Northern Great Plains Network
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

Great Plains Gazette

Newsletter of the Northern Great Plains Network

Volume 1 Issue 4 - Winter 2016

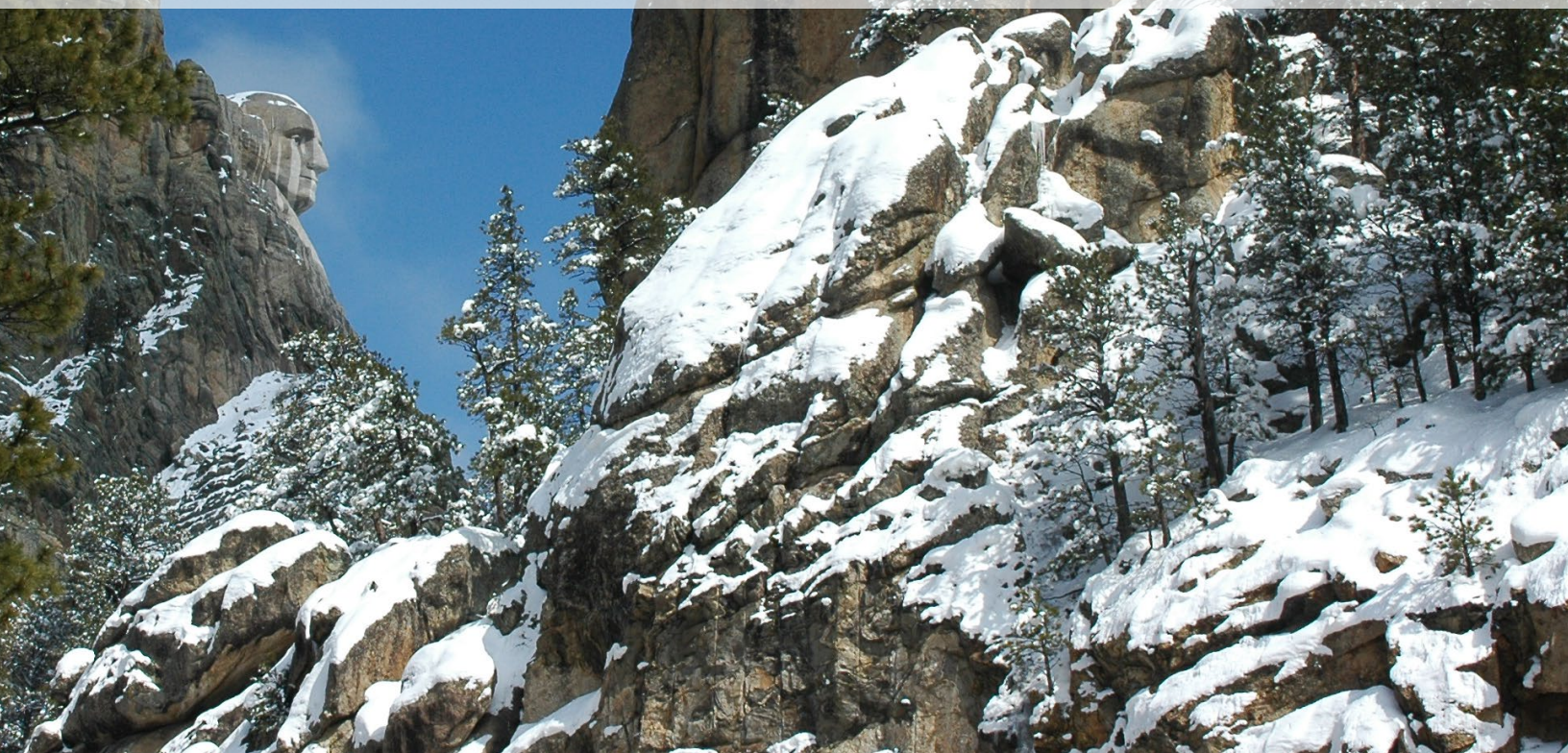
Coordinator's corner

Thank you again for working with us this past year. We appreciate you working with our crews to ensure everyone gets back at the end of the day.

