Peer Review: Graham's and White River Beardtongue Biological Status Report

Submitted by:
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1. Is our description and analysis of the species' needs, biology, habitat, population trends, and historic and current distribution of the species accurate?

Yes, with the exception of the historical distribution and conditions, which as presented here is an estimate based on assumptions. There should be more caveats in statement that compare historical spatial distribution to current, because we really don't know the pre 1900 distribution. For example Second paragraph pg 56, last sentence *"The small and localized loss of plants and pollinator habitat area within the species' range has not changed the spatial distribution of current populations from the historical condition."* I suggest you add estimated historical condition. Further, I recommend you revisit the similar statements in 6.2.1 and 6.2.2 (pg 60), "*The species maintains a similar resiliency, redundancy, and representation as it did historically across its range",* and 6.5.1, 6.5.2 pg 69-71 *"the remaining 15 populations retained the same condition as they did historically" ,* and *'The current distribution is the same as the historical distribution'…..*. and rephrase to "*Based on our assumptions the current distribution is likely the same as the historical distribution"* or something similar. There is no way to know what the population size was for these two species pre 1900. The assumption regarding population size for *P. grahamii* is based on trend data for a 10 year period in pop 13, and a 13 year period in pop 27. McCaffery et al. 2013 state: "*While plant abundances appeared to be largely stable over this monitoring period, recruitment has been low and sporadic, and several of the population growth rate estimates indicate that populations may be in slow decline"*. Therefore, I would suggest you don't include population size in the historical to current comparison. Further, the assumptions for habitat condition could be enhanced by reviewing the historical grazing records at https://quickstats.nass.usda.gov/

RE population size categories presented in Tables 19 &20. There are no medium sized populations of either species with the criteria utilized (except *P. scariosus* var. *albifluvis* within the CA). It does not seem logical to consider a *P. grahamii* population of 171 plants and one of 19,735 as both being large. A population with a smaller number of individuals such as *P. grahamii* #27 with 171 plants could be extirpated by a stochastic event, whereas population #20 with 19,735 plants would not be easily extirpated by a stochastic event and therefore logically have a different level of resiliency. I suggest you reconsider the metrics used for the size categories in Tables 19 & 20, and carried forward in subsequent evaluations, to ensure that populations of 100-1000 are considered be in a medium size category, as follows.

Size	# of plants
Small	0-100
Medium	101-1000

Large greater than 1000

2. Does the Biological Status Report provide accurate and adequate review and analysis of the current and projected future condition of the species?

Yes, current conditions are addressed, future conditions are not addressed in this document.

3. Are our assumptions and definitions of suitable habitat logical and adequate?

Yes.

4. Are there any significant oversights, omissions, or inconsistencies in our Biological Status Report?

The avoidance buffer distances are made with regard to fugitive dust and weed invasion, not to pollinator foraging distances. The avoidance buffers should incorporate foraging distances as well, especially for the primary pollinators of the species to ensure adequate pollination and reproduction, and access to pollen sources, particularly for the specialist pollinators.

5. Are the conclusions we reach logical and supported by the evidence we provide?

In general, yes the conclusions are logical and supported by evidence. However, the avoidance buffers are made with regard to dust and weed invasion, not specifically to pollinator foraging distances.

6. Did we include all the necessary and pertinent literature to support our assumptions/arguments/conclusions?

Yes.