

## Lemhi Penstemon Inventory in Big Hole National Battlefield

### Network parks where resource is being monitored

- Big Hole National Battlefield

### Importance: A rare endemic

Lemhi penstemon (*Penstemon lemhiensis*) is a short-lived perennial 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. The species is known from only 191 occurrences, 102 of which are in Idaho, and 89 are in Montana. Over 50% of these populations are made up of 30 plants or less. There are only three large populations with over 300 plants. One of these occurs in BIHO and it may 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 reportedly 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.



Lemhi penstemon (*Penstemon lemhiensis*)

### Distribution and Abundance

In 2007, 520 mature flowering plants were counted and mapped (Figure 1). In 2009, we sampled 150 quadrats on the Howitzer Hill and Horse Pasture (Figure 1), where the species appears to be restricted, and estimated the population to include 1385 mature plants (seedlings excluded). Precision of our estimate was low (approximate 95% confidence interval 495-2275 plants) because of the sparse distribution of plants, but we confirmed the population remains well above 300 plants, a level previously established to represent a globally significant population for this species.

### 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

Tom Rodhouse, Tom\_Rodhouse@nps.gov

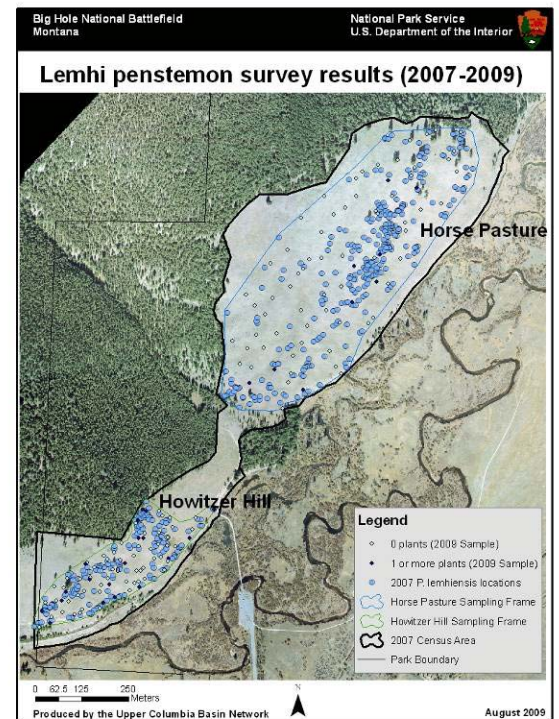


Figure 1. Map of inventory results (2007-2009).