Marcia Wilson and Stephen Wilson left the Network for greener pastures in August. We wish them both the best of luck and hope to have their positions filled this spring. Chris Davis started working for us in November, we're happy to have his help with the vegetation program. We had a great crew of seasonals this year, if you didn't get a chance to meet them all, check out page 7. It was great to work with Dan Licht and monitor bats for most parks this year. We were able to secure enough funding to continue some monitoring for the next five years.

This newsletter also features work done by the EPMT at MORU and FOUS. The Network office has a couple of new faces: Robert Reiss (MWR Civil Engineer) and Sharla Stevenson (Shared MWR/IMR Hydrologist). Stop by and see us when you are in Rapid City. We're looking forward to another year of monitoring with you in the parks!

Inside this issue



Bat Monitoring in Full Flight

National Program to Monitor Bats Established at NGPN parks

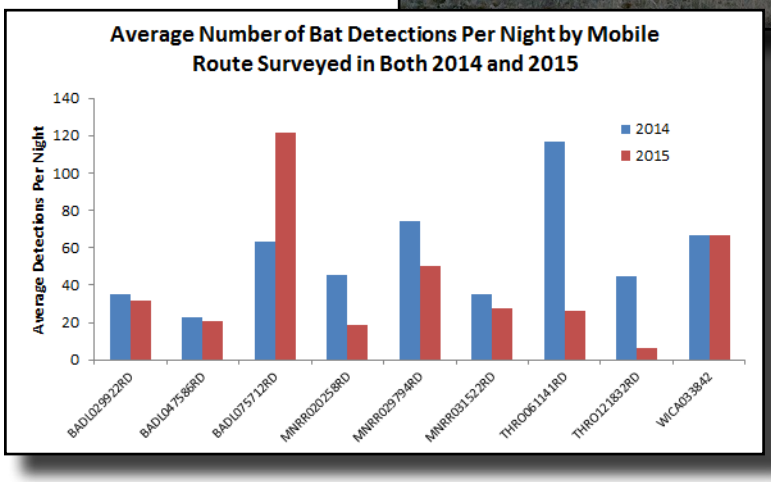
This summer marked the second year of bat monitoring by the Network. In 2015, the monitoring was expanded to include all Network parks with the exception of Devils Tower NM which has its own bat monitoring program. Badlands, Jewel Cave, Missouri, Niobrara, Theodore Roosevelt, and Wind Cave all met criteria for monitoring using the North American Bat Monitoring (NABat) sampling frame. The NABat protocol calls for placing 4 stationary monitors within a 10x10 km cell for a minimum of 4 nights. Road surveys were also conducted at those parks following the NABat protocol. Data from these surveys will feed directly into continent-wide monitoring of bat populations. The other parks in the Network were monitored using the same hardware; however, the deployment locations were not limited by the NABat framework.

Thomas Rains deploying a recorder at MORU

The Network has now established 55 NABat monitoring stations and 62 non-NABat stations. From 2014-15, 908 nights were monitored resulting in 451,107 bat recordings, or an average of 497 detections per night. The highest number of detections per night (3,771) occurred at the station next to the bat house at Fort Laramie (see center image). Stations next to surface water and trees also had high rates of detections. Stations in prairie away from water and trees typically had fewer detections.

Bat House at FOLA

Species identification is ongoing, but preliminary results suggest that the most common species in the Network are the big brown, silver-hair, and little brown bats. The Eastern red, hoary, Western small-footed myotis, and long-legged myotis were moderately common. Other species, including the threatened Northern long-eared bat, appear to be present in small numbers.



Mobile surveys are an effective way to track abundance as they are not susceptible to repeated flyovers by the same bat. Nine routes were surveyed in both 2014 and 2015. Seven routes had fewer bats detected in 2015 than in 2014 (see chart to left); however, the difference was not statistically significant. The increase in data collection in 2015 would not have been possible without Thomas Rains, a seasonal for NGPN. His night work and extensive travelling was appreciated.

In 2016, the monitoring at the NABat parks will be conducted by the University of Wyoming through an agreement with the Network. Monitoring at the non-NABat parks will be conducted by the MWRO Biologist.

