Grand Mesa, Uncompahgre, and Gunnison National Forests
Attn: Plan Revision Team
2250 South Main Street
Delta, CO 81416

Submitted Electronically

December 8, 2017

Re: Comments on Draft Assessment Report

Dear GMUG Plan Revision Team,

We greatly appreciate the opportunity to review and provide comments on the Draft Assessment for the Grand Mesa, Uncompahgre, and Gunnison (GMUG) national forests. We have focused on the reports: *Terrestrial Ecosystems: Integrity and System Drivers and Stressors* and *Aquatic and Riparian Ecosystems*. We found the Draft Assessment to be an informative evaluation of conditions on the forest, and we appreciate the tremendous time and effort required to assemble these documents. We request that you consider the additional issues and information, outlined below, for incorporation into revisions of the Draft Assessment.

Please feel free to contact us with any questions about information in these comments. Thank you for your consideration.

Sincerely,

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Comments on the Draft Assessment Reports on Terrestrial and Aquatic Ecosystems for the Grand Mesa, Uncompahgre, and Gunnison National Forests

I. Introduction

Developing and implementing robust, science-based forest plan decisions under the 2012 planning rule (planning rule) will result in public confidence that the Forest Service is fulfilling its mission and conservation obligations, and enabling integrated landscape-level decision making and more efficient project-level implementation. These comments pertain primarily to assessment topics (1) and (3) in planning rule (219.9(b)(1) & (3)): "Terrestrial ecosystems, aquatic ecosystems, and watersheds" and "System drivers … and stressors …." These topics correspond to the GMUG's Draft Assessment reports entitled *Terrestrial Ecosystems: Integrity and System Drivers and Stressors* and *Aquatic and Riparian Ecosystems*. The GMUG's Draft Forest Assessment (Draft Assessment) reports present substantial information and analyses regarding the ecological conditions on the forests. However, we have some concerns, questions, and recommendations for additional analyses.

II. Relationship between the Draft Assessment and Need for Changes to the Plan

The assessment should present information provided by monitoring and other data collection and information to allow the Responsible Official and interested parties to identify the on-the-ground results of management under the current forest plan, the GMUG's 1983 Land and Resource Management Plan (1983 LRMP). The Responsible Official must identify a) how current conditions outlined in the Draft Assessment are related to or caused by application of current, specific forest plan direction; b) how such conditions or trends can be influenced directly or indirectly by Forest Service management; and c) based on this, identify specific needs for change in management, including type of plan components, information needs, difference in management needed for different forest areas, and changes in management focus or urgency.

III. Integrating Assessment Topics

As stated elsewhere,[1] there is a concern about the strength of the connection between ecosystem-focused Draft Assessment reports and the forthcoming at-risk species report. This problem can lead to difficulty developing plan components that meet the requirements of the planning rule's sections 219.8 and 219.9. The planning directives provide direction for integrating assessment topics (FSH 1909.12, ch. 10, and 12). Such integration is particularly important for assessment topics 1, 3, and 5 because these serve as the basis for evaluating the ecological conditions of the Forest. The key ecosystem characteristics that are essential for the conservation and recovery of federally protected species and the persistence of species of conservation concern SCC should be used to select the key

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[1] See Defenders of Wildlife et al. November 29, 2017 letter referenced: "GMUG Plan Revision and the Draft Assessment," which sought an extension on the draft assessment comment deadline.

ecosystem characteristics for the evaluation of terrestrial ecosystems, aquatic ecosystems, and watersheds. Integration that establishes crosswalks between topics 1, 3, and 5 upholds the intent of the planning rule—the adoption of "a complementary ecosystem and species-specific approach to maintaining the diversity of plant and animal communities and the persistence of native species in the plan area" (36 C.F.R. 219.9).

Linking at-risk species (as well as less vulnerable species) to the ecosystems/habitat types and their reference or future condition under the current plan (i.e., their structure, function, composition, and connectivity), and drivers/stressors that are (or should be) identified in Assessment 1 and 3 is key to ensuring full and adequate consideration of these resources. Again, it is critical for the assessment to establish the connection between coarse-filter ecosystem characteristics/habitat conditions and the species that depend upon them for persistence so that one can,

- Discuss reference conditions and evaluate the condition and trend of the landscape; and
- Use the assessment to then determine if the likely future condition under the current plan satisfies the requirements for ecological integrity and ecological diversity established in the planning rule, including whether future ecological conditions under the current plan will meet species diversity requirements (e.g. viability of species of conservation concern). See 36 CFR 219.9(b).

In particular, the assessment should evaluate the connection between ecological conditions (current and expected future conditions under the current plan) and changes to species populations, as outlined in the directives. The assessment should project long-term conservation outcomes for at-risk species, factoring in selected scenarios for uncontrollable stressors (e.g. climate impacts). For species of conservation concern, the assessment should project viability using the parameters found in the definition of viability in the planning regulation (i.e. under present plan components, will future distribution of species of conservation concern be sufficient for the population to be resilient and adaptable to stressors and likely future environments?). Without this information, it will be challenging to develop plan components to sustain at-risk species. The assessment should document the assumptions inherent in the relationship between ecological conditions and changes in population and distribution so that those can be tested through monitoring and adaptive management.

To be clear, the available set of Draft Assessment reports do not ignore the needs of wildlife and plants and acknowledge the importance of biodiversity and restoring and maintaining ecological conditions necessary for viable species populations. This is particularly true for the aquatic and riparian ecosystem report. However, the Draft Assessment lacks a necessary synthesis of ecosystem, habitat, and species conditions necessary to evaluate the current plan's contribution to ecological integrity and ecological diversity. We are looking forward to reading the forthcoming at-risk species assessment report and hope that it will address the concerns that we have outlined here.

IV. Use of Prior Monitoring Information in the Assessment

We are surprised that the Draft Assessment reports did not more fully evaluate and utilize information that exists in GMUG annual forest plan monitoring reports,[2] as recommended in the planning directives (FSH 1909. 12, ch. 10, 11). The assessment report should include a synthesis of what was learned from that monitoring, focusing on the effects and effectiveness of existing plan components. It is not clear that relevant information from prior monitoring has been appraised and incorporated into the available Draft Assessment reports. The monitoring reports provide significant data about the effects of management actions on the forests during the life of the 1983 LRMP and how conditions have changed. We urge the Planning Team to better exploit the valuable information in GMUG monitoring reports in revisions of the assessment reports and use this information to further evaluate needs for change.

V. Comments on Ecosystem Reports

We appreciate the assessment acknowledging key areas of uncertainty, limitations in data and/or analysis, and where the lack of scientific consensus makes interpreting results difficult. In the next phases of the plan revision process, it will be important to identify which scientific conclusions will be used for decision making and to explain how it meets the best available scientific information (BASI) requirements in the planning rule (36 CFR 219.3).

