

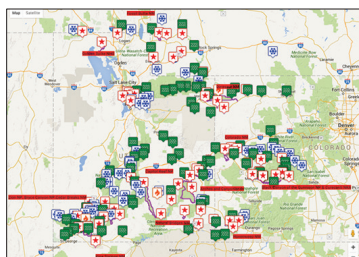


Natural Resource Monitoring at Curecanti National Recreation Area

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 [Curecanti National Recreation Area](#).

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. A dashboard for Black Canyon of the Gunnison NP and Curecanti NRA is currently under development. The page will continue to be refined as we receive feedback from users. More information can be found in our [2015 climate monitoring brief](#).

Invasive Exotic Plants



Canada thistle.

In 2014, observers detected 23 priority [invasive exotic plant](#) (IEP) species on monitoring routes and 10 priority IEP species in transects along 164.5 kilometers (102.2 miles) at Curecanti NRA. Canada thistle (*Breca arvensis*), woolly mullein (*Verbascum thapsus*), Russian thistle (*Salsola* spp.), and reed canarygrass (*Phalaroides arundinacea*) were the most widespread species. The routes with the highest densities of invasive plant patches were along the Gunnison River in the Cooper/Neversink area, the Elk Creek area, and the Blue Mesa routes 1, 3, 5, and 7. Percent cover of reed

canarygrass (16.3%) and Canada thistle (2.0%) in the Cooper/Neversink area was the highest of any invasive plant on any route. Twelve invasive species were recorded in transects around Blue Mesa, but the percent cover of all IEPs combined was less than 1%. In 2016, we will complete a detailed report comparing IEP patches found in 2014 and 2015 to those found during previous rotations (2010–2012 and 2003–2004) for all of Curecanti NRA and Black Canyon of the Gunnison National Park. Reports for all years are available at <http://go.nps.gov/ncpnIEPreports>.

Big Rivers



Neversink area.

The NCPN surveys geomorphology, monitors vegetation, and analyzes remote-sensing imagery on the network's [big rivers](#). This monitoring tracks the potential for channel simplification—a process that may result from increasing demands for water (and reduced flows) in the Colorado River watershed. Channel simplification may narrow the river channel, reduce the variety of geomorphic surfaces and habitats, disconnect the river from its

floodplain, and alter riparian vegetation and biodiversity, placing both ecological and recreational resources at risk. In 2014, NCPN modified sampling methods and completed monitoring in the Cooper/Neversink area. The revised methods focus on the cottonwood forest and river channels, and do not require sampling every year. Network staff are analyzing these data to ensure the methods reach the goals of the monitoring objectives.

Uplands



Aspen stand.

At Curecanti NRA, the NCPN monitors aspen forests and sagebrush shrublands. This protocol measures soil stability, hydrologic function, and plant community characteristics, including vegetation and surface cover, density of woody species, canopy closure, and fuels. Its goal is to increase understanding of upland systems and provide park managers with early warning of undesirable change. Monitoring at Curecanti NRA began with

a pilot study in 2008, followed by full implementation of the sampling design in 2011. In 2015, we completed the eighth year of monitoring at the park. Network staff are currently working on long-term trend reports for [uplands](#) at Canyonlands and Capitol Reef national parks. After those documents are complete, we will begin reporting for additional parks.

Water Quality



Morrow Point Reservoir.

In 2014, the NCPN published its third [water quality report](#), focusing on water years 2010–2012. These reports compare the data collected to state [water quality](#) standards. At Curecanti NRA, over 98% of evaluations at 20 sites met state water quality standards. The most common problem was high summer water temperatures, which occurred

at 10 of the sites. Water temperatures are expected to increase as air temperatures increase in the future. In 2015, we made 14 years of water-quality data available to the public through the U.S. Environmental Protection Agency's online STORET database.

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](#), [landbirds](#),

and [landscape dynamics](#) at Curecanti National Recreation Area.

For more information

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