Birds of a Feather, Monitor Together

All 13 Parks Monitored in 3rd Year of Program

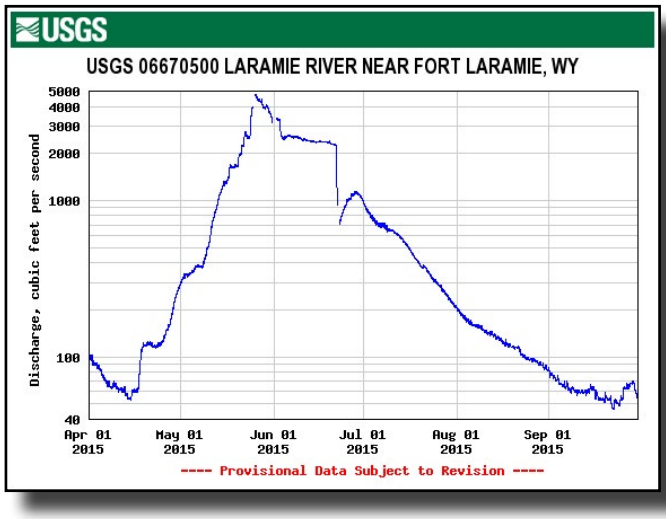
This summer the Network continued its cooperative agreements with the Bird Conservancy of the Rockies (formerly Rocky Mountain Bird Observatory) to conduct bird surveys. Landbird presence and abundance was sampled at all 13 parks in the Network from mid-May to late-July. Network ecologists and data managers worked with the Bird Conservancy to develop a sampling design for MNRR, and it was surveyed for the first time this summer following the new protocol. We are also working with Dr. Bob Gitzen, a university partner, to help us develop tools for the statistical analysis of bird counts. We look forward to using these tools to produce more reports for our parks in the future. Until then, Landbird Resource Briefs are written annually for each park.

Yellow-rumped warbler

All of the Network's bird data are located at the Avian Data Center. If you would like to look at 2013, 2014, or 2015 bird data for your park, please contact Angela Jarding and she can walk you through the steps.

Turning on the Waterworks

Sensors Deployed at FOLA and MNRR



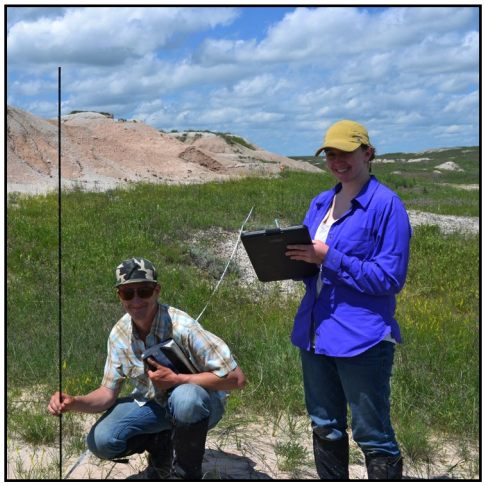
In 2015, the Network set up interagency agreements with United States Geological Survey (USGS) Water Science Centers in Wyoming-Montana and Nebraska to collect water quality data at two sites during the ice free season (early spring to late fall). One site was at the USGS Gaging Station 06670500 Laramie River near Fort Laramie, Wyoming. The other site was along Bow Creek in Nebraska and was selected by Missouri NRR staff. While the site at Fort Laramie has measured stream flow since 1915, the Bow Creek site was a new location for USGS.

Data are available in real-time from the USGS website and include measures of dissolved oxygen, pH, specific conductance, water temperature, and streamflow. The data collected this season clearly shows flooding on the Laramie River during May and June (graph to the left). We plan on hiring a new ecologist this winter that will help us with comparing the collected data with historic averages and state and federal water quality standards.

Continuous data from all water quality monitoring sites can be accessed from links on the Network's website.

Another Successful Season

5th Season of Vegetation Monitoring Complete

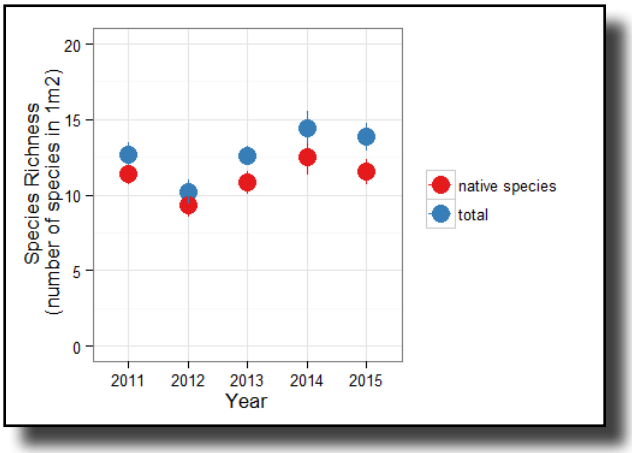


The NGPN vegetation monitoring crew has successfully completed its fifth season of Plant Community Monitoring! During the months of May through September the crew visited a total of 108 long-term monitoring plots in eleven parks across four states.

