncut forests. Also, reforestation on steep slopes might be a challenge, due to soil movement once trees are removed.

Most ponderosa pine stands should probably be unsuitable for timber production. There is limited demand for this species. DRTVMA at 8. This species naturally grows in open, park-like stands over the lower elevation portions of its range. Where stands are dense in these areas, it is usually due to fire suppression, past logging, and/or livestock grazing, which creates stands that have a large number of smaller trees. Such trees could be cut to restore the stands (and to allow reintroduction of fire, as discussed under **Managing Fire** below), but these trees would generally be too small to make commercial products. The timber industry prefers larger trees, to make more product; e. g., more 2 x 4s can be made from a larger tree versus a smaller one. But the larger trees are the ones that need to be retained in ponderosa pine stands, as they would likely be prevalent with a natural disturbance regime. They are fire resistant and provide some wood that can be excavated into cavities for nesting for cavity-dependent species.

The CER states that on the Plateau, 93 percent of the ponderosa pine type is within one-half mile of a road or trail. Chapter 2, Uncompahgre Plateau section at p. 7, Table 2. The stands not near roads are the least likely to have been logged and to have retained natural values³, so they should not be logged.

The draft revised plan must have a thorough explanation of the determination of lands suitable for timber production. We believe that considerably less land should be found suitable for timber production than in the current plan.⁴ Given the sizable acreage of dead spruce, which will likely increase before the plan is finalized and then may continue to increase, the projected wood sale quantity and the projected timber sale quantity should be considerably smaller than the current allowable sale quantity.

MUCH OF THE DEAD SPRUCE WILL NOT BE MERCHANTABLE. The revised plan should assume that there will be little demand for wood from the many of the spruce-fir stands significantly affected by SBB. Subalpine fir in these areas, because of its low strength and high pitch content, is not desired for wood products. Dead spruce is merchantable for commercial uses, but once dead for 5 years, if not sooner, it develops splits and cracks that make it useless for dimension lumber.

A study done recently for the Rio Grande National Forest noted that

³ Most of these stands still have been affected by fire suppression, but they can be used to further study the effect of fire suppression on this timber type.

⁴ Under the 1991 Amended Plan, 169,318 acres of aspen and 380,813 acres of conifer were determined to be suitable for timber production. Amended Plan at II-52.

Montrose Forest products and Rocky Mtn. Timber Products personnel have both mentioned that beetle kill much older than 5 years may be problematic because lumber recovery is significantly affected by cracks and checks.

Forest Stewardship Concepts, 2015, at 3. The RDTVMA at p. 8 also notes the deterioration of wood quality over time.

Montrose Forest Products is clearly the largest buyer of GMUG timber, as it is “the purchaser of the majority of the GMUG’s large timber sales”, and it “processes most of the wood removed from the [GMUG]”. RDTVMA at 2 and 12. It is our understanding that much of what this company produces is dimension lumber. From their website, <https://www.montroseedc.org/145/Montrose-Forest-Products-LLC>: “Among the wood products Montrose Forest Products markets are studs, timbers and various shop grades cuts.” (Visited April 9, 2018.)

The dead spruce could still be used for fence posts, poles, and biomass, but there are limited markets, if any, for these products within the GMUG’s working circle. A minor amount of the dead spruce could be sold for firewood.

RESTOCKING STANDARDS. We believe the revised plan must have standards requiring a minimum number of seedlings of sound quality to be present before an area can be certified as being reforested. Even if what constitutes “adequate restocking” varies by management area or land management objective, there must be a minimum number of seedlings. Otherwise, management on the GMUG could be wildly inconsistent from one project to the next one.

In Engelmann spruce-subalpine fir, “any kind of cutting is likely to destroy at least half of the advanced growth”. Thus “a manageable stand of advanced reproduction before cutting should contain at least 600 acceptable seedlings per acre, at least half of which should be spruce.” Alexander, *id.* at 44. Modern logging equipment and technique may reduce the death of advance regeneration during logging, but there will still be considerable loss of existing seedlings.

