



SCPN News

The newsletter of the Southern Colorado Plateau Network ❖ Summer 2011

Inventory and monitoring in the parks

In collaboration with NAU, inventory and monitoring of natural resources in the Southern Colorado Plateau Network (SCPN) continues, with I&M crews collecting bird community, upland vegetation and soils, and water resources data.

Bird community monitoring

Bird-community monitoring consists of breeding-season bird counts and habitat sampling, and focuses on several habitats where integrated upland or riparian monitoring is also occurring. In this way, information on the status and trends of bird communities contributes to our overall understanding of ecosystem condition. Bird-community monitoring will occur at the following parks in 2011:

- Grand Canyon NP
- Wupatki NM

Integrated upland monitoring

In the semi-arid uplands of the Colorado Plateau, it is necessary to monitor soil stability as well as vegetation composition and structure to track changes in ecosystem condition. We monitor vegetation and soils in twelve national parks, focusing on the predominant ecosystems of greatest concern to park managers. Monitoring (or related activities) will occur at the following parks in 2011:

- Grand Canyon NP
- Bandelier NM
- Mesa Verde NP
- Chaco Culture NHP
- Glen Canyon NRA
- Petrified Forest NP



Upland vegetation monitoring in mixed-conifer forest, Grand Canyon NP

Water resources monitoring

Water resources monitoring at SCPN incorporates several different components, each contributing valuable information about the overall health of water resources in the parks. *Aquatic macro-invertebrate* monitoring looks at species assemblages and physical stream habitat characteristics. *Riparian* area monitoring looks at vegetation, surface and groundwater dynamics, and stream channel morphology. *Water quality* monitoring focuses on water chemistry. Data collection for the final component, *spring ecosystem* vital signs, is still in the inventory and protocol development phase—likely including spring flow, total habitat area, and wetland/riparian vegetation.

Parks on the agenda for water resources

data collection this year are:

- Bandelier NM
- Canyon de Chelly NM
- Chaco Culture NHP
- Glen Canyon NRA
- Grand Canyon NP
- Hubbell Trading Post NHS
- Mesa Verde NP
- Navajo NM
- Salinas Pueblo Missions NM
- Walnut Canyon NM

In this issue

- I&M work in the parks
- Staff transitions
- Projects
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Sonya Daw, editor

Staff transitions

We'll be seeing some new faces on our water resources and integrated upland crews this year. Highlighted below are new part-time NAU support staff.

A warm welcome to...

Barbara Clark has been working with SCPN since last fall as a data management assistant. She is primarily focused on IT tasks in this position, having recently retired from a 20 year career at NAU as a systems programmer and database administrator. She has B.S. degrees in Biology and Chemistry from Auburn University, Alabama, and a B.E. in Computer Science from the University of South Florida. She brings a love for the Colorado Plateau to her new position.

Sonya Daw came on board this spring to work as a writer/editor for the network. With a B.A. in both Biology and Environmental Studies from the University of California at Santa Cruz in 1989, and a M.S. in Wildlife Biology from Oregon State University in 1996, she brings a background in science and science writing to the task of writing and editing for SCPN. Having worked with the Northern Colorado Plateau Network during its startup years, she is excited to be involved with I&M again.

Monica Swihart is working with Jodi Norris this summer as a GIS analyst. She's focused on reporting results of the Escalante River LiDAR project. She earned a B.A. in both Biology and Environmental Studies in 1981 from Oberlin College, Ohio, a M.L.A. (Masters in Landscape Architecture) from the University of Michigan, Ann Arbor, Michigan, in 1985, and recently completed a post-bacc certificate in Geographic Information Systems from Pennsylvania State University. While most of her professional experience has focused on water resource management and planning, she is excited to be working with NPS in a more conservation-focused capacity.

Best of luck to...

Clayton Bliss, who has spent the past 2 years as a field technician with SCPN, focusing on water quality and helping to develop the water quality database and protocol. He is headed to graduate school to pursue his interest in the area of hydrology or contaminant microbiology.