We are once again happy to report an injury-free season. The crew managed to avoid potential injury from hazards such as hidden prairie dog holes, chilly river crossings, and surprise bison encounters. Thanks to the resourcefulness and cunning observation skills of the crew, everyone made it through the summer safe and sound.

As with previous seasons, we again welcomed field assistance from varying organizations and parks. We were fortunate enough to receive assistance from the Natural Resources staff at DETO, volunteers from JECA and MORU, and an entire botany class from Dickinson State University. It was a pleasure for us to teach others about our line of work and learn about areas outside of vegetation management.

Though data analysis from this season is still preliminary, some interesting trends can be seen. Primarily, seasonal precipitation seems to directly influence species diversity across all parks. The drought year of 2012 shows the lowest diversity in the five years of data collection, while the particularly rainy summers of 2014 and 2015 have the highest. The graph represents plant species richness from WICA (pictured at right), but similar trends are seen across all of our parks. This winter, we plan on writing lots of reports summarizing the first five years of vegetation monitoring at each park.



Vegetation Crew monitoring with DETO staff

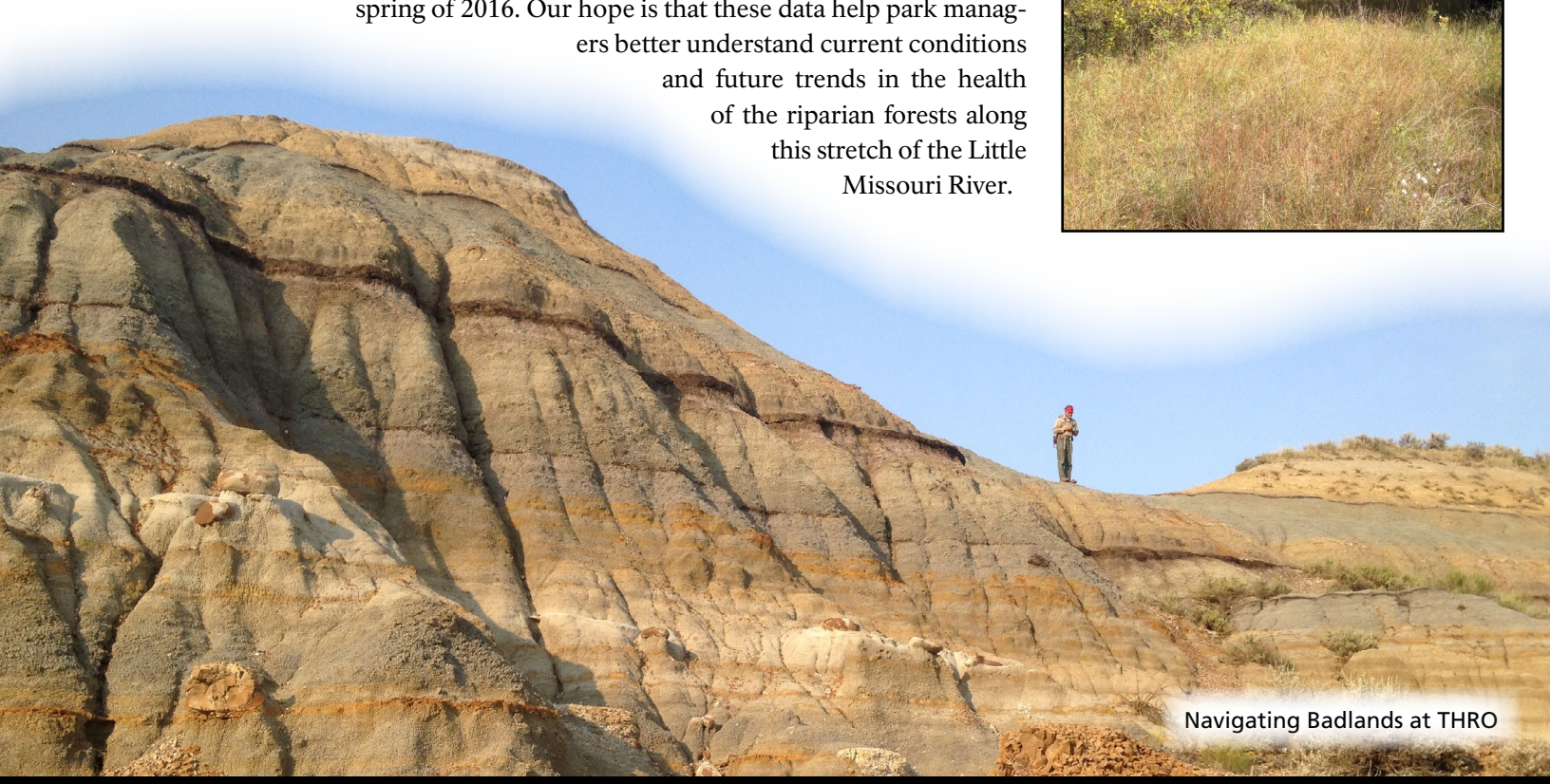
Theodore Roosevelt Forest Monitoring

Investigating Riparian Forests Along the Little Missouri

The vegetation program monitors forest structure and health on a five year cycle. In 2015, THRO was the final park to be visited. Our focus was on the riparian woodlands adjacent to the Little Missouri River. Over multiple visits this fall, 100 plots were installed and read across the North and South Units of the park. We counted the number of seedlings, measured the size of trees, looked for exotic species of concern, and surveyed tree vigor at each site.

The crew encountered many obstacles over the course of their four weeks of work at the park. The nature of the terrain and hydrology resulted in numerous river crossings requiring navigational mastery. Overall, the crew covered 30 miles in the South Unit and 60 miles in the North Unit on foot. With 50 plots in each unit spread across all reaches of the river corridor, the crew travelled to areas of the park rarely visited. This allowed for discovery of majestic mature cottonwood trees, frequent friendly bison encounters, and even the rare opportunity to observe a large moose traversing the badland landscape.

