

NRCM: Manually Treat Invasive Plants at Four Park Water Systems

Detailed Implementation Plan

Park: GRBA

PMIS # 223736

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Abstract

Mesic habitat, including wet meadows, is extremely limited in Great Basin National Park. It is also particularly susceptible to invasion by nonnative plants. Four wet meadow complexes serve as drinking water sources which prohibits the use of chemicals to control invasive plant populations within collection areas. This has affected the park's ability to effectively control invasive plants in these areas and provided a persistent seed source. We propose to use manual treatment methods to control invasive plant populations within sensitive water collection areas and prevent their spread to uninfested or already controlled sites. Manual treatments will also help to maintain function and resiliency of montane wet meadows, a rare but ecologically important habitat type in the park.

Introduction

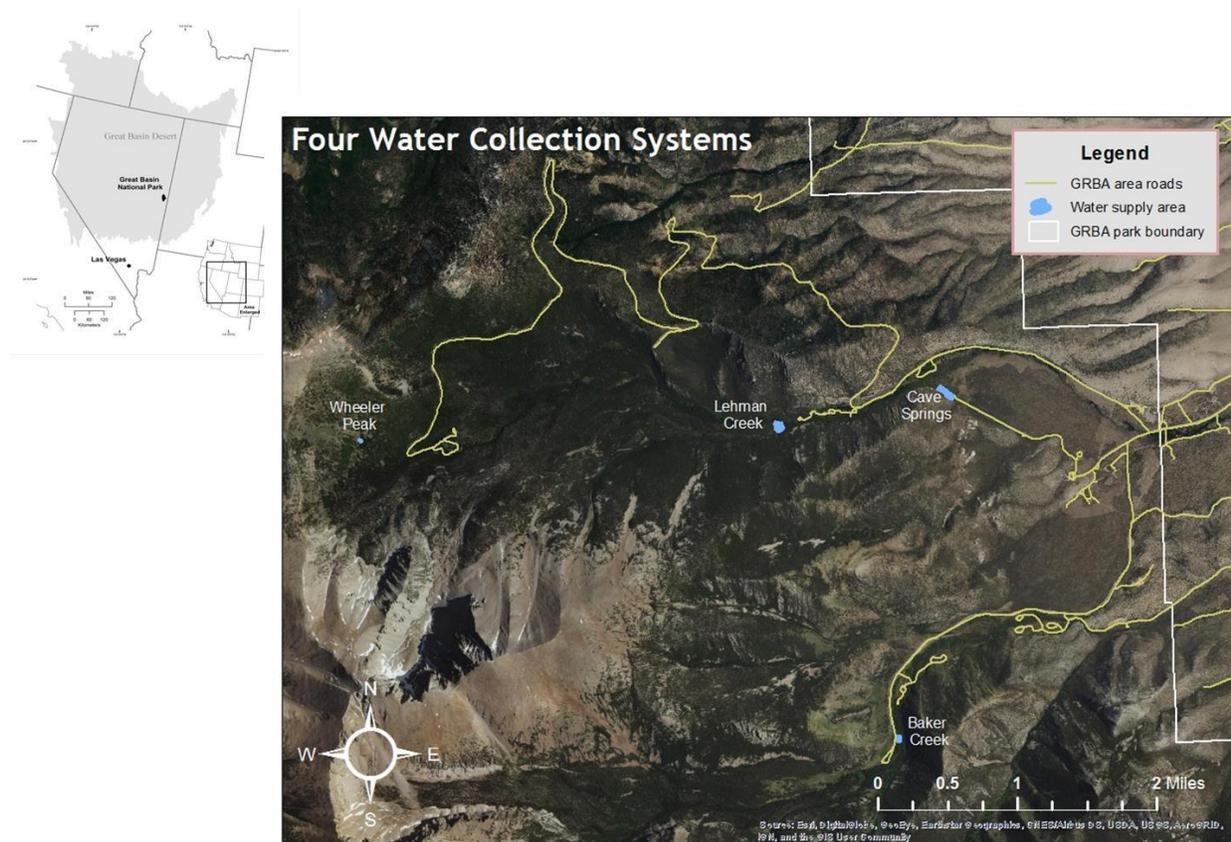
Great Basin National Park is dominated by upland plant communities with mesic habitats limited to narrow riparian corridors, springs and spring complexes that feed wet meadows. Mesic habitat types account for less than 2% of park lands with wet meadows making up about 0.1% (87 acres). Although rare, they are ecologically important in an arid landscape and can support higher plant diversity; provide habitat, cover, and forage for wildlife; filter water; slow runoff; and contribute water, nutrients and habitat connectivity to riparian habitat and stream systems. Several wet meadow complexes also serve as drinking water sources for the park visitor center, housing and campgrounds.

