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Grand Mesa, Uncompahgre and Gunnison National Forests
Attn: Plan Revision Team
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Dec. 26, 2017

Plan Revision Team,

Here are our comments on the recently released draft chapters on Air Quality and Species Assessments.

Air Quality

1. There are at least two RMBL publications that link deposition of nitrogen through the atmosphere to ecological conditions. These publications quantify nitrogen deposition rates and put them in a larger context.

Elser JJ, Anderson T, Baron JS, Bergstrom AK, Jansson M, Kyle M, Nydick KR, Steger L, Hessen DO 2009. Shifts in lake N:P stoichiometry and nutrient limitation driven by atmospheric nitrogen deposition. *Science* 326(5954):835-837

Elser JJ, Kyle M, Steger L, Nydick KR, Baron JS 2009. Nutrient availability and phytoplankton nutrient limitation across a gradient of atmospheric nitrogen deposition. *Ecology* 90(11):3062-3073

2. There is also a study of the impacts of dust pollution on wildflowers.

Waser NM, Price MV, Casco G, Diaz M, Morales A-L, Solverson J 2017. Effects of road dust on the pollination and reproduction of wildflowers. *International Journal of Plant Sciences* 178:85-93

3. On pg. 15 the draft chapter indicates that ozone measurements are not available from the Gothic station in CastNet. When we checked the public portal it looks like the measurements are in fact available. Perhaps a bit more detail might be included to indicate why the data that is apparently available through CastNet is not what the USFS is looking for?

Species at Conservation Risk

1. While the report does an admirable job of assessing individual species, the GMUG might consider identify landscape planning opportunities that will promote multi-species conversation, including identifying critical and managing critical habitats that support a disproportionate

number of species, and support land ownership adjustment strategies that support maintaining linkages between landscapes.

2. It would be much easier to understand these sections if there was a list of species, grouped by taxonomy. This would make it easier to analyze and provide feedback about whether any species should be added/deleted from the lists. Additionally, it would be helpful to have a map showing the distribution and overlap of key species of concern. This would assist with landscape planning.
3. The section on threats and risks to *Bombus occidentalis* should explicitly mention that honeybees are one of the biggest threats, moving mention from the appendix to the main body of the report. This is supported in the literature:
COMPETITIVE INTERACTIONS BETWEEN THE INVASIVE EUROPEAN HONEY BEE AND NATIVE BUMBLE BEES, Ecology, 2004, Diane Thomson
4. Given the historic absence of honeybees on the GMUG and the fact they are known carriers of diseases, both across the US and in Gunnison County in particular, dangerous to bumble bees, the GMUG should have policies to actively discourage the introductions of honeybees. In general, careful management of commercial pollinators, especially honeybees, should be one of the key management tools for *Bombus occidentalis*. This is identified in the UN Assessment on Pollination, Pollinators, and Food Production as well the paper in the Nov. 25, 2016 Science paper, "10 Policies for Pollinators" by Dicks et al.
5. The international reports on pollinators also recommend the establishment of long-term pollinator monitoring. Given that RMBL supports one of the few long-term monitoring projects, the USFS should consider making it a management priority to support the continuation of the study, as well as the general research on *Bombus occidentalis* at RMBL.
6. The absence of a demographic/population viability analysis identifying critical demographic parameters driving the population dynamics of Gunnison Sage Grouse and guiding management continues to be a mystery. Such an analysis would provide insight into management opportunities most likely to support continued viability of the populations. The absence of such an analysis also makes it difficult to understand the costs and benefits of different management strategies.

Sincerely,

A handwritten signature in black ink that reads "I. Billick". The signature is written in a cursive, slightly slanted style.

Ian Billick, PhD
Executive Director