



Natural Resource Monitoring at Colorado National Monument



Colorado National Monument.

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 plants, 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 Colorado National Monument.

Landbirds



Bewick's wren.

The NCPN is partnering with the Rocky Mountain Bird Observatory to assess breeding bird species trends in three habitats: riparian, pinyon-juniper, and sagebrush-shrubland. In 2011, the seventh year of monitoring was completed, including two transects in pinyon-juniper habitat at Colorado NM. The second year of trend analyses was completed. Although populations for most species of conservation concern within the NCPN appeared to be sta-

ble, investigation of Bewick's wren populations in pinyon-juniper habitat is recommended, as RMBO has documented a decline of more than 50% in the last seven years for this bird. Potential explanations of Bewick's wren decline include loss of suitable nesting habitat and competition with other cavity nesters. Long-term monitoring will continue to be necessary for interpreting population status and trends for avian species of the NCPN.

Flora Update



White poplar.

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. Colorado NM has seen an increase of two new plant taxa, bringing the known and reported park flora to 468 taxa. The two new species are compressed rush (*Juncus compressus*), previously on the potential list, and white poplar (*Populus alba*).

Invasive Exotic Plants



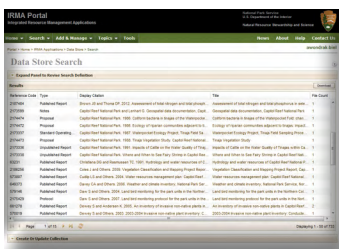
Russian olive.

Patrick Breen, OSU, Bugwood.org

Invasive exotic plants (IEPs) represent one of the most significant threats to natural resources in national parks. Exotic plants are able to reproduce prolifically, rapidly colonize new areas, displace native species, and alter ecosystem processes across multiple scales. However, if these invaders are discovered in their early stages, control efforts are likely to cost less and achieve higher success rates than after a species has become more widespread. In 2011, twenty-four IEP species were detected, 11 of which were priority species that accounted for 696 separate infestations. IEPs were most prevalent along riparian areas and roads. Yellow sweetclover (*Melilotus officinale*), field bindweed (*Convol-*

vulus arvensis), Russian olive (*Elaeagnus angustifolia*), and tamarisk (*Tamarix* spp.) were the most widespread species found along monitoring routes. Cheatgrass (*Anisantha tectorum*) and yellow sweetclover had the highest percent cover and highest frequency of all transects, respectively. Russian olive has generally increased, while tamarisk has decreased since surveys were conducted in 2003 and 2009. Many IEPs were present in small, localized invasions that have a promising chance of successful control and eradication. A [full report](#) is available at the NCPN web site. Network staff will return to resample all monitoring routes in 2013.

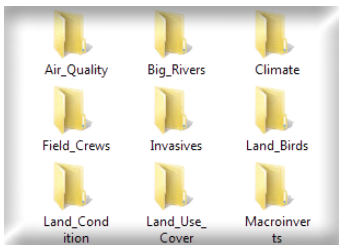
IRMA Data Store



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, [44 were linked to Colorado NM](#). These documents covered topics including water quality, birds, and mammals.

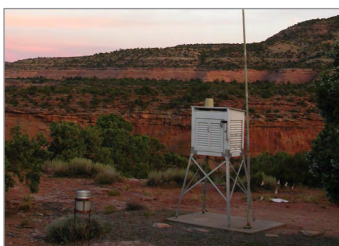
Data Management Review



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.

Climate



Monitoring station.

The overarching goal of NCPN climate monitoring is to compile and present climate data in a form that helps explain the trends seen in other network vital signs. The NCPN compiles and analyzes climate data from one weather station in Colorado NM. In 2011, mean annual maximum temperatures were slightly below average, while mean annual minimum temperatures were slightly above average at Colorado NM. Although total precipitation was just above the long-term mean, snowfall was approximately

20 inches lower than the historical average. Most NCPN stations with long observation periods show a general increase in average annual minimum temperature over the past 30–50 years. There is evidence for a declining trend in snowfall from the 1980s to the mid-2000s; however, snowfall during many of the last few years was higher than the long-term average. A climate report will be produced by the NCPN and posted on the network’s web site in 2012.

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>