Wet meadows and other riparian habitat types are especially susceptible to invasion by nonnative plants due to increased water availability and soil nutrients. Nonnative plants use more water and can outcompete native vegetation leading to degradation of native habitat and impacts to wildlife. Several species of invasive plants commonly invade wet meadows in the park: bull thistle (*Cirsium vulgare*), musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*) and whitetop (hoary cress, *Cardaria draba*). Spotted knapweed (*Centaurea stoebe*) is another invader targeted by the park's weed program that may be present in mesic habitats. With the exception of bull thistle, all of the target species listed above are designated as noxious weeds in Nevada.

Available methods for controlling nonnative plants inside water system collection areas are limited to manual treatments. Application of herbicides inside collection areas is prohibited, and manual treatment is time and labor intensive. This has limited the success of invasive species control inside these areas. Herbicide treatments outside collection areas are ongoing, but untreated weeds within

collection areas continue to degrade an important habitat type and provide a seed source for expansion of invasive species.

The project area is located in the main two watersheds on the east side of Great Basin National Park: Lehman Creek and Baker Creek. The four collection areas are fenced and comprised of wet meadows, springs and varying amounts of surface water. Collection areas differ in size. The total treatment area is five acres. Elevations range from 7,200 to 10,300 feet (Map 1).



Map 1. Four water collections systems targeted for treatment in Great Basin National Park: Wheeler, Lehman Creek, Caves Springs and Baker Creek.

Problem Statement

Great Basin National Park contains four water collection systems that supply potable water to the park visitor center, housing and campgrounds. Each system collects water from a series of natural springs located within larger wet meadow complexes. Because these areas provide water for human consumption, herbicide use within the boundaries of the collection area is prohibited. The inability to use herbicide as a control method has allowed invasive plant populations to persist providing a seed source that negatively impacts areas outside water collection area boundaries and degrades a limited but important habitat type in the park.

Objectives

- Reduce cover of invasive plants in four water collection areas
- Increase the ability of park staff to control nonnative populations at these sites in the future
- Prevent the spread of invasive plant species into un-infested or already controlled sites
- Maintain function and resiliency of montane wet meadows, a rare but ecologically important habitat type

Methods

Crews will locate and manually treat invasive plants found within water collection areas at four spring/meadow complexes: Cave Springs, Wheeler Peak, Upper Lehman Creek Campground and Baker Creek. Four species will be targeted for treatment: Canada thistle, musk thistle, bull thistle and whitetop (hoary cress). Other invasive plants that are encountered during treatment (e.g. spotted knapweed) will be treated as well. The total project area for all four sites is five acres. Total cover of target species is between zero and fifteen percent.

Crews will use mechanical treatment methods (hand pulling, grubbing, etc.) to remove invasive plants within water collection areas. Use of chemical herbicides at these sites is prohibited because they are sources for drinking water. Treatments will occur before flower and seed production. Every effort will be made to remove the entire root to prevent resprouting. Any plants with flowers or seeds will be bagged and placed in park dumpsters.

Due to the high resiliency of these sites – available water, productive soils, elevation and presence of robust native plant communities – seeding or replanting with native stock will not be necessary. Funding is for FY17 with all treatments completed within the fiscal year.

Monitoring will occur in subsequent years through invasive plant inventory and retreatment at these four sites. GRBA staff and/or Lake Mead EPMT crews will conduct future inventories and treatments during annual weed surveys.

Deliverables

Meeting our objectives will reduce or eliminate invasive weed species in four park water collection systems. Spatial data will be collected and archived in the park's weed geodatabase. Treatments will also be included in annual invasive plant GPRA reporting. A final report will be completed in PMIS and submitted to regional contacts as needed.

Budget

Labor Cost = \$8,800 (3 pay periods each for GS-07 crew lead and GS-05 bio tech)

Materials/Equipment/Vehicle Cost = \$850

Total Project Cost = \$9,650