

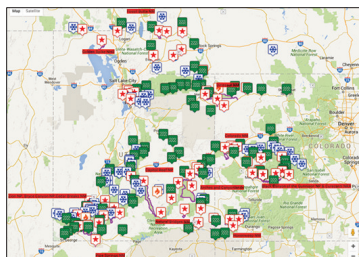


Natural Resource Monitoring at Natural Bridges National Monument

The Northern Colorado Plateau Network

In 16 parks across four western states, the [Northern Colorado Plateau Network](#) (NCPN) is dedicated to providing National Park Service (NPS) managers with the information they need to make sound, science-based decisions. By conducting long-term monitoring of key indicators of ecological integrity, or “vital signs,” we help inform managers about the health of park resources and provide early detection of potential problems. In this way, we support the NPS mission of preserving the resources of America’s most special and treasured places for future generations. This brief describes recent NCPN activities at [Natural Bridges National Monument](#).

Climate



NCPN weather stations.

The NCPN recently moved its [climate](#) monitoring toward interactive, user-defined data presentation. Network staff are working with developers of [The Climate Analyzer](#), an interactive website that allows users to create custom graphs and tables from historical and current weather-station data that update every 24 hours. Parameters include temperature and precipitation, snowfall and snowpack, and stream flow and water temperature. In July 2014, an NCPN version of [The Climate Analyzer](#) was launched, with data now available for each network park. In addition, “Climate

dashboards” for Dinosaur NM and the Southeast Utah Group parks (Arches NP, Canyonlands NP, Hovenweep NM, and Natural Bridges NM) present current conditions, forecasts, and recent data for numerous weather stations in one easy-to-access location. The dashboards also present the current condition of drought severity in the region through a link to the U.S. Drought Monitor. Additional NCPN dashboards are in development, and the page will continue to be refined as we receive feedback from users. More information can be found in our [2015 climate monitoring brief](#).

Landbirds

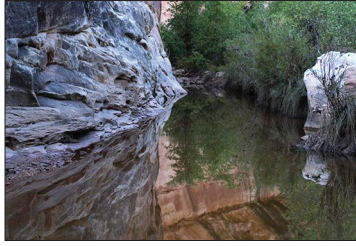


Pinyon jay.

The NCPN is partnering with the Bird Conservancy of the Rockies (BCR; formerly the Rocky Mountain Bird Observatory) to assess trends in breeding [bird](#) species in three habitats: low-elevation riparian (LR), pinyon-juniper (PJ), and sage shrubland (SA). In 2014, the tenth year of monitoring was completed. BCR recorded 1,620 birds of 66 species in LR habitats across six network parks, and 1,421 birds of 68 species in PJ habitats across nine network parks—including two LR and one PJ transect at Natural Bridges NM. Each loca-

tion was surveyed once. Throughout the network, BCR recorded 48 bird species of conservation or management concern and estimated densities for 29 of those species. As additional years of data accumulate, long-term trends underlying annual fluctuations will be revealed. Long-term monitoring will continue to be necessary for interpreting population status and trends for avian species of the NCPN. Reports for all years are available at http://go.nps.gov/NCPN_LBreports.

Springs and Seeps



Armstrong Canyon.

The primary goal of NCPN monitoring of [springs, seeps, and hanging gardens](#) is to assess trends in key indicators of spring and seep ecosystem health: water quantity, water quality, and spring-related vegetation. The NCPN has worked closely with Southeast Utah Group (SEUG) staff to develop a long-term springs monitoring program that augments SEUG sampling by adding information on site vegetation and disturbance at existing monitoring sites, initiating flow sampling at additional

sites, and including hanging gardens. Springs monitoring occurs at hanging gardens at the park, with monitoring methods focusing on endemic plants and repeat photography of the site area. Six hanging-garden sites are visited each year on a rotating basis. A joint effort with several other NPS monitoring networks is underway to develop a database for this protocol. The NCPN springs monitoring protocol was submitted for peer review in 2013.

Wadeable Streams



Pressure transducer, Armstrong Canyon.

To monitor [riparian systems](#), the NCPN collects data on vegetation, hydrology, and geomorphology in wadeable streams. Monitoring of Armstrong Canyon began in 2010. To date, four integrated monitoring reaches have been sampled for vegetation, and cross-sections of the channel and the location of the thalweg (deepest part of the channel) have been surveyed at three reaches. In 2014,

a pressure transducer was installed at one of the reaches to monitor flood frequency and magnitude in the canyon. In addition, two reaches were resurveyed and vegetation was sampled after the region experienced some large flash floods in late summer 2013. In 2015, hydrologic monitoring continued but no additional monitoring occurred, due to budget cuts.

Archiving Project



The Western Archeological and Conservation Center.

In fiscal year 2014, the NCPN obtained funding for professional archiving services through an existing agreement between the NPS Intermountain Region Museum Services Program and the University of Arizona School of Information Resources and Library Science. The archiving services include preparation of records for archiving, cataloging of all materials, the creation of finding aids, and physical storage of all records at the Western Archeological and Conservation Center (WACC)

in Tucson, Arizona. The WACC facility provides temperature and humidity-controlled storage conditions and a professional archives staff. As a result of this effort, all final products for the Natural Bridges National Monument vegetation mapping project have been archived. This will help ensure the long-term preservation of these important records, as well as compliance with NPS rules, regulations, and policies related to archiving and records management.

Land Surface Phenology



NASA

MODIS image of Earth, with an opening in cloud cover over the Colorado Plateau.

The NCPN is working with cooperators at Pennsylvania State University and Northern Arizona University to develop software that automates processing of MODIS (moderate resolution imaging spectrometer) satellite imagery. The greenness of Earth's surface, as measured by the MODIS satellite, provides a way to [track soil moisture and](#)

[vegetation condition](#) across large spatial scales in remote areas at 16-day intervals. These satellite data are being used to interpret climate effects on vegetation in NCPN parks. The data are being analyzed in conjunction with data from NCPN uplands monitoring to determine if observations from space match what we see on the ground.

Additional Efforts

In addition to the projects described in this brief, the NCPN also monitors [air quality](#) and [landscape](#)

[dynamics](#) at Natural Bridges National Monument.

For more information

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