We realize the reports provides a summaries of ecosystem integrity. It would be extremely helpful and likely easy to also include one table that summarizes ecosystem conditions by the NRV analysis results for each key characteristic selected for the assessment reports.

a. Terrestrial Ecosystem Report

The GMUG selected some appropriate key ecosystem characteristics upon which to base its analyses of ecosystem conditions on the forests. With exceptions, selected characteristic could be applied to assess the natural range of variation (NRV) for each ecosystem type. (Though snags are not typically used to assess grassland conditions.). Unfortunately, the assessment report does not provide a sufficient analysis of patch size and habitat connectivity, though data and alternative methods for doing so exist. The full set of the key characteristics and how the assessment evaluates them do not adequately assess conditions of non-forests or non-wooded ecosystems such as shrublands and grasslands, and this must be remedied in revisions of the assessment.

And it's unclear how "diversity of cover types" provides any meaningful information about the conditions of ecosystem types listed in Table 7 (p. 28) to be monitored over the life of the revised

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[2] GMUG Forest Plan Monitoring Reports: https://www.fs.usda.gov/detail/gmug/landmanagement/planning/?cid=fsbdev7_003229.

plan. This is not a characteristic that assesses structural, compositional, functional, or connectivity elements of any of these ecosystems.

i. Key ecosystem characteristics for grasslands and shrublands

Despite the selection of six characteristics intended to assess NRV for each ecosystem, it's not clear that any have provided a sufficient assessment of structural, compositional, or connectivity characteristics for these ecosystem types. If they have not, the assessment report should provide additional clarity regarding what the characteristics are meant to measure. We urge the GMUG to select additional key characteristics to adequately assess the conditions of these systems such as species composition, species richness and biodiversity; the proportion of vegetative cover to bare ground; seasonal grass height; and proportion of native grass species, forbs, shrubs, trees, and non-native annual grasses. See Browder et al. (2002) and Ford et al. (2004) for examples of alternative indicators that could be applied on the GMUG.

Alternatively, consider the key ecosystem characteristics necessary for at-risk shrubland and grassland species to recover and persist on the GMUG. For example, we can make the assumption that an ecosystem within NRV for structure, composition, function, and connectivity characteristics would likely support the full complement of species associated with the ecosystem. And thus, the conditions necessary for Gunnison sage-grouse would provide indices to measure the integrity of the sagebrush ecosystem. Key characteristics required for sage-grouse include:

- Low levels of human disturbance, especially around leks (SGNTT 2011: 21, Table 1; Knick et al. 2013).
- Big sagebrush on south-facing slopes or protected draws for wintering habitat (Braun et al. 2005; Connelly et al. 2011).
- Absence or low levels of annual grasses (e.g., cheatgrass) (Miller et al. 2011; Connelly et al. 2011).
- Large, intact patches of sagebrush to allow for habitat connectivity (Connelly et al. 2011).
- Native perennial grass cover (at least 7 inches high) for nesting and brood-rearing habitat and to prevent the spread of cheatgrass (Connelly et al. 2000; Reisner et al. 2013)

Literature cited in this section

Braun, C.E., J.W. Connelly, M.A. Schroeder. 2005. Seasonal habitat requirements for sage-grouse: spring, summer, fall and winter. Pages 38-42 in N.L. Shaw, M. Pellant, S.B. Monsen (compilers). Sage-grouse Habitat Restoration Symposium Proceedings, June 4-7, 2001; Boise, ID. RMRS-P-38. U.S. Forest Service, Rocky Mountain Research Station. Fort Collins, CO.

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Knick, S.T., S.E. Hanser, K.L. Preston. 2013. Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A. Ecology and Evolution. Available at http://onlinelibrary.wiley.com/doi/10.1002/ece3.557/pdf.

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Reisner, M.D., J.B. Grace, D.A. Pyke, P.S. Doescher. 2013. Conditions favouring Bromus tectorum dominance of endangered sagebrush steppe ecosystems. Journal of Applied Ecology. Available at http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12097/pdf.

SGNTT (Sage-grouse National Technical Team). 2011. A Report on National Greater Sage-grouse Conservation Measures. Available at www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/im_fs/2012.Par.52415.File.dat/IM%202012-044%20Att%201.pdf.

ii. Data regarding spruce bark beetle impacts

We understand that data gaps can limit some assessment analyses. We appreciate the GMUG assessment report indicating where some of these gaps and limitations exist (p. 3). However, the fact that the forests' vegetation dataset, relied upon for NRV analyses, does not reflect spruce beetle impacts is problematic. The assessment report notes that 2017 data that do reflect the new post-outbreak conditions exist (ibid.). We believe it is unfortunate that the assessment for spruce-fir and spruce-fir-aspen ecosystems were not delayed until the dataset could be utilized to assess key ecosystem characteristics of these forest types. We do not believe that the lack of data should always preclude analysis or action, but in this case—given the magnitude of the beetle outbreak—the new data are highly likely to show a completely different condition than data actually used for the assessment. A failure to reanalyze these ecosystems with the new dataset and base the assessment and, moreover, plan components with the new data is also likely to have negative (but avoidable) impacts to forest conditions. We strongly urge the GMUG to conduct a supplemental assessment report when the 2017 data become available for analysis. Spruce-fir covers a significant area of the GMUG: 17% and 534,300 acres (p. 6), and is needed by vulnerable species such as the federally threatened Canada lynx, American marten, olive-sided flycatcher, and boreal owl, among others.

iii. Assessment of vegetation management as a stressor

The assessment report states, "Current management actions on the GMUG are often intended to mitigate impacts of ecosystem stressors, though insufficient or misdirected management can be a stressor in itself, as can legacies of past management" (p. 8). Yet, it is not possible to discern from the report which management actions have acted as stressors and how intensely they have stressed these systems, which may be continuing to act as stressors, and which may have had beneficial effects. And thus, it is difficult to understand how this very important part of the assessment will guide the modification of existing, and development of new, plan components.

The assessment of vegetation management impacts to terrestrial ecosystems is very general, especially given that additional information from monitoring reports and likely other document are available to provide a more specific characterization of which types of management activities have contributed to "undesirable side effects" (referenced on p. 12). For example, the ponderosa pine forest type has the highest extent of past vegetation management impacts (p. 13, Table 4). Table 4 lists the historical management activities practiced in this ecosystem. What have been the impacts of even-aged management vs. uneven-aged management? Furthermore, the use of "high" in Table 4 is ambiguous. Does "high" indicate a high level of deleterious impacts or merely a high level of management activity? This is unclear. This is just one example, but the assessment report must provide sufficient specificity and clarity to enable an understanding of which management activities have stressed the ecosystems evaluated, and an estimate of how much stress each may have caused.