We recommend a minimum stocking standard of about 75-100 trees per acre for most ponderosa pine (see more below), 300 for aspen and spruce-fir, and 200 for all other timber types. An acceptable number of seedlings for the lowest elevation ponderosa pine stands could be based on the historic density as determined by site-specific stand reconstruction. The number of acceptable seedlings should exceed the historic density, as some seedlings will likely die before they reach pole size. A general exception to the stocking standards could be made for areas in the wildland-urban interface.

Having too low of a number of seedlings might mean an area is not really reforested. For example, 75 seedlings per acre is a tree every 24 feet, if they are evenly spaced. This might be acceptable for ponderosa pine stands on south- and west-facing slopes at the lower to mid-elevations of this timber type on the GMUG, where fires burned fairly frequently prior to settlement by European descendants, keeping the stands open. However, it would not be acceptable for other forest types, which are naturally much denser than open ponderosa pine stands, and where open stands would be subject to windthrow.

The GMUG must show it is using the best available science (BAS) to determine the restocking standard for each timber type.⁵ If restocking standards are to be determined at the project level, the GMUG must state in the scoping document and/or draft NEPA document for each project what standard(s) will be used and how BAS was used to determine it/them. This requirement needs to be a standard in the plan if restocking will sometimes or always be determined at the project level.

If any artificial reforestation is allowed in ponderosa pine, the plan should require that the resulting stands be clumpy, i. e. clumps of two to ten trees or so, as this is how this tree species naturally regenerates and grows on the landscape.⁶ This would allow restoration of small meadows, which were historically present. See CFRI, 2008 at 2.

SNAGS AND DOWN DEAD WOOD

The ecological values of standing dead trees (snags) and down dead wood are well known. See RDTEA at 55. It is important that the revised plan require sufficient quantities of standing and down dead material be retained to provide wildlife habitat and other ecological values.

The current plan's requirements for snag retention range as low as 90 snags per 100 acres. Plan at III-9b, -10. This is too low for spruce-fir, lodgepole pine, and aspen, as natural stands would likely have more snags than this, averaged over, say, 100 acres. It might even be low for ponderosa pine. The revised plan should require that large snags be retained where available, and where not, that some of the largest snags available be retained. Note that the adjacent White River National forest has such standards in its plan. See White River Plan at 2-8.

It is also important to ensure that the some of the snags retained are soft enough for excavation by primary cavity nesting species. Recent research found that snag retention was insufficient

⁵ The Planning Rule states: "The responsible official shall use the best available scientific information to inform the planning process required by this subpart". 36 CFR 219.3.

⁶ This clumpy structure is critically important for wildlife species such as Abert's squirrel.

because too many of the snags were too hard for excavation, and thus were not used. See Lorenz et al, 2015.

Since snags will not last forever, and could even fall down shortly after they are inventoried, it is a good idea to require replacement snags, i. e, live trees that may soon become snags and can replace the snags that fall to the ground. Candidates for replacement snags would include trees with: obvious decay, wounds, root rot, bark beetle infestation, etc.⁷ The White River Plan requires the same number of “recruitment” snags per acres as it does for existing snags. White River Plan, *ibid*.

The plan requires that 10-20 tons per acre of down dead wood be retained in all forest types. *Id.* at III-10. We agree with the agency’s contention that this is too high for the lower elevation forest types, which had more frequent fire. RDTEA at 62. This includes ponderosa pine. However, the revised plan should require that some down dead wood be retained in these forest types.

For the higher elevation types – spruce-fir, spruce-fir-aspen, lodgepole pine, and aspen – we believe the current standard of 10-20 tons per acre is reasonable. See Brown et al, 2007, who found the optimum coarse woody debris level to be “8 to 24 tons per acre for cool lodgepole pine and lower subalpine fir types”. *Id.* at 7⁸. These levels of down wood can be safely retained because

fire hazard including resistance-to-control and fire behavior reach high ratings when large fuels exceed about 25 to 30 tons per acre in combination with small woody fuels of 5 tons per acre or less.

Id. at 8.

