



Lemhi Penstemon Inventory

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 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 at the battlefield, now confirmed to be the largest known population of the species. Lemhi penstemon is listed as a sensitive species and is ranked as at risk of extinction due to limited or declining numbers 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 may be effective in stimulating germination and population growth.

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

Distribution and Abundance

In 2012, we surveyed for lemhi penstemon and the invasive spotted knapweed in 300 plots on the Howitzer Hill and Horse Pasture, where the population is concentrated. We estimated the population to include approximately 2500 mature plants (seedlings excluded), with 95% confidence interval ranging from 1838-3010 plants. Unfortunately, we also confirmed that the invasive spotted knapweed population is increasing dramatically in the same area, presenting a serious threat to the long-term persistence of the penstemon population.

In 2012, the population of spotted knapweed on the hillslopes increased by 600% over 2011 to approximately 17000 plants (95% confidence interval 13500 to 21200).

Management Applications

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

Objective

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



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 Big Hole National Battlefield!



NPS surveyor searching for Lemhi penstemon plants hidden by dense vegetation. This photo was taken on the Horse Pasture, which overlooks the North Fork Big Hole River and the Nez Perce encampment where the 1877 battle occurred.