

Gay Austin, retired FS-BLM Botanist, Range Management Specialist who has lived in the Gunnison Basin for 48 years. Thank you for accepting my comments on the GMUG NF's Plan and EIS.

The GMUG NF's Staff has worked hard to develop the Plan and EIS. For instance, a Riparian Management Zone "Desired Condition", FW-DC-RMGD-05 stands out to me as well-written and needed. I also really like FW-STND-RMGD-10! I am supportive of Alternative D and the GMUG's efforts to address climate change (including reducing methane emissions from an existing coal mine/oil and gas operations).

I am opposed to the GMUG's SCC plant list of 24 species for an almost 3 million acre forest when the Rio Grande NF's (1.83 million acres) SCC list has 31 plant species. There were plant species, G1s (ie. *Physaria rollinsii*) and G2s (*Mielichoferia macrocarpa*), and species meeting the SCC criteria that were missed (*Botrychium paradoxum* G3G4 S1, *Carex leptalea* G5 S1, *Carex livida* G5 S1, *Dicranum polysetum* (G5 S1), *Drosera rotundifolia* G5 S2, *Eriophorum gracile* G5 S1S2, *Eriophorum scheuchzeri* G4?T3T4 SNR, *Kobresia simpliciuiscula* G5 S2, *Lomatogonium rotatum* G5 S2, *Trichophorum pumilum* G5 S2). *Dicranum polysetum* (moss) meets the SCC criteria by being 1 of 2 populations in Colorado (Lottis Creek Fen), threatened by heavy livestock use, a disjunct, and having a small population size.

In the EIS, "Sensitive Species Considered in Analysis", page 83, no Regional Forester Sensitive Plant Species were included in the analysis. Only Mammal, Birds, Amphibians, Fish, Insects but no plants (Table 52). How can the GMUG justify this? To add to this, in the EIS (Terrestrial Ecosystems, Alpine Uplands...), the GMUG text says that "Many of these ecosystems were evaluated for key ecosystem characteristics..."(USDA Forest Service 2018). "Key ecosystem characteristics" to me and the Colorado Native Plant Society include plant communities and plants! Regional Forester Sensitive Wildlife Species were included here but, sadly, no Regional Forester Sensitive Plant Species nor plant communities. For years Barry Johnston, PhD, provided the needed consistency in the GMUG Botany program that is lacking now. As a Botanist, I strongly recommend that the GMUG hires a full-time Forest Botanist to support rare plants (Federally Listed & SCC), rare plant communities, and other Forest Botany needs. Rare plants and plant communities are just as important as rare wildlife species and their habitats. "Plants and plant biodiversity are the very foundation of human survival..." (Shaw 2021).

Other recommended changes to the GMUG Plan & EIS:

Alpine Plant Communities: FW-DC-ECO-02. Alpine plant communities are NOT resilient to disturbance from human activities and never will be because of their extreme temperature variations, shallow soils, biological soil crusts, and sensitivity to disturbance (Willard & Marr 1971, Brown et al. 1978, Zwinger & Willard 1996, Gold et al. 2001). These ecosystems are found above timberline on the GMUG, have short growing seasons, and are highly vulnerable to climate change (Neely et al. 2011, Shaw 2021). Approximately 11.8% of the alpine tundra in the western U.S. has been damaged by human activities (Brown et al. 1978). Plan components listed in the EIS (Terrestrial Ecosystems, Alpine Uplands and Alpine Rocky Slopes, Screes, and Cliffs), FW-GDL-SPEC-19 and FW-GDL-RNG-11, are flexible and potentially will not be carried out. These 2 need to be changed to Standards (STND) to help better protect alpine plant communities and their sensitive soils. Also I recommend adding a new plan component

standard under Recreation Management, Winter Resorts: Trail construction and ground disturbance with heavy equipment is avoided in alpine areas with alpine plant communities, rare plants, and/or fens.

FW-OBJ-REC-04 discusses “enhancing at least 100 acres of alpine areas in the plan area”. However under Native Species Diversity (SPEC), the component objective, FW-OBJ-SPEC-03 recommends enhancing or restoring 20,000 acres of wildlife habitat. I propose a plant component objective, FW-OBJ-SPEC-05 to enhance or restore 20,000 acres of alpine plant community/rare plant habitat.

In the EIS (Terrestrial Ecosystems, Alpine Uplands..., Sufficiency, last sentence) “This ensures that conditions in this (alpine) habitat type will not contribute to any loss of viability or cause any trend toward Endangered Species Act listing for regional sensitive species present in the plan area.” Regional Sensitive Species or the GMUG’s SCC species?

Fen Ecosystems - Fens are another uncommon ecosystem in the GMUG that are not resilient to human activities such as ditching, flooding, vehicle tracks, sedimentation, and hydrologic alterations. On Grand Mesa “hydrologically modified fens supported 58 plant species compared to 101 species in undisturbed fens” (Austin & Cooper 2015). Barry Johnston, PhD. (2012) recommended additional sampling of fens in the GMUG and additional fen protection. Human impacts to fens continue across the GMUG (Blanchard Park Fen, Hobbs Fen, Mt Emmons Iron Fen, etc.). See photos below.



Blanchard Park Fen, Grand Mesa, showing new reservoir construction



Hobbs Fen showing livestock postholing



My Emmons Iron Fen showing unauthorized ditch work

Even though fen acreage in the GMUG is very small (Johnston et al. 2012), the GMUG Plan and EIS do not have the plan components sufficient to protect fen ecosystems. Fen sustenance depends on maintaining peat accumulation, ongoing groundwater flows and connections, fen plant communities, water quality and quantity, and lack of sedimentation. Although the GMUG has a Fen Inventory (Johnston et al. 2012), aerial photographs were used to delineate fens and not all fens were found. I found 16 additional fens on Grand Mesa last summer using Google Earth and another 59 sites that haven't been ground-truthed. I also found 3 new fens in Taylor Park. Barry Johnston's Fen Inventory should be updated.

The Plan Soil Standards are not strong enough to protect fen soils (ie. peat). In the western U.S. peat cannot be considered a renewable resource because the peatland soil represents not decades but thousands of years of organic material accumulation and an irreplaceable habitat (Borland 1993, Cooper 1990, USFWS 1999). To maintain Histosols and peat, please create a standard that concentrates water storage development (ie. reservoirs) in fens that have already been heavily impacted and are not restorable (Austin 2008). Also a new standard is needed to require the GMUG to inform project staff of any known fens in the project area and to delineate any new fens not recorded in the original Fen Inventory (Johnston et al. 2012). In the last 3 years I have seen 3 timber sale projects, Monarch-Marshall Pass Vegetation Management Project, Taylor Park Vegetation Management Project, and the Grand Mesa timber sales, being implemented without adequate fen mapping and protection. The Fen Inventory (Johnston et al. 2012) mapping had not been used in project design and there were new fens found from improved GoogleEarth photographs.

Secondly pertaining to fen groundwater, Plan component, FW-STND-RMGD-10 is very good! However, FW-STND-RMGD-07: I do not agree with the GMUG using the Watershed Conservation Practices Handbook (FSH 2509.25) to determine "riparian management zones" around fens. This handbook is outdated and does not contain adequate protections for fens and fen groundwater (see my attached edits to the handbook document). Sources of groundwater supporting fens are often found well outside the 100' "riparian management zone". A 100 foot buffer around a fen is not adequate to "avoid negative impacts to the ecological services" (FW-GDL-RMGD-15) that fens provide (ie. rare plant habitat, peat carbon sequestration, high biodiversity).

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