The current plan’s requirement for only 50 linear feet per acre in the current plan (see *id.* at III-10) is inadequate. It is highly unlikely that only 50 linear feet per acre would provide 10-20 tons per acre. Fifty feet per acre might be only one or two logs per acre, likely less than now occurs on the GMUG. Indeed, Table 21 of the RDTEA, p. 58, shows that all forest types are currently well above the 50-foot requirement, but only spruce-fir exceeds the 10 tons per acre minimum, and just barely. The other types are well short of 10 tons per acre of down dead wood.

The requirement for down dead should include retention of longer pieces where available. This would prevent meeting the requirement after vegetation treatment by leaving numerous short

⁷ Bull et al, 1997, note the importance of live trees with cavities for housing cavity-dependent species.

⁸ These authors believe that up to 25 tons per acre may be desirable for cavity-nesting birds, and for small mammals “more than 30 tons per acre is best.” *Id.* at 8.

sections such as portions of cull logs. Longer pieces would likely exist under natural disturbances. The requirement should also include retaining a diversity of log sizes, where available, as this would ensure conservation of all the values of down dead wood: habitat for insects and small mammals, reduction of soil movement, slow and continuous decay into new soil, etc. However, it may be desirable to limit the retention of small diameter fuels, as these are the most easily ignited, and will facilitate ignition of larger pieces.

The RDTEA states that the revised plan may have provisions for snags and down dead that “may vary based on forest type, the values at risk, site productivity, or other factors”. Id. at 62. We agree that the requirements can vary by forest type, with the lower elevation types needing the fewest snags and tonnage and length of down dead. However, we do not see why these requirements should vary with site productivity or values at risk (see RDTEA at 64), except that more productive sites could produce larger snags and larger down dead pieces. However, the number of snags should be no different. If the requirements for the number of snags and linear feet of down dead will vary according to these factors, the Forest Service must explain why that is desirable and how it is scientifically valid.

KEEP CREATED OPENINGS SMALL. The National Forest Management Act requires regulations to specify maximum sized openings to be created in one harvest operation. 16 U. S. C. 1604(g)(3)(F)(iv). The Planning Rule limits opening size for national forests in Colorado to 40 acres. 36 CFR 219.11(d)(4). Plan standards may allow larger openings, however:

standards for exceptions shall include the particular conditions under which the larger size is permitted and must set a maximum size permitted under those conditions.

Id. at (d)(4)(i).

Plan components can also allow larger openings “after 60 days public notice and review by the regional forester”. Id. at (d)(4)(ii).

We do not believe that creating larger through even-aged silviculture is routinely justified. Such openings fragment wildlife habitat, reduce snow accumulation (via wind scour), and create a difficult environment for regeneration in most timber types. Thus the plan should limit openings to 40 acres, with only limited, if any, exceptions allowed. Any exceptions should be for only a narrow set of circumstances, which should be stated as specifically as possible, including, but not limited to, what vegetation type they could be applied to, and what the new maximum size(s) will be.

STANDARDS FOR DEFINING AN OPENING AND WHEN IT IS NO LONGER AN OPENING. The current plan states that an opening remains an opening until numerous criteria are met. Current Plan at III-44. The standards and guidelines for this direction require a certain height of seedlings in feet or a percent of the height of the adjacent stand, and 30 percent crown closure with 70-75 percent of the plots stocked. Ibid.

Generally, these provisions should be retained in the revised plan, though some adjustments might be acceptable. Crown closure of 30 percent might not be needed for ponderosa pine. The reduction in increased water yield as a new stand grows is probably not needed. But it is important to have full stocking and a minimum height of seedlings to certify that an opening is no longer an opening.

The standards and guidelines for when a created opening is no longer an opening should not vary much by scenic integrity objective. The purpose of having such standards and guidelines is to ensure that there are not too many openings across the landscape, possibly in violation of other plan standards, and to the detriment of wildlife habitat, watershed, and scenery.

THERE MUST BE A WIDE RANGE OF ALTERNATIVES. The alternatives developed for the plan revision's EIS must have a wide range of management emphasis, including the amount of wood that could be offered for sale and cut – both the projected timber sale quantity and the projected wood sale quantity.