The following example offers a different way to recognize why additional analyses and added specificity is needed to understand the effects of various management practices on ecosystem conditions. Based on years of science, we know that post-disturbance salvage logging, and the same or similar practices labeled with different terminology (e.g., sanitation harvest), can severely degrade forest ecosystems and harm wildlife and plant species (c.f., Beschta et al. 2004; Karr et al. 2004; Donato et al. 2006; Noss et al. 2006; Shatford et al. 2007; Thompson et al. 2007; Lindenmayer et al. 2004, 2008). For example, Hutto et al. (2016) provide a comprehensive survey of negative ecological impacts of post-fire salvage logging, stating,

> Unfortunately, salvage harvesting activities undermine the ecosystem benefits associated with fire (Lindenmayer et al. 2004, Lindenmayer and Noss 2006, Swanson et al. 2011). For example, postfire salvage logging removes dead, dying, or weakened trees, but those are precisely the resources that provide nest sites and an abundance of food in the form of beetle larvae and bark surface insects (Hutto and Gallo 2006, Koivula and Schmiegelow 2007, Saab et al. 2007, 2009, Cahall and Hayes 2009). No fire-dependent bird species has ever been shown to benefit from salvage logging (Hutto 2006, Hanson and North 2008). The ecological effects of salvage logging on aquatic ecosystems are also largely negative (Karr et al. 2004). In fact, the demonstrated negative ecological effects associated with postfire salvage logging are probably the most consistent and dramatic of any wildlife management effects ever documented for any kind of forest management activity (Hutto 2006).

Given social and political pressure to salvage harvest, the past extent and impacts of such activities must be examined in the assessment.

Literature Cited in this Section

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Donato, D.C., Fontaine, J.L. Campbell, W.D. Robinson, J.B. Kauffman, and B.E. Law. 2006. Postwildfire logging hinders regeneration and increases fire risks. Science 313: 615.

Hutto, R.L. and Gallo, S.M. 2006. The effects of post-fire salvage logging on cavity-nesting birds. The Condor. 108: 817-831.

Hutto, R.L., R.E. Keane, R.L. Sherriff, C.T. Rota, L.A. Eby, and V.A. Saab. 2016. Toward a more ecologically informed view of severe forest fires. Ecosphere. 7(2): e01255.

Karr, J.R., Rhodes, J.J., Minshall, G.W., Hauer, F.R., Beschta, R.L., Frissell, C.A. and Perry, D.A. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience. 54: 1029-1033.

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Lindenmayer, D.B, D.R. Foster, J.F. Franklin, M.L. Hunter, R.F. Noss, F.A. Schmiegelow, D. Perry. 2004. Salvage harvesting policies after natural disturbance. Science. 303: 1303.

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Swanson, M.E., Franklin, J.F., Beschta, R.L., Crisafulli, C.M., DellaSala, D.A., Hutto, R.L., Lindenmayer, D.B., and Swanson, F.J. 2011. The forgotten stage of forest succession: early successional ecosystems on forest sites. Frontiers in Ecology and the Environment. 9(2): 117-125.

Thompson, J.R., Spies, T.A., and Ganio L.M. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. PNAS 104:25. National Academy of Science. June 2007.

iv. Spruce-fir and spruce-fir-aspen management

The assessment report states (p. 62),

> In some areas of the forest, a large percentage of this cover type is still in mature, dense stand conditions, susceptible to stand-replacing fires and/or epidemic insect/pathogen outbreaks. Because so much of the area is in relatively uniform conditions, natural disturbances have the potential to impact large areas at one time.

Nothing about this statement indicates that these forest ecosystems are outside of NRV. With a long interval between fires, spruce-fir stands are often mature and sometimes dense. Stand-replacing fire and insect and disease outbreaks (even at a large landscape scale) are thus characteristic of these systems. The assessment report makes these points (p. 19). Therefore, the following sentence preceded by those above, "Active management that is focused on diversifying the structural stages present will be important here to increase resiliency to fires, insects, disease, and climate change" (p. 62) doesn't make sense if the ecosystem characteristics are within NRV. If the GMUG wants to restore early seral conditions, as indicated in the assessment report, stand-replacing fire would help. However, the large areas of bark beetle mortality have already set back succession to the early seral stage. Therefore, it is not correct to justify active management of this ecosystem type that reduces susceptibility to fire as being necessary for ecosystem integrity.

v. Domestic livestock grazing as a stressor

The assessment report states, "[grazing] can be beneficial to some native plant species and communities adapted to grazing" (p. 16). The assessment report must clarify whether this statement refers to native ungulate grazing, non-native ungulate grazing, or both together. While native plant and animal species are well-adapted to natural grazing regimes, the grazing of non-native livestock can have significant deleterious impacts to ecosystems that are well-established in the BASI (c.f., Beschta et al. 2013 and sources referenced therein). If the report is referring to non-native livestock, the GMUG must provide BASI to make this claim. On the flip-side, which plant (as well as animal) species are being negatively impacted by domestic livestock grazing?

The assessment report states that "While current grazing practices on the GMUG are ecologically sustainable, the legacy of high historical livestock levels and associated activities does impact the current ecological integrity of some ecosystems on the GMUG" (p. 16). A significant percentage of the forests' rangelands are not in either good or excellent condition (p. 16). Therefore, what is the BASI being used to make the claim that current grazing practices (vs. historic levels and practices) are sustainable?

Literature cited in this section

Beschta, R.L., D.L. Donahue, D.A. DellaSala, J.J. Rhodes, J.R. Karr, M.H. O'Brien, T.L. Fleischner, and C.D. Williams. 2013. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. Environmental Management. 51(2): 474-491.

vi. Extraction of mineral resources and oil and gas development

The assessment report states, "Extraction of mineral resources and oil and gas development is an ecosystem stressor, though it does not currently impact large areas on the GMUG" (p. 17). These activities may not occur on a large area relative to the total size of the GMUG, but mining claims cover 26,000 acres; coal is leased on 15,000 acres with more pending; 107,000 acres are leased for oil and gas with more pending (pp. 17-18). These are large areas in absolute terms, and the GMUG must acknowledge that mineral development to this extent can have significant impacts to ecosystems and the species that depend on them. Indeed, the assessment notes that "[a]bandoned mine lands may have ongoing issues with soil and water contamination, impacting aquatic and riparian ecosystem health and hindering revegetation efforts" (p. 17).

