



Natural Resource Monitoring at Golden Spike National Historic Site



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Golden Spike National Historic Site.

The Northern Colorado Plateau Network

The Northern Colorado Plateau Network (NCPN) covers a geologically and biologically diverse region comprising 16 national parks in four western states. These parks contain desert grasslands, shrublands, forests, caves, large rivers, perennial streams, seeps, springs, and striking geology. Invasive species, trampling and grazing by livestock, and adjacent land-use activities are some of the most significant threats to NCPN parks. The NCPN is designing and implementing a long-term monitoring program to measure key indicators of ecological integrity, or “vital signs.” Multiple monitoring efforts will help inform managers of the health of park resources and provide early detection of potential problems. This brief describes recent NCPN activities at Golden Spike National Historic Site.

Flora Update



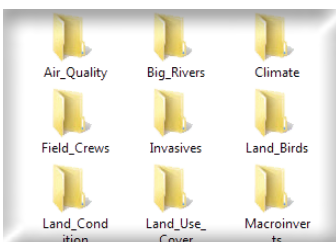
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Winterfat.

In 2008–2009, the NCPN published an annotated checklist of vascular plant species for each network park. Since that time, nearly 700 changes have been necessary to keep up with new research, due to the discovery of new species and changes to park status and existing nomenclature. For instance, 432 new vascular plant species have been added to the park floras

and the status of another 102 species has been changed. An [addendum to the original checklists](#), compiled by contractor Walt Fertig and published in 2012, details these changes. Golden Spike NHS has seen an increase of eight new plant taxa since 2007, an increase of 5.5% that brings the known and reported park flora to 152 taxa.

Data Management Review



Data management is one of the NCPN’s most pivotal tasks. In 2011, the network completed a review of its data management practices as part of a program-wide assessment facilitated by the national I&M Program. The goal of the review was to evaluate current practices and identify areas for improvement. In collaboration with network staff, the NCPN data manager completed a comprehensive self-assessment consisting of more than 200 questions spanning 12 categories. The review identified several areas

of strength for the NCPN, including databases, data distribution, quality assurance/quality control, and data management roles/responsibilities. The network will share its expertise in these areas with other networks as needed to help them make improvements. Two main areas needing improvement were also identified: data documentation and water quality data management. The NCPN will work with the national I&M Program and other networks to make improvements in these areas.

Invasive Remote Sensing



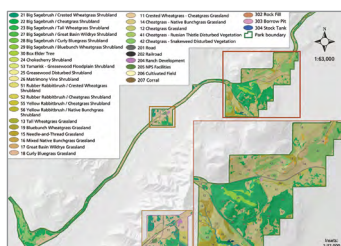
African mustard.

Al.Schneider@USDA PLANTS Database

Invasive annual plants, such as cheatgrass (*Bromus tectorum*) and African mustard (*Malcomia africana*), can have profound impacts on dry-land ecosystems, often leading to an increase in fuel loads and fire cycles, competitive displacement of native plant populations, and an increase in wind- and water-borne soil erosion during drought years, when these plants do not germinate. At Golden Spike NHS, the NCPN will partner with the U.S. Geological Survey (USGS) and Brigham Young University to document landscape-level dynamics of invasive annual plants through the analysis of satellite

imagery, using a method developed by the USGS. After invasive annual plant populations have been detected and mapped over a number of years, a mapping algorithm will allow us to compare spring and summer Landsat imagery and model the abundance of brome grasses and other spring weeds as a function of the seasonal difference in vegetation greenness. This technique will be used to map specific areas across the Northern Colorado Plateau where there are concerns about dust production and fire in sagebrush habitats where endangered plants are of concern.

Vegetation Mapping

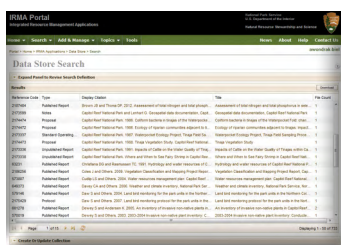


Vegetation map.

The NCPN has completed a multi-year, multi-partner effort to map vegetation at Golden Spike NHS. This project included gathering aerial photography, collecting initial vegetation-plot data, using the vegetation data to classify vegetation types and write descriptions, writing a vegetation-type key, performing photo interpretation, conducting an accuracy assessment, creating a geodatabase, and writing the final report. The team collected vegetation and environmental data from three vegetation classification plots and 46 observation points. A total of 552 map polygons representing 29 natural and semi-natural vegetation map classes were developed for the project. The mapped veg-

etation was classified into 18 community types. Eight of the classified types were dominated by non-native herbaceous species; the other ten associations described predominantly native vegetation. The most frequent vegetation mapping unit was Big Sagebrush / Cheatgrass Shrubland, covering 28% of the project area. These maps will be a valuable resource for use in park management, resource monitoring, interpretive programs, planning, prescribed fire, and as a baseline for designing ecological studies. All 16 NCPN vegetation mapping projects are now complete. [Summary briefs](#) and data posters for all projects are available at the network website.

IRMA Data Store



Looking for something? The Integrated Resource Management Applications (IRMA) portal is your web-based "one-stop shop" for documents, data sets, and other types of NPS natural and cultural resource information. In 2011, the NCPN received funding from the national I&M Program to upload digital files to the [IRMA Data Store](#). Overall, a total of 370

digital files were uploaded. About half of those documents were already in digital form; the other half had to be scanned from hard-copy documents. Of the 370 documents uploaded, [40 were linked to Golden Spike NHS](#). These documents covered topics including water quality, mammals, and invasive exotic plants.

Additional Efforts

In addition to the projects described in this brief, the NCPN also monitors water quality, landscape dynamics, land surface phenology,

and invasive exotic plants at Golden Spike National Historic Site.

For more information

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