A wide range of alternatives is required by the CEQ Regulations implementing NEPA: “Agencies shall...rigorously explore and objectively evaluate all reasonable alternatives.” 40 CFR 1502.14(a).

CUTTING METHODS. Some cutting methods are not appropriate for certain timber types. For example, clearcutting is not appropriate in the Engelmann spruce/subalpine fir type because these tree species do not regenerate well, if at all, in the open. See Alexander, 1987 at 29.

Note that under NFMA, clearcutting can be used only where “it is determined to be the optimum method”. 16 U. S. C. 1604(g)(3)(F)(i), 36 CFR 219.11(d)(5). Clearcutting in timber types where regeneration would be difficult afterward cannot be considered the use of an optimum method.

Clearcutting will also be generally inappropriate for ponderosa pine. This species grows in uneven aged stands composed of even-aged clumps. Schubert, 1974, at 17-18.

PROTECT LYNX HABITAT. Any kind of vegetation treatment in lynx habitat can adversely affect or eliminate that habitat. Logging to produce wood products generally simplifies the structure of vegetation. Lynx and other species needing forested habitat thrive on complexity, such as standing dead, more than one age class, down dead, etc. Generally, lynx in Colorado inhabit subalpine forests (spruce-fir, spruce-fir-aspen, lodgepole pine). They avoid openings greater than 300 feet wide and prefer forested areas with 40 percent canopy closure. Draft Assessment for Identifying and Assessing At-Risk Species (DARS Assm) at 108. They also like 35 percent or greater horizontal cover.

Dead standing spruce still provides habitat for lynx. Many stands with dead spruce also have understories of subalpine fir and/or spruce, which provide lynx foraging habitat, as at least the bottom branches of the understory trees are available for winter snowshoe hare foraging. This provides good habitat for snowshoe hare, lynx' favorite prey. The understory trees and any subalpine fir mid-story and overstory trees will also provide enough overhead cover to protect lynx from avian predators; this is non-foraging, non-denning, "other" habitat.

There is strong preliminary evidence that lynx are still using stands with dead spruce on the Rio Grande National Forest, GMUG'S neighbor to the south. See Squires et al, 2017. See also DARS Assm at 107. There is no reason to suspect a different situation on the GMUG.⁹

It is important to protect lynx linkages. There are nine linkages into and out of the GMUG. DARS Assm at 107. These are very important, as "[h]abitat connectivity between these administrative units is essential for facilitating movement of Canada lynx across the landscape". Ibid. Linkages and connectivity are key to allowing lynx to recover to full viable populations.

Under the approved SBEADMR project and others, the GMUG has approved cutting of sizable areas containing dead standing Englemann spruce. Felling and removing dead standing spruce will likely damage some of the understory trees in a stand. Thus implementing these cuts would degrade suitable habitat or convert it to unsuitable.

It is also our understanding that once spruce have been dead for 5 years or less, they quickly begin to lose their merchantability, at least for dimension lumber products, as is discussed elsewhere in these comments. Thus cutting dead spruce would in many cases not supply the timber industry with usable products but would still damage lynx habitat or convert it to unsuitable habitat.

⁹ It should be noted here that the percentage of spruce stands affected by SBB is likely somewhat higher on the Rio Grande compared to the GMUG, though the latter may eventually catch up.

The revised plan must provide standards and guidelines that limit cutting of dead spruce and any other trees in moderate or better quality lynx habitat. Logging for purposes other than to remove hazard trees (such as near roads, trailheads, and campgrounds) should be prohibited in areas having 35 percent or greater horizontal cover. The existing Southern Rockies Lynx Amendment, which is incorporated into the current GMUG plan, may need to be strengthened to ensure protection of habitat and linkages.

MANAGING ASPEN

Aspen is thought to be steadily decreasing in coverage in the western U. S., and thus treatment to retain this species on the landscape is said to be needed. However, this may not be true. Some studies show aspen increasing. See CER Volume III, Chapter 2, section A at 16. Two of the studies cited there are directly relevant to the GMUG: one on the Uncompahgre Plateau and one on the Grand Mesa. The latter is discussed in more detail below.