Kelly Lawrence, who has immersed herself in all components of the water resources program over the past 2 years as a field technician with SCPN, working with the photo and springs databases as well. She is headed to graduate school in Oregon to study oceanography.

Examining riparian ecosystems using LiDAR and color infrared imagery

Southwest riparian ecosystems experience dramatic changes when flash floods occur, but they are also subjected to many other stressors: alteration of flow regimes from dams and diversions, invasions of exotic species and altered hydrologic cycles caused by a changing climate. The remoteness and extent of riparian systems make them difficult to monitor. The SCPN is partnering with the Remote Sensing Services Laboratory at Utah State University to create a high resolution characterization of the geomorphology and vegetation of a 70 km segment of the Escalante River in Glen Canyon NRA. The data collection flight took place in May, 2010. This work will provide park managers with detailed topographic and vegetation information that will help to answer questions relating to the distribution of native and invasive riparian plant communities and the effects of exotic control efforts. A similar effort is planned for the riparian corridors of Canyon de Chelly NM, with a flight planned for July, 2011. For more information, contact Jodi Norris (Jodi_Norris@nps.gov; 928-523-1942).



Riparian vegetation in an Escalante River tributary

NAU students documenting parks

In the spring of 2011, SCPN teamed up with Professors Peter Friederici and Laura Camden of the NAU School of Communications to offer a journalism capstone project: Documenting Southwestern Parks. The purpose of this first-time project was to engage NAU students in crafting stories about the national parks that would reflect their unique perspectives. Small teams of students researched topics related to national park units, with a focus in photojournalism, audio-video documentary, and/or print journalism. They traveled to those parks to record in multimedia formats, and then crafted those raw materials into final products. Jean Palumbo is currently working with park staff and one of those students, Ryan Gahris, to edit and finalize those projects so that they will be suitable for use on the Learning Center of the American Southwest (LCAS) website (www.southwestlearning.org) and for use in park visitor centers and websites. Thanks to all the park staff who submitted ideas for the project and to those who worked with the students this spring. Look for the final products on the LCAS website this fall.

Natural Resource Condition Assessment update

I recently sat down with Cathy Schwemm, Natural Resource Condition Assessment (NRCA) ecologist for the Northern and Southern Colorado Plateau Networks, for a progress update. The NRCA program provides parks with current information on the condition of high priority natural resources and ecological processes by comparing current conditions against desired, or reference conditions.

The program will

- provide a comprehensive, scientifically credible synthesis of park natural resource conditions in 2-3 years
- provide information to support ongoing and future planning efforts for parks
- identify critical data gaps that should be addressed

NRCA work began for parks in the Northern and Southern Colorado Plateau Networks in 2010. Over the past year, high priority issues have been identified at several parks, and cooperative or

interagency agreements have been developed to address them.

At *Bandelier NM*, vegetation condition will be addressed through an interagency agreement with the USGS.

At *Petroglyph NM*, the potential impact of adjacent development on soil erosion and petroglyph-bearing rock formations is a high priority, and will be addressed through a cooperative agreement with the Museum of Northern Arizona.

Other parks already involved in NRCAs this year are *Zion NP*, *Curecanti NRA*, *Black Canyon of the Gunnison NP*, and *Timpanogos Cave NM*. Next year, Cathy hopes to begin the NRCA process for several more parks, beginning with *Glen Canyon NRA*.

For more information, visit the website at <http://science.nature.nps.gov/im/units/scpn/nrca/index.cfm>, or contact Cathy Schwemm, NCPN/SCPN NRCA Ecologist (cathy_schwemm@nps.gov; 928-523-8619).



Upper Frijoles Falls, Bandelier NM

Inventory of Grand Canyon NP bryophytes complete



Mosses and lichens along the Widforss Trail, Grand Canyon NP

Theresa Clark, a Master's student in the NAU Biology Department, recently completed a three year inventory of the mosses and liverworts of Grand Canyon NP.