The relative area of these activities may be much less significant than the location of the activities. This section of the assessment report provides no analyses of the effects of these activities to the forests' ecosystem conditions. Data from monitoring reports and other sources must be used to provide a true evaluation of ecosystems affected by exploration and development. For example, how have leasing stipulations and reclamation requirements "reduce[d] the impacts… on sensitive ecosystems"? (p. 17). Are they sufficient to protect the forests' natural resource values, including at-risk species? Does this information and analyses based on this information indicate needs for change in the plan?

vii. Patch size and habitat connectivity assessment

We find this section of the assessment puzzling. The focus seems to be on finding NRVs for habitat patch sizes as the only method for assessing habitat connectivity. The assessment report states, "We were unable to identify meaningful quantitative reference conditions for patch size of ecosystems on the GMUG" (p. 53), and the assessment stops there. There are a range of methods for measuring connectivity and/or fragmentation in ecosystems. We believe that the assessment report could provide an analysis of habitat connectivity on the GMUG with existing information. There is no dearth of guidance for conducting such an assessment in the scientific literature (c.f., Theobald 2002; Calabrese and Fagan 2004; Baldwin et al. 2012; Kupfer 2012; McRae et al. 2012; Theobald 2012).

The assessment report states, "… we recommend that if the Revised Forest Plan includes desired conditions regarding patch size and habitat connectivity, they be based on functional metrics for species, or groups of species, of interest" (p. 51). Sufficient information already exists to base metrics for species. For example, the American marten, which is associated with spruce-fir, mixed-conifer, and lodgepole pine ecosystems, is particularly sensitive to habitat fragmentation and would make a good surrogate (focal) species to help provide for sufficiently large and intact habitat patches in these forest types. Some key characteristics associated with American marten habitat patches in spruce-fir ecosystems include (c.f., Powell et al. 2003; Buskirk and Powell 1994; Buskirk and Ruggiero 1994; Ruggiero et al. 1998):

- Late-successional stands of mesic coniferous forest with complex forest physical structure near the ground.
- Spruce trees: 135 trees per acre at >8 inches.
- Squirrel middens near dens: 6.3 middens per acre.
- Snags for denning: 9 snags per acre at >16 inches diameter at breast height.
- Hard logs: <41 cm in diameter.
- Forest openings: <25-30% of a marten's home range.
- Coarse woody debris: 47 logs per acre at >16 inches in diameter.
- Continuous areas of forest to prevent barriers to movement.

Literature cited in this section

Baldwin, R.F., S.E. Reed, B.H. McRae, D.M. Theobald, and R.W. Sutherland. 2012. Connectivity restoration in large landscapes: modeling landscape condition and ecological flows. Ecological Restoration 30(4): 274-279.

Buskirk, S.W. and L.F. Ruggiero. 1994. American marten. In Ruggiero, L.F, K.B. Aubry, S.W. Buskirk, L.J. Lyon, and W.J. Zielinski, tech eds. The scientific basis for conserving forest carnivores:

American marten, fisher, lynx, and wolverine in the western United States. USDA Forest Service, Gen. Tech. Rep. RM-254. 184 pp.

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McRae, B.H., S.A. Hall, P. Beier, and D.M. Theobald. 2012. Where to restore ecological connectivity? Detecting barriers and quantifying restoration benefits. PloSone 7(12): e52604.

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Theobald, D.M., S.E. Reed, K. Fields, and M. Soule. 2012. Connecting natural landscapes using a landscape permeability model to prioritize conservation activities in the United States. Conservation Letters 5(2): 123-133.

viii. Potential needs for plan changes

In some cases, the relationship between assessment findings and potential needs for change is unclear. In some cases, potential needs for change statements are confusing. We provide comments on a few of these statements below (pp. 61-62).

> *Consider direction for ecosystem management to maintain ecological integrity as a whole, in addition to guidance regarding specific resources (timber, wildlife, rare plants, etc.). This includes maintaining the existing diversity of ecosystems on the landscape and a variety of structural stages, including the protection and preservation of old-growth forest where present.*

The statement should add "restore" to read "to maintain or restore ecological integrity" in accordance with the planning rule. What does "maintaining the existing diversity of ecosystems on the landscape" mean from a management perspective? (i.e., would the GMUG ever consider removing an existing ecosystem to reduce diversity?) The statement needs additional clarity. Why just maintaining "a variety of structural stages" to maintain (or restore) ecological integrity? Composition, function, and connectivity are missing from the statement, indicating the assessment report is inadequate to provide the scientific basis to enable management toward maintaining integrity.

> *Consider focusing management actions to mitigate the impacts of known ecosystem stressors on the GMUG, and prevents drivers from becoming stressors. These actions could include:*
>
> - *Use of prescribed fire, managed wildfire, timber harvest, and fuels reduction treatments to increase ecological integrity and resilience to climate change.*

The ability of any of these actions to mitigate the impacts of stressors has not been assessed in this report. It may be helpful to restate the BASI used in the assessment report or to refer to a specific page in the report that addresses how these activities mitigate stressors. What are their impacts based on past and current management?

> - *Proactively managing invasive species.*

What does "proactive" management mean? How are invasive species managed under current plan direction? Is the management regime ineffective? The effects of current direction on invasive species must be assessed to understand why the plan needs to change.

> - *Monitoring undesirable impacts of livestock grazing.*

The assessment report must delineate the undesirable impacts of livestock grazing in order for the public to understand what is to be monitored.

> *Consider allowing and providing direction for ecologically sound uses of prescribed fire and wildfire in the plan area. Although the 2007 amendment made some beneficial changes to the plan, some additional clarification and changes may be needed.*

What is it that is unclear about the 2007 amendment? How is this affecting ecosystem conditions and management? Again, this is not adequately addressed in the assessment in order to support the change.

> *Consider better defined desired conditions at a scale, or scales, that are relevant to management. Consider providing a spatially-explicit framework to implement management towards desired conditions.*

It should be the job of the assessment to determine ecologically meaningful spatial scales for analysis and to guide management and monitoring, which the assessment has not done. What does a "spatially-explicit framework" mean? This terminology requires clarification.

Consider establishing a monitoring framework that can inform adaptive management through a) monitoring changes of ecosystems at a landscape scale, b) assessing the results and effectiveness of management actions designed to maintain or improve ecosystem resilience and adaptation to climate change.

The plan must do more than "consider" this. The plan must ***do*** this. Developing a monitoring program that enables adaptive management is a key aspect of planning.

Consider matching the variability found on the GMUG. For instance, snag and downed wood retention levels should be examined and possibly updated with values that may vary based on forest type, the values at risk, site productivity, or other factors. Metrics used to evaluate down wood retention should be discussed to ensure the plan is using an appropriate and measurable metric. Minimum stocking standards should be reviewed to ensure they are appropriate given contemporary management objectives and the climate and natural fire regime of local forest types; project-specific determinations by silviculturists may be more ecologically appropriate than Forest-wide standards.