It is our understanding that there has been no new discovery of stands affected by sudden aspen decline (SAD) since about 2009. See RDTEA at 49. This corresponds with the end of a drought. Considerable treatment of aspen was recently approved under the SBEADMR project.¹⁰ With climate change, additional drought periods are possible, but widespread mechanical treatment is not needed or justified at this time. Any new incidences of SAD would be most likely to occur in the lowest elevation aspen stands on south- and west-facing slopes. With a warming climate, these areas, over time, may no longer be suitable habitat for aspen, and there is no need to treat them.

Since there is little or no commercial use for aspen at this time, aspen stands should not be considered suitable for timber production. Thus the plan should not authorize much additional treatment, except via prescribed fire.

Additional aspen treatment would be especially unwarranted on the Grand Mesa. In a study of aspen there, Kulakowski et al., 2004, found that aspen likely covers more area now than it did historically (including some areas historically dominated by spruce and fir) because of a large number of fires in the late 19th century. They stated:

The total area where spruce and fir have replaced aspen is small in comparison to the area where aspen has increased or has persisted. The successional replacement of aspen by conifers is more pronounced at higher elevations and where the predisturbance vegetation was dominated by conifers.

¹⁰ Under selected alternative 2, up to 42,000 acres of aspen and aspen-spruce mix could be treated commercially, and 77,000 acres of the same treated non-commercially. SBEADMR FEIS at 57.

In other words, the areas where conifers are succeeding aspen are locations where spruce fir likely dominated historically. This succession “may be within the range of historical variation.” *Id.* With its high altitude location, cool temperatures, and abundant precipitation, SAD is unlikely to significantly affect the aspen on the Grand Mesa.

Any self-reproducing aspen stands, i. e., ones with two or more age classes, should not be cut.¹¹ The SBEADR FEIS shows that 18-74 percent of the aspen by geographic area are multi-storied. *Id.* at 12, Table 3. Such stands are stable and should remain on the landscape, even if sudden aspen decline returns.

It is also not a good idea to cut seral aspen stands that are advancing toward spruce and fir. Clearcutting these stands may accelerate their succession to conifer, as the soils would become more acidic, which favors conifer versus aspen regeneration. However, such stands can be burned, which will maintain a more basic soil and increase the chances of good aspen regeneration and growth. See Cryer and Murray, 1992.

In a study on the Uncompahgre Plateau, Johnston, 2001, found that:

The factors associated with inadequate regeneration were high water tables, heavy browsing, soils with a thin Mollic surface layer, and logging practices that compact large portions of the unit.

If more than very minor aspen treatment is contemplated or allowed by the revised plan, the plan needs to identify areas where aspen regeneration might be problematic. Areas with high water tables and thin mollic soil layers can be identified at the broad scale in the plan. Then areas proposed for treatment need to be checked prior to approval of any project so that any proposed treatment of aspen can be designed to minimize regeneration problems.

The RDTEA notes that there are some areas where herbivory has caused regeneration problems on the Grand Mesa and Uncompahgre Plateau. *Id.* at 17. Any aspen areas treated recently or in the future must be monitored to assess browsing damage.

CONSERVE OLD GROWTH. Old growth is a life stage that provides habitat not found, or only found in lower amounts and quality, in earlier age classes. Old growth is characterized by old trees (for the species and site); decadence, e. g., standing dead trees with rot that facilitates excavation into nesting cavities for various species; and down dead material in various stages of

¹¹ The RDTEA states that multi-layered (i. e., uneven-aged) aspen stands with no conifer invasion are stable. *Id.* at 21.

decay. Old growth stands are extremely rich biologically in terms of the habitat they provide. Their conservation is necessary to protect ecosystem integrity.

The RDTEA states that “a field-based inventory of old-growth/late-successional habitats in the plan area” is needed. Id. at 3. Given the importance of old growth, this information should be gathered and analyzed as soon as possible. The results should inform revised plan provisions for protection and retention of old growth

Unlike younger age classes, old growth cannot be created in a short time frame via human manipulation. Old-growth stands often feature large trees that are highly desired by the timber industry. Thus there will be pressure to log these stands, but logging would damage or destroy old growth. Thus much of the existing old growth must be conserved. For species, like ponderosa pine, where old growth is likely to be sparse (due to past high-grade logging), all or most of the stands identified as old growth should be protected. In timber types where old growth is more common across the GMUG, at least 20 percent in each type should be retained.

