



Natural Resource Monitoring at Bryce Canyon National Park



National Park Service

Colorful hoodoos below Bryce Point.

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 Bryce Canyon National Park.

Nutrient Enrichment



NPS/D. Thomas

Sheep Creek in winter.

Nutrient impairment by nitrogen (TN) and phosphorus (TP) deposition is a primary cause of water-quality degradation nationwide. In response to recent state efforts to develop numeric nutrient water-quality criteria, the U.S. Geological Survey and NCPN published a report on nutrient concentrations in streams and rivers near and in NCPN parks during 1972–2007. Most sites showed either no trends or downward trends in TN or TP concentrations, which may

be linked to improved management of water resources. Although negative changes may indicate cause for concern, some cases of elevated nutrient concentrations were likely the result of natural processes, such as geologic weathering. At Bryce Canyon NP, none of the study sites (which were all outside the park) persistently exceeded TN or TP criteria. Data were insufficient for trend assessments. The full report is available at <http://pubs.usgs.gov/sir/2012/5043/>.

Uplands



NPS

Uplands monitoring plot.

NCPN uplands monitoring is intended to strike a balance between increasing fundamental understanding of upland systems and providing managers with early warning of undesirable change. This protocol measures plant community characteristics, including vegetation and surface cover, density of woody species, canopy closure, and fuels. Through discussions with park staff, pinyon-juniper woodlands and mixed conifer forests were selected for integrated uplands monitoring at Bryce Canyon NP.

The NCPN implemented monitoring in 2010, and network staff returned for a fourth season of monitoring in 2013. In February 2013, data from the 2011 field season were published in a [summary report](#). This is the last summary report the NCPN will produce for uplands monitoring at Bryce Canyon NP, as the focus of our reporting will now shift to more detailed trends analysis. A status and trends report for Bryce Canyon NP will be produced after at least five years of data collection are complete.

Landbirds



Canyon wren.

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The NCPN is partnering with the Rocky Mountain Bird Observatory to assess breeding bird species trends in three habitats: lower riparian, pinyon-juniper (PJ), and sage shrubland. In 2012, the eighth year of monitoring was completed, including one PJ and two sage shrubland transects at Bryce Canyon NP. The third year of trend analyses was completed this year, with significant trends detected for 10 species. Seven species exhibited declines in population density, one species showed an

increase, and two species showed a quadratic trend (e.g., increased in population density in early years, then decreased in later years). Canyon wren declined in two different habitats. Only gray vireo, in pinyon-juniper habitat, showed a steady increase. 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.

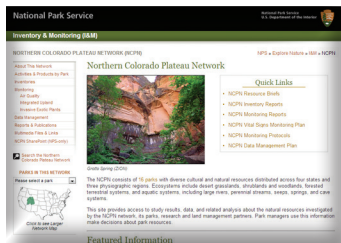
NCPN on Facebook



Since its inception in July 2012, the [NCPN Facebook page](#) has quickly become the most popular I&M page on the site. What started out as an effort to keep park staff better informed about our activities has turned into an opportunity to talk to several hundred people each day about science in the national parks and our contribution to it. Photos and posts from the field (our most popular content) help people to know who we are and what we do, and put

a human face on our program. As of October 2013, the NCPN page had 975 followers. Most lived in the Colorado Plateau area, but 16% hailed from 44 foreign countries. We usually reach about 1,000–1,500 people each week, but that number has risen into the several thousands on occasion. The goals of the page, and the barometers by which we gauge success, are evolving, but to this point we feel that the rewards have been worth the effort.

Website Re-design



It's now easier to find everything you need from us at the [NCPN website](#). The network staff has completed the website re-design process planned for all 32 I&M networks. The result is a streamlined site that is easier to navigate. Each network park also has its own page where users can go to find out what the network is doing

at that park and access all NCPN products and publications relative to that park. The site continues to offer interactive features, such as the ability to retrieve a current park species list, and is more tightly integrated with the IRMA Data Store, which allows new publications to be posted to the site more quickly.

Budget Sequester Impacts



U.S. Capitol.

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The federal budget sequestration begun in March 2013 forced the suspension of some NCPN monitoring activities this year. Decisions about which vital signs would not be monitored were made in discussions between network staff and staff at each NCPN park. At smaller parks, such as Bryce Canyon NP, fewer vital signs are monitored and the network did not need to cut any field monitoring activities.

However, if the sequestration budget cuts are continued into Fiscal Year 2014, then network staff, park staff, the Technical Committee, and Board of Directors will have to have a detailed discussion that re-examines all vital signs and develops a strategic, longer-term approach to monitoring activities under the reduced funding levels.

Additional Efforts

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

climate, and water quality at Bryce Canyon National Park.

For more information

Northern Colorado Plateau Inventory & Monitoring Program
National Park Service
P.O. Box 848
Moab, UT 84532
435-719-2346
<http://science.nature.nps.gov/im/units/ncpn>

