



## Lemhi Penstemon Monitoring

### 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 2013, UCBN and park staff surveyed for lemhi penstemon and the invasive spotted knapweed in 299 plots on the Howitzer Hill and Horse Pasture. The estimated population included 2688 mature plants, showing a slightly increasing trend since 2009. The population by the Visitor Center also increased from 42 to 63 plants, including many new 1-rosette plants, where seedlings had been found in 2011.

The invasive spotted knapweed population showed a dramatic reduction on the Horse Pasture. This is a result of successful treatment with herbicide. Howitzer Hill was also treated; however results for this year show no decline, perhaps because of a longer period of heavy infestation and seed bank development in this area.

### 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.

## Big Hole National Battlefield

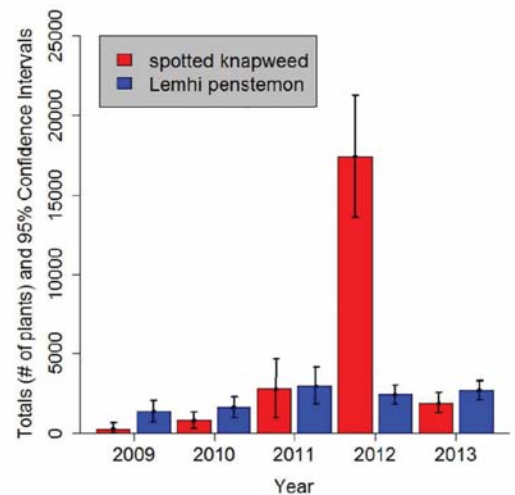
### Objective

Track changes in the distribution and abundance of Lemhi penstemon in the Battlefield.



Left: UCBN biotechnician counting Lemhi penstemon plants.

Right: Pollen wasp inside a flower.



Population estimates for spotted knapweed and lemhi penstemon plants on the Howitzer Hill and Horse Pasture hillslope study area of BIHO, 2009-2013.