

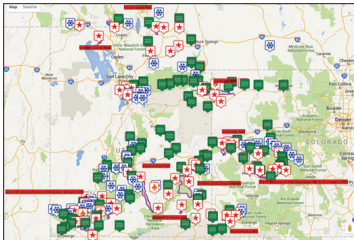


Natural Resource Monitoring at Dinosaur National Monument

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 [Dinosaur 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](#).

Invasive Exotic Plants



Russian knapweed.

In 2014, NCPN staff detected 14 priority [invasive exotic plant](#) (IEP) species and two additional IEP species in a 132-hectare (326-acre) area in the Cub Creek vicinity. Russian knapweed (*Centaurea repens*), tamarisk (*Tamarix* sp.), perennial sowthistle (*Sonchus arvensis*), Canada thistle (*Cirsium arvense*), and yellow sweetclover (*Melilotus officinalis*) were widespread in Cub Creek. The number of hectares of invasive plants in 2014 (14.0 ha) was similar to that in 2010 (14.5 ha), but substantially less than in 2002–2003 (46.8 ha). Russian knapweed, yellow sweetclover, Russian olive (*Eleaegnus angustifolia*), and tamarisk all declined from 2010 to 2014, while Canada thistle, bull thistle (*Cirsium vulgare*), common houndstongue (*Cynoglossum officinale*), and perennial sowthistle all increased. A

brief survey was also conducted along the northern portion of the Green River monitoring route. Thirty-six invasions of five species were detected along 856 m of river. Reports for all years are available at <http://go.nps.gov/ncpnIEPreports>. In addition, network and park staff used NCPN data collected along the Yampa River and Green River (above and below its confluence with the Yampa) to publish a paper exploring the question of whether damming a river increases the likelihood that exotic plants will invade its banks. Invasive plant species, including tamarisk (*Tamarix* spp.), were found to be 2–3 times more prevalent on the regulated Green River than on the wild Yampa River. The results are summarized in a brief at <http://go.nps.gov/NCPNIEPRR>.

Big Rivers



Yampa River at Deerlodge Park.

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 bio-

diversity, placing both ecological and recreational resources at risk. In 2015, NCPN completed monitoring along the Green and Yampa rivers at the Browns Park, Echo Park, Deerlodge, Harding Hole, Island Park, Laddie Park, and Seacliff sites. Network and park staff also published a paper showing that river regulation likely has an increased effect on the timing and extent of invasive plant species (see [Invasive Exotic Plants](#), previous page).

Water Quality



Confluence of the Green and Yampa rivers.

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 Dinosaur NM, over 98% of evaluations met state water quality standards. High concentrations of iron have been previously noted in the Yampa River and continue to be detected. High summer water temperatures were also recorded on the Green River at Gates of Lodore. Water temperatures are expected to increase as air temperatures increase in the fu-

ture. We also continued our ongoing screening for contaminants of emerging concern (CECs) in conjunction with the Environmental Protection Agency (EPA) Region 8. Surface waters at 16 locations in and near seven network parks (including Dinosaur) were sampled two times in 2014. Overall, detection frequencies and concentrations were low across the seven parks. Detections were more frequent in samples taken during spring (April and May) than in the fall (September and October; [read the CEC report or brief](#)).

Land Surface Phenology



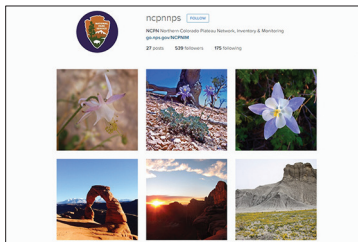
NASA

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.

Social Media



The NCPN is using Instagram to reach a younger demographic.

The NCPN uses social media to reach broader audiences than are available to us via our NPS website. In 2015, posts on the network's [Facebook page](#) had more than 200,000 views. We use Facebook to promote network activities, publications, and parks; participate in agency-level social media efforts; and share links to stories about science in the national parks. The page has more than 2,500

followers, and an average reach of about 1,800 each week. In November 2015, we expanded our social media presence to Instagram (@ncpnps) and quickly became the most-followed Inventory & Monitoring network on that platform. Using [Instagram](#) allows us to reach a younger audience than Facebook, where less than 7% of our audience falls into the 13–24 age demographic.

Additional Efforts

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

[landscape dynamics](#), and [uplands](#) at Dinosaur National Monument.

For more information

Northern Colorado Plateau Network
National Park Service
P.O. Box 848
Moab, UT 84532
435-719-2346

<http://science.nature.nps.gov/im/units/ncpn>

