



Lemhi Penstemon Inventory in Big Hole National Battlefield

Network parks where resource is being inventoried

- Big Hole National Battlefield

Importance: A large population of a rare endemic plant

Lemhi penstemon (*Penstemon lemhiensis*) is a short-lived perennial flowering plant (forb) that is endemic to Lemhi County in eastern Idaho and 4 counties in southwest Montana, including Beaverhead County where Big Hole National Battlefield (BIHO) is located. Over 50% of known populations are made up of 30 plants or less. There are only three large populations known with over 300 plants. One of these occurs in BIHO, which now appears to be the largest known population of the species. Lemhi penstemon is listed as a sensitive species by the US Forest Service and the Bureau of Land Management, and is ranked G3 and S3 (rare but not imperiled with 21-100 occurrences in the state) by the Montana Natural Heritage Program. The species has been in decline throughout its range, and is facing threats from altered fire regimes and invasion by spotted knapweed. The species requires bare soil microsites to become established and prescribed burning has been demonstrated to be effective in stimulating germination and population growth.

Given the large, globally significant population size at BIHO, and the potential declines reported elsewhere in the species' range, documenting the distribution and abundance of Lemhi penstemon at BIHO is important, and will support more informed management decision-making.

Distribution and Abundance

In 2009, we sampled from 148 quadrats on the Howitzer Hill and Horse Pasture, where the species appears to be restricted, and estimated the population to include 1580 mature plants (seedlings excluded). In 2010 we sampled the same areas with 299 plots and estimated the population to include 1618 plants (approximate 95% confidence interval 974-2262 plants). The estimates from these 2 years were strikingly similar and well within margins of error, confirming that the population is the largest yet reported for this species, with well over 300 plants. During our surveys we also confirmed that a small population of 40 plants identified near the visitor center in 1983 has been extirpated.

Inventory Objectives

- Estimate the distribution and abundance (population size) of Lemhi penstemon in BIHO.

Management Applications

- Provide a map of penstemon distribution in the park.
- Enable park managers to avoid penstemon habitat during management activities.
- Update park management knowledge of the Lemhi penstemon population, including its size, impending threats to its long-term persistence, and potential management options such as prescribed fire.
- Support park resource planning and land health reporting efforts, and inform resource management planning in the Battlefield.

Contact Information

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Lemhi penstemon (*Penstemon lemhiensis*) is a rare endemic found in only 4 MT counties and in 1 ID county. The largest known population of this species occurs in BIHO!



Figure 1. NEPE employee Jannis Jocius surveying for Lemhi penstemon in BIHO along a 50-m "belt transect".