Like other elements of forest ecology, old growth is not static, and conditions change over time. Fire or insect attacks can change old growth into a different state. Thus replacement old growth needs to be considered. Stands that are not yet considered old growth, but left alone have the potential to reach that stage should also be identified and protected under the revised plan. These stands could be called “developing old growth”. The Arapaho-Roosevelt National Forest identified developing old growth in its 1997 management plan and set goals and guidelines for retention. See Arapaho-Roosevelt Plan at 32 and Plan FEIS at 206, 207.

The existing GMUG plan provides a good starting point, a standard/guideline¹², for considering how to best conserve old growth See Amended Plan at II-9a, 9b. The revised plan should contain a similar provision, which should be a standard. It should require that old growth be maintained in the largest sized patches possible, and should be well-distributed across the GMUG. Old growth should be maintained in every timber type. The descriptions for old growth by timber type in Mehl, 1992 can be used to identify and delineate old growth patches in each type.

LIMIT VEGETATION MANAGEMENT FOR THE PURPOSE OF CREATING YOUNGER AGE CLASSES TO SOME LOWER ELEVATION AREAS. With the large-scale mortality in the spruce-fir type from spruce bark beetle, older age classes will be well below historical levels, and younger age classes will be above these levels. Any older stands should thus be retained in this timber type. Since spruce-fir does not readily regenerate in the open, early successional stands in this timber type are probably not common in stands not affected by bark beetles or other stand-replacing disturbance. Rather, these stands develop more than one age class because

¹² The Plan does not state what is a standard and what is a guideline.

they can reproduce under an overstory. Thus a stand typed as mature spruce-fir may have an understory and/or mid-story of numerous spruce and/or fir trees of various sizes and ages.

Lodgepole pine has a long fire return interval with stand-replacing fires the norm. Young age classes in this timber type often occur after such a disturbance because lodgepole pine seeds prolifically. Fire suppression may have occurred for sufficient time to begin moving the age class distribution of lodgepole pine to the edge of the RNV. However, vegetation management has had a moderate effect on this ecosystem. RDTEA at 11-12. Logging, mostly via clearcutting, has created younger age classes (at least where regeneration has been successful), and this activity is ongoing. Thus widespread vegetation management in the lodgepole pine type is not necessary to create younger age classes.

It would also be difficult and undesirable to create significant new areas of younger classes in lodgepole via logging because: 1) high-elevation lodgepole pine are usually under the size desired for commercial timber products; 2) new roads would be required, which are costly and have many adverse impacts¹³; 3) logging is not like fire, as it increases small diameter fuel, material that would be consumed with a natural fire in lodgepole, and 4) it is questionable that the Forest Service would have enough money to prepare, offer and administer enough timber sales in lodgepole pine to significantly change the age class distribution.

Changing the age class distribution in lodgepole pine via fire would be too dangerous, as it would require many fires or a smaller number of large fires, which would be difficult to ignite, but once ignited, would usually be difficult to control.

Also, creating and maintaining a more desirable age class distribution would require regular logging or burning of the lodgepole type, not just short term implementation of logging. With global warming, fires will be more frequent. This would change the age class distribution in lodgepole pine.

The RDTEA states that there are some stable lodgepole pine stands in areas of the GMUG where there are “thin, well-developed soils, cold microclimates, and in areas where shade tolerant species do not exist Id. at 22. These areas should not be cut.

Any efforts to change the age-class distribution should be limited to the ponderosa pine/Douglas-fir and warm-dry mixed conifer types where it can be demonstrated with site-specific data that fire suppression has moved the age-class distribution toward older classes and is outside the range of natural variability.

¹³ The Forest Service cannot manage its existing road system. As of 2000, the estimated maintenance backlog for agency roads was \$8.4 billion. Final Roadless Area Conservation Rule, 66 FR 3245, January 12, 2001.