This statement is worded in a confusing way. Regardless, this seems like something that should happen now, at the assessment phase of planning. Additionally, this sets up the GMUG to be making decisions at the project level that belong at the plan level, leading to inconsistent application of plan components in projects and possibly inadequate protection of resources.

b. Riparian and Aquatic Ecosystem Report

i. Selection of key ecosystem characteristics

We believe the key characteristics the GMUG chose to assess aquatic and riparian ecosystem conditions are relevant and appropriate for understanding conditions that affect vulnerable species and other wildlife, including plants.

ii. Assessment of aquatic systems

We found this section overly general. Data sources are mentioned but not documented in a way that demonstrates which data sources are being used in a given analysis. This must be clear in any revision of the assessment report. Metcalf et al. (2012) and Dare et al. (2012) studies are cited but not listed in the bibliography. The assessment report should indicate where on the GMUG the species, native and non-native, occur, and maps would be very helpful for the public to understand the condition of aquatic ecosystems based on the key characteristics. While reference conditions for stream habitat characteristics are presented, the assessment report lacks a complete interpretation of the data in Table 1 (p. 7). A more detailed synthesis of the Adams (2006) and Dare et al. (2012) documents is necessary. How has management under the current plan affected ecosystem conditions? There is one brief mention of this in the discussion about the "stream habitat characteristics and variation." What are the trends in ecosystem conditions based on these analyses and predicted future trends in conditions? How is it possible to consider needs for changing the plan without this part of the assessment? Not surprisingly, the need for change discussion does not draw from much of the information provided in the assessment. For example, how is current plan direction related to the set of management influences (i.e., anthropogenic stressors) discussed in the report? The answer would help reveal additional needs for changes. The brief segment of needs for changes focuses on a few guidelines. What are desired conditions for this ecosystem? Do the current plan components meet the requirements of the planning rule? In sum, this segment of the assessment report provides an insufficient basis upon which to develop plan components and an overall framework for achieving aquatic integrity through planning.

iii. Assessment of riparian and wetland ecosystems

This section of the report provides a more complete characterization of the conditions of the systems (e.g., fens) analyzed. However, overall, the report lacks the necessary specificity to understand where stressors are impacting ecosystem conditions. This information is needed to demonstrate where restoration should be occurring under the revised management plan. On page 15 the report states, "There has been a shift towards more ecologically sound management and use of riparian and wetland ecosystems in recent years but these areas continue to see levels of use that are disproportionate to their extent on the landscape." What does "sound management" mean? This must be defined. What is the direction in the current plan that guides sound management? What direction is impeding sound management?

Again, needs for plan changes discussed in this section of the report focus on standards and guidelines. Do desired conditions need to change? Do they, as well as current standards and guidelines, meet planning rule requirements? In sum, the riparian and wetland section of the report needs to provide a basis for analyzing whether planning rule requirements outlined in 219.8(a)(3) are being met and what changes in management direction would be needed to ensure they are met.

c. Rare Communities and Special Habitats

We recommend the GMUG consider the ecosystems described below as special habitats to be addressed in the assessment.

i. Complex early seral forest

The assessment report concluded that all ecosystems are outside the NRV for "diversity of structural stages," showing "an under-representation of early seral stages on the landscape" (p. 32). Though the assessment notes that data limitations may account for this finding (i.e., data were not available to adequately assess spruce beetle effects).

The assessment report does not differentiate early successional conditions resulting from timber harvesting vs. fire and other natural disturbance factors, and each has distinct ecosystem characteristics. Early seral conditions resulting from timber harvest (vs. natural disturbance) simplifies forest conditions. The assessment report indicates that fire and vegetation management should be considered for increasing the occurrence of early-seral conditions on lodgepole stands (p. 62).

Complex early seral conditions that result from mixed- and high-severity fire (see Swanson et al. 2011; Donato et al. 2012; DellaSala et al. 2014; Swanson et al. 2014; Hutto et al. 2016) should be considered as: rare ecosystems, critical stages of biodiversity establishment and forest development, and a foundation for supporting ecological integrity. Because complex early seral forests provide high quality habitat and ecological conditions for a wide range of native flora and fauna, including woodpeckers, elk, bears, and others, the assessment should consider how unlogged naturally disturbed forests may be spatially arranged in order to maximize species diversity and provide for ecological integrity. Naturally disturbed areas provide opportunities for management that contributes to achieving ecological integrity, habitat diversity, and species persistence requirements, especially snag dependent and shrub-dependent species, over a long timeframe measured in decades.

Newly disturbed areas are sensitive to activities such as road-building, livestock grazing, recreation, and logging. Swanson et al. (2011: 10) summed up the management issues by finding that,

> Natural disturbance events will provide major opportunities for these ecosystems, and managers can build on those opportunities by avoiding actions that (1) eliminate biological legacies, (2) shorten the duration of the ESFEs [early-successional forest ecosystems], and (3) interfere with stand-development processes. Such activities include intensive post-disturbance logging, aggressive reforestation, and elimination of native plants with herbicides.

The assessment should evaluate how well the current plan components protect complex early seral forest habitat.

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ii. Prairie dog colonies and colony complexes

We encourage the Forest Service to consider Gunnison's prairie dog colonies as important, rare ecosystems that provide habitat for a range of grassland species. Biologists consider prairie dogs keystone species (Miller et al. 1994; Kotliar et al. 1999; Miller et al. 2000; Davidson and Lightfoot 2006). At least nine species depend on prairie dogs and their colonies (Kotliar et al. 1999) and over 100 may benefit from these ecosystems (Miller et al. 1994). These species are at-risk across their range, which overlaps with the GMUG.

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VI. Assessing Potential for Management Areas to Protect Wildlife and Habitat

a. Connectivity Management Areas

We appreciate the brief mention of the significance of wildlife connectivity in the Forests' Draft Assessment *Terrestrial Ecosystems: Integrity and System Drivers and Stressors* and request that the final plan integrate additional wildlife connectivity elements as presented below. The assessment report states (p. 51), "Habitat connectivity is the degree to which the landscape facilitates animal movement and other ecological flows, and is determined by patch size and shape and spatial arrangement of patches."

The GMUG national forests lie along a continental wildlife linkage extending from New Mexico's Gila and Arizona's Apache-Sitgreaves national forests through west-central Colorado into the greater Yellowstone ecosystem. Initially defined by Fields et al. (2010) and supported by the subsequent research of Carroll et al. (2013) and Belote (2016, 2017), maintaining and restoring the functional connectivity of this "megalinkage" requires progressive management of the 23,870,652 acres in Colorado managed by the federal government.

The planning rule *includes a requirement to manage for ecological connectivity on national forest lands and to facilitate connectivity planning across land ownerships* (219.8(a)(1)—the first such requirements in the history of U.S. public land management. The pending revisions of most forest plans provide a significant opportunity to protect and enhance the diversity of habitat and wildlife on national forest lands by developing forest plans that promote the conservation, restoration, and enhancement of ecological connectivity.

The planning rule defines connectivity as: *Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change* (219.19). The planning rule definition reflects both structural and functional aspects of connectivity. The rule's reference to spatial scales and "landscape linkages" suggests a structure of connected patches and ecosystems. Functional connectivity is also part of the definition: water flows, sediment exchange, nutrient cycling, animal movement/dispersal, species climate adaptation and genetic interchange are all ecological processes that are sustained by connectivity.