The data collected this fall will provide a baseline for continued monitoring of THRO's riparian forests. We plan on producing a report to share with the park and public in the spring of 2016. Our hope is that these data help park managers better understand current conditions and future trends in the health of the riparian forests along this stretch of the Little Missouri River.



Navigating Badlands at THRO

Battling Invasive Species

NPS Academy Intern at MORU

Collaboration between the Northern Great Plains Exotic Plant Management Team (NGP EPMT) and Mount Rushmore NMEM resulted in a NPS Academy Student Conservation Association intern funded by the NPS Academy program to be stationed at Mt. Rushmore for the 12 week program. Our intern, Amie Schiller, was able to complete several projects during her time at the park. Projects included exotic invasive species inventory and treatment, hazard tree inventory, and planting a pollinator garden in the developed area of Mt. Rushmore. Amie was also able to assist the NGP EPMT crews at Jewel Cave and Wind Cave National Park as well as helping the Northern Great Plains Inventory and Monitoring Program read vegetation plots at Wind Cave.

Amie Schiller planting pollinator garden at MORU

Engaging youth in protecting our natural resources was a priority this year and this project demonstrates the benefits of employing youth to work in our parks. They gained an understanding of the complexities in managing natural resources and the unique challenges of conducting active management of resources. We will continue our partnerships with youth organizations in the future and hope to expand their opportunities to include other natural resource disciplines in the parks that we serve.

Treating the Bodmer Unit at FOUS

The NGP EPMT and Ft. Union Trading Post staff has worked since 2002 to control invasive species such as leafy spurge, Canada thistle and musk thistle in the Bodmer Unit of the park. Although treatments did not occur every year, crews have been diligent in treating high priority areas. New herbicides such as Perspective have reduced the number and amount of herbicides used in the park as well as increasing efficacy of the current treatments. Field crews can now use one herbicide in one treatment instead of two or three herbicides spread over several treatments as in the past.