MANAGING INVASIVE SPECIES

Invasive species, i. e., plants and other organisms that are not native to the local area, are a significant problem on the western national forests, including the GMUG. Any kind of management that disturbs the ground, e. g., logging, livestock grazing, ski area expansion, road construction, and some recreation activities, can facilitate introduction and spread of noxious weeds.

The revised plan should provide solid direction for preventing infestation and minimizing damage from non-native species. We like the proposed change in general direction for this issue:

Incorporate invasive plant management responsibility, funding, and accountability into all resource areas. Focus on early detection and small infestation control strategies to increase efficacy of management.

RDTEA at 63.

The revised plan should prioritize treatments, focusing on: new species, new populations of any species, and rapidly spreading populations as the top priorities.

MANAGING FIRE

Fire is a very important natural disturbance process. It has shaped the landscape of the GMUG and surrounding area. It is important for the revised plan to provide direction for fire management.

USING FIRE AS A MANAGEMENT TOOL TO RESTORE NATURAL CONDITIONS.

The revised plan should encourage the use of fire to reduce unnatural fuel loading and restore natural ecological conditions where it can be safely and cost-effectively implemented. Opportunities to use fire as a management tool will be limited, but opportunities should still be identified and explored.

Of all the timber types on the GMUG, the ponderosa pine type is the most likely to be on the edge of or outside its range of historical variability with regard to fire. The GMUG has about 103,500 acres of land that is typed as ponderosa pine. RDTEA at 6, Table 2. It is almost all on the Uncompahgre Plateau between 7000 and 9000 feet elevation. Current amended plan at II-8.¹⁴

¹⁴See CER, Volume III Chapter 2, p. 2 of the Uncompahgre Plateau section, which shows 102,500 acres of ponderosa pine in the Uncompahgre Plateau Geographic Area. An earlier assessment showed 198,000 acres of ponderosa pine. CER Volume III Chapter 2, section A - Existing Vegetation at p. 2, Table 2. This major difference in acreage typed as ponderosa pine not explained.

Ponderosa pine stands on 25 Mesa on the Plateau were studied to determine the historic range of variability (HRV) of ponderosa pine and mixed conifer stands. See CFRI, 2008. The conclusion was that such stands historically (reference time around 1875, prior to significant influence by European descendants) had much lower basal areas than exists in current stands. Small meadows were numerous but are now almost gone. Id. at 2.

Mixed conifer stands on the Plateau also likely had lower basal area. These stands may not be outside the historic range, but young, post-fire stands appear to be lacking. Ibid.

...the lack of major mixed-severity and stand-replacing wildfires for more than a century has resulted in a near absence of young, post-fire forests; at least some of the current mixed-conifer forests probably have higher densities of shade-tolerant, small and medium size conifers than would have been typical in past centuries.

Id. at 2.

There is a general scientific consensus that some ponderosa pine stands are more dense and have fewer openings than occurred prior to European settlement. However, it should not be assumed that ALL such stands had this history. Various studies show that some ponderosa stands had mixed severity fires, including stand replacement fires. See, e. g., Kaufmann et al, 2003. That study and some others were conducted on Colorado's Front Range, but it is reasonable to assume that this conclusion is also true for the Uncompahgre Plateau. See RDTEA at 23. Generally, the highest fire frequencies likely occurred at the lowest elevations, while higher elevations were more likely to have had less frequent fire. The areas with less frequent fire had greater fuel accumulation between fires, and thus had mixed fire severity. See, e. g., Sheriff et al, 2014.

In any case, not all non-ponderosa pine trees, such as Douglas-fir, should be removed from stands dominated by ponderosa pine. The CFRI, 2008 study found that mixed conifer stands on today's 25 Mesa were historically mixed conifer. See id. at 8. Also, having other species present will help retain forested areas if ponderosa pine is subject to intense insect attack, as is now occurring in the San Juan Mountains to the south, with roundheaded pine beetle (*Dendroctonus adjunctus*).