Connectivity plays a key role in the rule's conservation approach. As a key characteristic of ecosystems, connectivity may also be an "ecological condition" needed by individual species, and so forest plans may need to address connectivity for individual or groups of species. For example, a recent amendment to forest plans in Wyoming protects migration corridors between seasonal habitats for pronghorn.

There is an additional requirement in NFMA that is particularly important to developing plan components for connectivity. It is a procedural requirement that the planning process be "coordinated with the land and resource management planning processes of State and local governments and other Federal agencies" (16 USC § 1604(a)). One of the purposes of the planning rule was to "[e]nsure planning takes place in the context of the larger landscape by taking an 'all-lands approach'" (77 Fed. Reg. 21164).[3] To accomplish this, forest plans should consider how habitat is connected across ownership boundaries. We recommend reaching out to government agencies now, during the assessment phase to assess cross-boundary connectivity and needs to maintain or restore habitat linkages areas and wildlife movement corridors. The planning rule accounts for this type of "all lands" connectivity by:

- Requiring assessments to evaluate conditions, trends and sustainability "in the context of the broader landscape" (219.5(a)(1)).
- Recognizing that sustainability depends in part on how the plan area influences, and is influenced by, "the broader landscape" (219.8(a)(1)(ii), (iii)).
- Requiring coordination with other land managers with authority over lands relevant to populations of species of conservation concern (219.9(b)(2)(ii)).
- Requiring coordination with plans and land-use policies of other jurisdictions (219.4(b)).
- Requiring consideration of opportunities to coordinate with neighboring landowners to link open spaces and take joint management objectives into account (219.10(a)(4)).

Colorado includes significant core areas managed by six national forests in addition to GMUG,[4] and nine BLM field offices.[5] In addition, three BLM National Conservation Areas[6] and three major National Park Units[7] lie adjacent to or in close proximity to GMUG National Forests.[8] Significantly, in Colorado, the Forest Service manages approximately 3,675,500 acres of designated wilderness in 36 units.

Achieving the broader scale "all-lands" goals of the planning rule requires partnerships and compatible management across landscapes among multiple landowners and jurisdictions. In particular, there is a need for a landscape-scale strategic approach to conserving connectivity. NFMA has established that the way to communicate a long-term and reliable management commitment for

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[3] Compare with the NPS (2011) "big-picture" approach: "replacing short-term, single species management with multi-species, long-term and large-scale approaches…[to] ensure not only the survival of species and scenic vistas, but also allow these systems to continuously evolve and change"; and with the first goal of President Obama's *National Fish, Wildlife, and Plants Climate Adaptation Strategy*: to "build or maintain ecologically connected network of terrestrial, coastal, and marine conservation areas that are likely to be resilient to climate change and support a broad range of fish, wildlife, and plants under changing conditions" (Council 2014:19-20).

[4] Arapaho-Roosevelt, Pike-San Isabel, Rio Grande, Routt, San Juan, White River NFs.

[5] Little Snake, Colorado River Valley, White River, Kremmling, Tres Rios, Uncompahgre, Gunnison, San Luis, Royal Gorge and Grand Junction Field Offices.

[6] Gunnison Gorge, McInnis Canyons, and Dominquez-Escalante National Conservation Areas.

[7] Black Canyon of Gunnison National Park, Great Sand Dune National Park and Preserve, and Colorado National Monument.

[8] Gunnison Gorge, Dominquez-Escalante, and McInnis Canyons NCAs.

National Forest System lands is through forest plans. Because incorporating connectivity into planning is new, there will be a need to change plan accordingly, based on assessment analyses.

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b. Protecting CNHP PCAs

We are pleased that the GMUG is making extensive use of Colorado Natural Heritage Program (CNHP) reports as input to this assessment. However we feel that the GMUG should also include the CNHP Potential Conservation Areas (PCA) recommendations in this assessment and in the forest plan. The best available and most recent PCA online data is available from CNHP as follows:

- In GIS format via http://www.cnhp.colostate.edu/download/gis.asp
- As online PCA Reports via http://www.cnhp.colostate.edu/download/gis/pca_reports.asp

The PCAs were created based CNHP extensive field work and analysis that is documented in the following reports cited in the PCA Reports:

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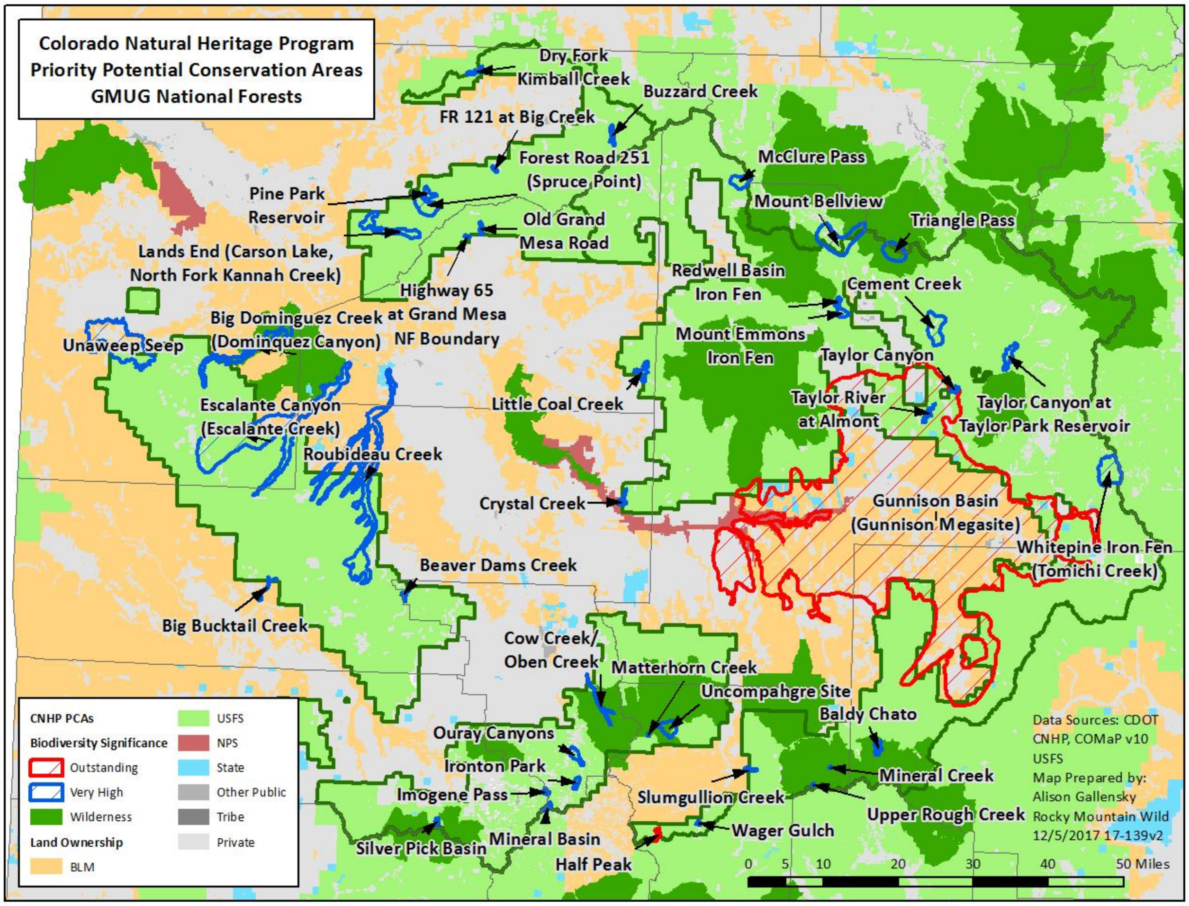
CNHP PCAs should be considered for designation as special interest areas or for other management designations that ensure the protection of the species and natural communities that are found on these areas. Where it is not practical to designate the PCA areas, the forest plan should require that projects done on the forest should not harm the PCA or the sensitive species and natural communities that are found there. Both forest-wide and management area standards will be necessary to ensure adequate protection.

