

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

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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.

Re: Known distributions:

Our knowledge of current distributions of both species are incomplete due to lack of surveys on Tribal lands, and the occurrence of very large areas of occupied/potential Graham's and White River beardtongue habitats in the DWR lands in Unit 2. More surveys of DWR and adjacent lands are needed as these areas likely contain large populations with high potential for long-term conservation.

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

Yes.

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

Yes.

Re: Habitat Associates:

I defer to Fitts et al., but my observations of thistle species in occupied habitats were limited to *Cirsium barnebyi* and *C. arizonicum*.

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

Re: Known plant or habitat losses:

The existence and effects of the ML-103 project (2012) appear to have been omitted. Considerable surface disturbance occurred as part of the Questar Mainline 103 pipeline replacement project in Weaver Canyon. Pre- and post-disturbance surveys and monitoring were performed by SWCA. Prior to construction, an unknown number of White River beardtongue plants were lost during road improvement and widening in Hells Hole Canyon between 2009 and 2012. The assumption of plant loss is based on observations of White River beardtongue plants subsequently becoming established in disturbed shale along the road and in roadside berms created by the disturbance. There is a large (core) population in a historic roadcut above the road that presumably is the seed source for the plants occurring in and next to the road. The presence of White River beardtongue in recently disturbed shale in roads and washes in the project area suggests plants were present before disturbance occurred. There was limited habitat loss in Hells Hole and Weaver Canyons due to road improvements and disturbance during this project, but disturbance occurred in immediate proximity to populations of both Graham's and White River beardtongues. Spatial data and reports should be in the possession of the USFWS, but should also be available from SWCA.

Re: Herbivory:

We made numerous observations of White River beardtongue browsing by deer and elk during the transplant experiments (2015-present). It appears that young plants are more vulnerable to browsing than mature plants, with less frequent browsing once the plant becomes established, and then browsing occurs as nipping off the leaves in spring, or removal of flowering stems in early summer. Rabbit herbivory of newly transplanted seedlings also occurred.

Re: Invasive Weeds:

I have observed localized introduction and expansion of *Strigosella africana* in beardtongue habitats since 2008. I do not have any empirical evidence, but it appears that this weed species has a higher tolerance to shale soils than cheatgrass. Introduction of *Strigosella africana* in Weaver Canyon Graham's beardtongue habitats followed intensive sheep grazing and associated trampling of shale soils in and adjacent to occupied habitat. I have also observed rapid weed invasions at the Graham's beardtongue transplant experiment site at Red Leaf (Seep Ridge SITLA lease area). Weed cover in the reclaimed soil treatments comprised African mustard (*Strigosella africana*; 57.5%), cheatgrass (*Bromus tectorum*; 20.0%), herb sophia (*Descurainia sophia*; 8.0%), and halogeton (*Halogeton glomeratus*; 5.3%). Other invasive species present were prickly Russian thistle (*Salsola tragus*; 3.5%), littlepod false flax (*Camelina microcarpa*; 3.0%), and redroot amaranth (*Amaranthus retroflexus*; 1.0%).

Also, invasive weeds also compete with Graham's beardtongue through shading. Dense weeds at the Red Leaf experimental site appeared to cause stem elongation, low vigor, fungal infection, and stress-induced flowering in Graham's beardtongue in native soil treatments.

Re: Off-road vehicles:

It may be worth noting that sparsely vegetated shale barrens (potential habitats) on ridgelines are attractive off-road vehicle routes.

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

Yes.

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

Yes.

If you find that our data are inadequate, please identify additional data or studies that are needed to adequately evaluate the biological status of the species. Please provide literature, data, and full citations, if appropriate.

It does not appear that the 2014 survey results for the Red Leaf SITLA lease areas are included in either population estimates or maps. These data were released to USFWS in 2016. Contact BLM VFO or SWCA for survey result shapefiles and final report.