She reports 157 bryophyte taxa for the park, of which 114 are new records for the park and 28 are new records for Arizona. Three taxa are new to science and will be described in future publications.

Prior to her study, the only other relatively comprehensive investigation of bryophytes in Grand Canyon NP was completed by Inez Haring, who collected in the canyon during the fall of 1941 and 1946. Ms. Haring documented 64 species, primarily found along North and South Rim trails and at selected springs.

Theresa's thesis is currently available through the NAU library. She is working with SCPN staff to publish a final report in the NPS Natural Resources Technical Series this fall. Her resulting bryophyte collection will be housed at the NAU Deaver Herbarium. Funding for the project was provided by the NPS I&M Program.



New publications

SCPN has published the following reports, which can be found on the Natural Resource Information Portal, <https://nrinfo.nps.gov/Home.mvc/showWelcomePage>, the SCPN website, <http://science.nature.nps.gov/im/units/scpn/products.cfm>, or on the Learning Center of the American Southwest website, www.southwestlearning.org.

Vegetation Mapping Reports—recently published:

Vegetation classification and map: Bandelier NM
Vegetation classification and mapping project report: Chaco Culture NHP

Inventory Reports—recently published:

Herbarium Reviews for Four Parks in the Southern Colorado Plateau Network
Inventory of Exotic Plant Species Occurring in Salinas Pueblo Missions NM
Mammal inventory for Hubbell Trading Post NM
Mammal inventory for Navajo NM

Protocols—coming in 2011:

Integrated Upland Monitoring Protocol for the Southern Colorado Plateau Network
Aquatic Macroinvertebrate Monitoring Protocol for the Southern Colorado Plateau Network

Monitoring Reports—just published:

Integrated upland vegetation and soils monitoring for
Aztec Ruins NM—2009
Chaco Culture NHP—2009
Grand Canyon NP—2009
Petrified Forest NP—2009
Wupatki NM—2009
Bandelier NM—2009
Glen Canyon NRA—2009
Mesa Verde NP—2009
Petroglyph NM—2009

Monitoring Reports—due out in Summer 2011:

Aquatic macroinvertebrate and physical habitat monitoring in
Capulin Creek and the Rito de los Frijoles in Bandelier NM—2009
Tsaille Creek in Canyon De Chelly NM—2009
Coyote Gulch in Glen Canyon NRA—2009
Hermit Creek in Grand Canyon NP—2009
Mancos River in Mesa Verde NP—2009



Orchid from a spring in Canyon de Chelly NM



National Park Service
U.S. Department of the Interior

Southern Colorado Plateau Network

Northern Arizona University
P.O. box 5765
Flagstaff, AZ 86011-5765

SCPN staff phone list

Jim DeCoster (Plant Ecologist)	928-523-7454
Melissa Dyer (Hydrologic Technician)	928-523-1930
Stephen Monroe (Hydrologist)	928-523-7458
Jodi Norris (Spatial Analyst)	928-523-1942
Jean Palumbo (Writer/Editor)	928-523-9505
Mary Anne Schrade (CPCESU/SCPN Prog. Asst.)	928-523-1908
Cathy Schwemm (NRCA Ecologist)	928-523-8619
Allison Snyder (Data Manager)	928-523-7426
Kristin Straka (Data Management Assistant)	928-523-7480
Stacy Stumpf (Water Resources Crew Leader)	928-523-0867
Megan Swan (Botanist)	928-523-7489
Lisa Thomas (Program Manager)	928-523-9280



Cultural and Natural Resource Management on the Colorado Plateau: Science and Management at the Landscape Scale

October 24-27, 2011

High Country Conference Center at Northern Arizona University
201 West Butler Ave., Flagstaff, Arizona

Early registration ends July 31st!

For information: <http://www.research.nau.edu/events/biennial-conference/>