The following map and table shows the 2017 CNHP Potential Conservation Areas (PCAs) with that Very High or Outstanding Biodiversity Significance and significant overlap with lands managed by the GMUG National Forest.



2017 CNHP Potential Conservation Areas (PCAs) with Very High or Outstanding Biodiversity Significance and significant overlap with lands managed by the GMUG National Forest

PCA Name	Biodiversity Significance	Predominant Current Management Emphasis	Associated Element of Biodiversity (driving site ranking)
Baldy Chato	Very High Biodiversity Significance	Existing Wilderness	Uncompahgre Fritillary (*Boloria improba acrocnema*)
Beaver Dams Creek	Very High Biodiversity Significance	General Forest and Rangelands	Lower Montane Forests (*Pseudotsuga menziesii / Paxistima* myrsinites Forest)
Big Bucktail Creek	Very High Biodiversity Significance	Big Game Winter Range	Cottonwood/Skunkbrush Riparian Shrubland (*Rhus trilobata* Shrubland)

PCA Name	Biodiversity Significance	Predominant Current Management Emphasis	Associated Element of Biodiversity (driving site ranking)
Big Dominguez Creek (Dominquez Canyon)	Very High Biodiversity Significance	Active wildlife habitat management, Non-Motorized (Dominguez Creek)	Colorado hookless cactus (*Sclerocactus glaucus*)
Buzzard Creek	Very High Biodiversity Significance	General Forest and Rangelands	Grand Mesa penstemon (*Penstemon mensarum*)
Cement Creek	Very High Biodiversity Significance	Motorized Backcountry Recreation, Non-Motorized Backcountry Recreation	Extreme Rich Fens (*Kobresia myosuroides - Thalictrum alpinum* Herbaceous Vegetation)
Cow Creek/Oben Creek	Very High Biodiversity Significance	Existing Wilderness, Road Corridor (Cow Creek)	Lower Montane Forests (Pseudotsuga menziesii / Paxistima myrsinites Forest)
Crystal Creek	Very High Biodiversity Significance	Scenic Byway (West Elk)	Aspen Forests (*Populus tremuloides / Ceanothus velutinus* Forest)
Dry Fork Kimball Creek	Very High Biodiversity Significance	General Forest and Rangelands	Sun-loving meadowrue (Thalictrum heliophilum), Piceance bladderpod (*Physaria parviflora*)
Escalante Canyon (Escalante Creek)	Very High Biodiversity Significance	General Forest and Rangelands, Wildlife/Backcountry Recreation	Colorado hookless cactus (Sclerocactus glaucus), Wooded Herbaceous Vegetation (*Juniperus osteosperma / Hesperostipa comata*), Good-neighbor bladderpod (*Physaria vicina*), Hanging Gardens (*Aquilegia micrantha - Mimulus eastwoodiae* Herbaceous Vegetation)
Forest Road 251 (Spruce Point)	Very High Biodiversity Significance	General Forest and Rangelands, Recreation Road Corridor	Grand Mesa penstemon (*Penstemon mensarum*)
FR 121 at Big Creek	Very High Biodiversity Significance	General Forest and Rangelands	Grand Mesa penstemon (*Penstemon mensarum*)

PCA Name	Biodiversity Significance	Predominant Current Management Emphasis	Associated Element of Biodiversity (driving site ranking)
Gunnison Basin (Gunnison Megasite)	Outstanding Biodiversity Significance	General Forest and Rangelands	Gunnison Sage Grouse (*Centrocercus minimus*)
Half Peak	Outstanding Biodiversity Significance	Available for Wilderness	Stonecrop gilia (*Aliciella sedifolia*)
Highway 65 at Grand Mesa NF Boundary	Very High Biodiversity Significance	High Use Recreation - Developed, Recreation Road Corridor (Hwy 65)	Grand Mesa penstemon (*Penstemon mensarum*)
Imogene Pass	Very High Biodiversity Significance	Bear Creek/Bridal Veil - undeveloped recreation	San Juan draba (Draba graminea)
Ironton Park	Very High Biodiversity Significance	Motorized Backcountry Recreation, Scenery & Scenic Byway (550)	Dwarf Birch/sphagnum Shrubland (Betula nana / Sphagnum spp. Shrubland)
Lands End (Carson Lake, North Fork Kannah Creek)	Very High Biodiversity Significance	Backcountry Recreation/municipal water, General Forest and Rangelands	Rothrock townsend-daisy (*Townsendia rothrockii*), Grand Mesa penstemon (Penstemon mensarum)
Little Coal Creek	Very High Biodiversity Significance	Big game winter range and municipal water, General	Adobe Hills thistle (*Cirsium perplexans*)
Matterhorn Creek	Very High Biodiversity Significance	Existing Wilderness	Dwarf Birch/sphagnum Shrubland (*Betula nana* / *Sphagnum* spp. Shrubland)
McClure Pass	Very High Biodiversity Significance	Scenic Byway, Wildlife Habitat	Grand Mesa penstemon (*Penstemon mensarum*)
Mineral Basin	Very High Biodiversity Significance	Motorized Backcountry Recreation	San Juan draba (*Draba graminea*)
Mineral Creek	Very High Biodiversity Significance	Existing Wilderness	Montane Wetland (*Carex limosa* Herbaceous Vegetation)
Mount Bellview	Very High Biodiversity Significance	Existing Wilderness, Non-Motorized Backcountry Recreation	Colorado wild buckwheat (*Eriogonum coloradense*)