The 2006 CER stated:

Ponderosa pine forests at the Sub-Regional-scale were not homogenous open park-stands prior to Euro-American settlement, but rather it appears that some dense stands of small ponderosa pine trees similar to the stands that dominate the landscape today existed. Therefore when identifying management and restoration goals for

ponderosa pine, site-specific HRV assessments are necessary to maintain HRV on both a stand and landscape scale within the analysis area.

Id., Volume III, Chapter 2 at 18-19.

The plan should require that prior to approval of any restoration treatment in ponderosa pine or mixed conifer, a site-specific assessment of HRV be conducted that would then inform any proposed treatment. It should also require a restoration plan (similar to a watershed restoration action plan required by the Watershed Condition Framework) that identifies: the departure (type, spatial distribution, and degree) from HRV; desired projects; specific outcomes; and monitoring.

Restoration treatments are not necessary or appropriate in the higher elevation timber types such as Engelmann spruce-subalpine fir, as the natural fire interval is very long. Human fire suppression has not seriously disrupted the natural fire regime in these areas. In other words, there is nothing to “restore”. Problems with attempting to “restore” lodgepole pine historic age-class distribution, if that is even needed, is discussed above in the **Timber and Vegetation Management** section.

B. MANAGING WILDFIRE.

Wildfires, whether naturally ignited or human caused, should be allowed to burn under appropriate conditions if they do not threaten humans or infrastructure. This would help restore fire to a good part of its ecological role on the landscape.

The revised plan should include guidance on how to determine where fires may be allowed to burn and under what conditions.

To emphasize protection of infrastructure, the GMUG should consider having a wildland-urban interface management area (MA). This MA should extend no more than one-quarter mile from any kind of infrastructure. It should specify that the most intense vegetation removal should occur only in the areas closest to the infrastructure.

THE REVISED PLAN NEEDS MANAGEMENT AREAS AND STRONG FOREST-WIDE STANDARDS AND GUIDELINES

For a forest plan to be useful and meaningful for agency application, and to inform the public of agency intent, it must, among other things, provide limitations on management and other activities to protect resources, as needed. From the webinars on the scoping process conducted

by the GMUG in early April, it appeared the GMUG intends to minimize the use of management areas and will attempt to cover most management situations via forest-wide direction.

This is unacceptable. First of all, note that the Planning Rule requires that “[e]very plan must have management areas or geographic areas or both”. 36 CFR 219.7(d). Second, the GMUG has a variety of vegetation types, ecological resources, recreational attractions, and elevations. Public demand for management spans the spectrum from full protection for ecological resources, to maximum development for human benefit. To achieve the greatest good for the greatest number of people and apply multiple use¹⁵ will require different emphases in different parts of the GMUG.

The best way to ensure this diversity of management to meet public needs is to designate management areas with different emphases in different parts of the GMUG, as appropriate for each EIS alternative. To put it in stark contrast, wilderness and roadless areas must be managed much differently than areas where the emphasis is on timber production. Less starkly but still illustrative, areas where timber production is the emphasis would not be favored for dispersed or developed recreation, or for scenery. The revised plan needs to have some areas where some activities are either prohibited or not emphasized.

Attempting to cover all situations with forest-wide direction, even outside of areas like wilderness and roadless areas where there are legal or regulatory management limitations, would require direction so general it would be almost meaningless. Stated another way, under this scheme, almost any activity could occur on any part of the GMUG National Forest.

The revised plan must have strong standards and guidelines, forestwide and as needed in the MAs and GAs, for protection of resources such as: threatened, endangered, candidate, proposed, and conservation concern species; connectivity of wildlife habitat; air quality; water quality; riparian areas; watershed integrity; recreational opportunity (especially for primitive and semi-primitive areas); scenic integrity; snags; down dead wood; soils; fens; and native fisheries.

Direction is also needed for: motor vehicle use by type of vehicle and season, mechanized use, use of motor vehicles off-road for game retrieval, land acquisition and disposal, use of prescribed fire, management of the Continental Divide National Scenic Trail and any other designated trails, managing heavily used wilderness areas to conserve wilderness values, and controlling the introduction and spread of noxious weeds.

¹⁵ Part of the definition of “multiple use” is as follows:

...the management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people...

Multiple Use Sustained Yield Act, 16 U.S.C. 531(a).

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