Upper Columbia Basin Network Inventory and Monitoring

National Park Service
U.S. Department of Interior

Pacific West Region

Lemhi Penstemon and Spotted Knapweed Monitoring

Big Hole National Battlefield

Lemhi penstemon *(Penstemon lemhiensis)* from basal rosettes to flowering plant

Why are Lemhi penstemon and Spotted knapweed important?

Lemhi penstemon *(Penstemon lemhiensis)* is a rare perennial flowering plant 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 and there are only three large populations known with over 300 plants. Results of inventory and monitoring efforts from 2009-2017 confirm the population at the battlefield to be the largest reported of the species, making Big Hole National Battlefield a crucial place for Lemhi penstemon conservation. Lemhi penstemon is listed as a sensitive species and is ranked as at risk of extinction due to habitat loss from invasion of spotted knapweed *(Centaurea stoebe L.)* and from altered fire regimes. Seedlings requires bare soil microsites to become established and prescribed burning may be effective in stimulating germination and population growth. In the absence of fire, other vegetation may compete for resources and occupy potential germination sites.

Botanist surveying for Lemhi penstemon plants along a 50-m transect in the Horse Pasture at BIHO.

Why do we monitor lemhi penstemon?

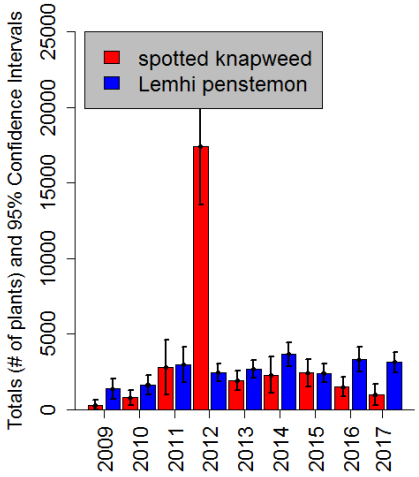
- To provide status and long-term trends of the total number of established lemhi penstemon and spotted knapweed plants
- To detect changes in the lemhi penstemon population (e.g., number of seedlings, plant establishment, survival of mature plants)

How do we use the monitoring data?

- To assist park management with restoration decision-making, including guiding potential management options, such as prescribed fire
- To enable park managers to avoid critical penstemon habitat during management activities, such as herbicide application
- To support park resource planning and land health reporting efforts

What have we found?

After multiple years of study, it has become increasingly clear that the Lemhi penstemon population is stable in the Battlefield and does not appear to be in decline. However, during recent hot, dry years, plant mortality increased and regeneration from seed decreased, raising the possibility of future decline with altered climatic conditions. Spotted knapweed remains a concern, but the weed control strategy initiated after the alarming 2012 spike appears to be keeping that infestation at bay.



Population estimates for spotted knapweed and lemhi penstemon plants on the Howitzer Hill and Horse Pasture hillslope study areas of BIHO, 2009-2017.

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http://science.nature.nps.gov/im/units/ucbn/monitor/lemhi_penstemon.cfm