PCA Name	Biodiversity Significance	Predominant Current Management Emphasis	Associated Element of Biodiversity (driving site ranking)
Mount Emmons Iron Fen	Very High Biodiversity Significance	Wildland Urban Interface/Municipal Watershed	Dwarf Birch/sphagnum Shrubland (*Betula nana* / *Sphagnum* spp. Shrubland)
Old Grand Mesa Road	Very High Biodiversity Significance	General Forest and Rangelands, Utility Corridor	Grand Mesa penstemon (*Penstemon mensarum*)
Ouray Canyons	Very High Biodiversity Significance	Motorized Backcountry Recreation	Montane Riparian Forests (*Populus tremuloides* / *Acer glabrum* Forest)
Pine Park Reservoir	Very High Biodiversity Significance	General Forest and Rangelands	Grand Mesa penstemon (*Penstemon mensarum*)
Redwell Basin Iron Fen	Very High Biodiversity Significance	Wildland Urban Interface/Municipal Watershed	Dwarf Birch/sphagnum Shrubland (*Betula nana* / *Sphagnum* spp. Shrubland)
Roubideau Creek	Very High Biodiversity Significance	Existing Special Management Area, General Forest and Rangelands	Good-neighbor bladderpod (*Physaria vicina*)
Silver Pick Basin	Very High Biodiversity Significance	General	San Juan draba (*Draba graminea*)
Slumgullion Creek	Very High Biodiversity Significance	Scenic Byway	Dwarf Birch/sphagnum Shrubland (*Betula nana* / *Sphagnum* spp. Shrubland)
Taylor Canyon	Very High Biodiversity Significance	Recreation Road Corridor	Crandall's rock-cress (*Boechera crandallii*)
Taylor Canyon at Taylor Park Reservoir	Very High Biodiversity Significance	Recreation Road Corridor	Crandall's rock-cress (*Boechera crandallii*)
Taylor River at Almont	Very High Biodiversity Significance	Recreation Road Corridor	Crandall's rock-cress (*Boechera crandallii*)
Triangle Pass	Very High Biodiversity Significance	Existing Wilderness	Boreal Toad (Southern Rocky Mountain Population) (Anaxyrus boreas pop. 1)

PCA Name	Biodiversity Significance	Predominant Current Management Emphasis	Associated Element of Biodiversity (driving site ranking)
Unaweep Seep	Very High Biodiversity Significance	Not available for Wilderness	Great Basin Silverspot Butterfly (*Speyeria nokomis nokomis*), Montane Riparian Deciduous Forest (*Acer negundo / Prunus virginiana* Forest)
Uncompahgre Site	Very High Biodiversity Significance	Existing Wilderness	Uncompahgre Fritillary (*Boloria improba acrocnema*)
Vega Reservoir	Very High Biodiversity Significance	General Forest and Rangelands	Montane Riparian Forests (*Populus tremuloides / Acer glabrum* Forest)
Wager Gulch	Very High Biodiversity Significance	Available for Wilderness, Recreation Road Corridor	Dwarf Birch/sphagnum Shrubland (*Betula nana / Sphagnum* spp. Shrubland)
Whitepine Iron Fen (Tomichi Creek)	Very High Biodiversity Significance	General	Dwarf Birch/sphagnum Shrubland (*Betula nana / Sphagnum* spp. Shrubland)

VII. Enhancing Ecosystem Integrity through a Protective Plan

We believe that the best way to protect ecosystem integrity is through a plan that includes the following characteristics:

- Increased number and acreage of areas designated for protection, including recommended wilderness, wildlife focused management, special interest areas, and research natural areas.
- Forest wide and geographic region-wide plan components, primarily using standards instead of desired conditions, objectives, or management approaches.

a. Designated Areas

Increasing the number of areas with designations specifically to protect resources provides the following benefits:

- Protecting large, unfragmented landscapes is a foundational principle of conservation biology (Belote et al. 2017). Maintaining the character of areas not currently fragmented by roads and trails helps reduce edge effects and increase landscapes where natural forces and processes predominate.
- Another foundation of conservation biology is supporting connectivity between habitat areas for migration, dispersal, and other purposes (Ament et al. 2014). To successfully conserve connectivity needed for viable populations of at-risk species, these areas must be explicitly recognized as areas with a connectivity-oriented management emphasis. It is possible and necessary to identify specific areas where connectivity across roads and other barriers must be facilitated by federal land management, and by definition, this would require a specific management area and/or strong forest-wide plan components specifically applicable in these areas.
- The assessment has correctly recognized multiple ecosystems and multiple geographic areas within the forest. But current protective management is not well distributed across all ecosystems and all geographic areas. This is referred to as ecosystem representation. Increasing the number and acreage of areas designated for protection can create more balanced ecosystem representation which will in turn help enhance ecosystem integrity (Dietz et al. 2015).

Literature cited in this section

Ament, R., R. Callahan, M. McClure, M. Reuling, G. Tabor. 2014. Wildlife Connectivity: Fundamentals for Conservation Action. Center for Large Landscape Conservation. Bozeman, MT.

Belote, R.T., M.S. Dietz, C.N. Jenkins, P.S. McKinley, G.H. Irwin, T.J. Fullman, J.C. Leppi, and G.H. Aplet. 2017. Wild, connected, and diverse: building a more resilient system of protected areas. Ecological Applications. 27(4): 1050-1056. doi: 10.1002/eap.1527, http://onlinelibrary.wiley.com/doi/10.1002/eap.1527/epdf [12-6-2017].

Dietz, M.S., et al, 2015, The world's largest wilderness protection network after 50 years: An assessment of ecological system representation in the U.S. National Wilderness Preservation System. Biological Conservation. April 2015. http://www.sciencedirect.com/science/article/pii/S0006320715000944 [12-6-2017]

b. Management areas

We recommend the potential special interest areas be analyzed in the assessment. For example, management areas for the following purposes should be analyzed:

- Wildland Urban Interface (WUI), or other areas identified where protection from fire would be a priority, and would thus have substantially different management from non-WUI areas.

- Riparian Management Zones that would give riparian-dependent resources "primary emphasis" (36 CFR §219.19). This will ensure that the plan complies with 36 CFR 219.8(a)(3)(ii), which requires that widths be established for all lakes, perennial and intermittent streams, and open water wetlands. These areas must be identified in the plan area.

- Protected management areas for threatened, endangered, and other rare species found on the forest, including designated critical habitat if specially designated areas do not provide adequate protection.

- Passive management areas where active management is discouraged could provide an important part of an approach to ecosystem integrity. We agree with the statement in the assessment (p. 6), "Current management actions on the GMUG are often intended to mitigate impacts of ecosystem stressors, though insufficient or misdirected management can be a stressor in itself, as can legacies of past management." This implies that active management is not always the best approach to ensure ecosystem integrity.

Each of these types of areas would have specific management direction, including desired conditions, objectives, standards, and guidelines associated with the area that has been defined.