The Bodmer Unit is a unique cultural landscape in that it was the site of Karl Bodmer's paintings of Ft. Union and Native Americans when he accompanied Prince Maximilian on his expedition to the American West in the summer of 1833. Although the landscape has changed since the 1830's, we still hope visitors can experience the site similar to what Karl Bodmer captured in his famous watercolor paintings. Now that the site is in a controlled state for invasive species, it will allow NGP EPMT and park staff to focus on other high priorities areas within the park and continue to improve the ecological condition of this important cultural landscape.

NGP EPMT and Montana Conservation Corps crews treating the Bodmer Unit of FOLA

Staff Updates

So Long Seasonal Staff

We would like to give one final thank you to our seasonal biological technicians whose tireless efforts provided the network with another year's worth of valuable data!


Daina Jackson

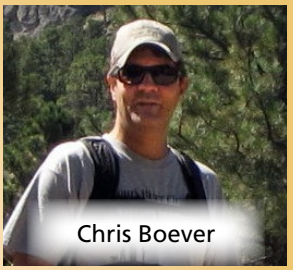
This summer was Daina's third season with NGPN. Her favorite part of the job was discovering new remote parts of each park. She plans on spending her winter in Custer, SD relaxing and if the weather is nice riding her motorcycle.


Joseph Ladd

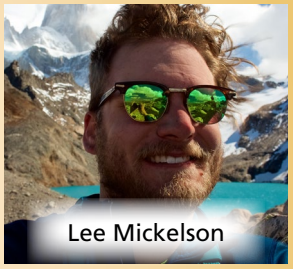
This summer was Joseph's second season with NGPN. He loved the constant challenge the job provided him with and the chance to visit beautiful remote areas of the parks. This winter Joseph plans on relaxing in Western WA with friends and family.


Logan LaFleur

This summer was Logan's first with the NGPN. Having grown up locally, she was familiar with many of the parks, but several she visited for the first time. This winter she'll be participating in National Novel Writing Month and spending time with family.


Chris Boever

During his first season with NGPN, Chris enjoyed working in areas of the National Parks that are off the beaten path. He is looking forward to starting a new job as a student contractor fisheries technician with the USGS in Yankton, SD this winter.


Lee Mickelson

Lee hails from Northwest Montana, and he loves that people are willing to pay him to hike around and look at the cool things that grow in the dirt. This winter he hopes to either travel to faraway lands or hole up and eat lots of soup.


Stephanie Rockwood

This was Stephanie's third season with NGPN. Her favorite part of this season was seeing all the fall color changes at THRO. During her winter off, Stephanie hopes to visit family and friends, and maybe go on an adventure to somewhere new!


Will Vogel

Will had a fantastic time in his first season with the Network. He enjoyed the amazing opportunity to see all of the amazing parks up close and first hand. Will plans on staying in the area this winter and hopes to return to the Network next spring.


2015 Vegetation Crew enjoying SCBL

Farewells

Saying Goodbye to Staff Members

Marcia Wilson

Dr. Marcia Wilson became the new program manager for the Chihuahuan Desert I&M Network based in Las Cruces, New Mexico in August 2015. Marcia worked for the NGPN since 2003 as an Ecologist. She was involved in the selection process of the NGPN vital signs and was a co-author on the Network's Monitoring Plan. As the General Ecologist for NGPN, she was the lead on landbird, water quality, and macroinvertebrate vital signs. The NGPN land bird monitoring protocol was a joint effort with the Chihuahuan Desert, Southern Plains, and Sonoran Desert I&M Networks, as well as Rocky Mountain Bird Observatory (RMBO). For the water quality vital sign she developed the Water Quality Monitoring Protocol as a partnership with the United State Geological Survey. We miss Marcia, and look forward to opportunities to collaborate with her in her new position.

Stephen Wilson

In August of 2015, Stephen Wilson left NGPN to become a GIS Technician at the DOI Office of the Special Trustee for American Indians with the Office of Appraisal Services, Land Buy-Back Valuation Program. Stephen served as the Data Manager and Biologist for the NGPN since February 2010. He has been involved with natural resource inventories, as well as the development and implementation of all the Network's protocols including plant community, land bird, water quality, and prairie dog monitoring. Prior to working for NGPN, Stephen spent 10 years working as a Natural Resource Manager at the Missouri National Recreational River. We miss Stephen already, but lucky for us his new office is just a few blocks away and can still be reached when we need a little assistance!

New Faces

A warm welcome to our new staff

Sharla Stevenson

Sharla Stevenson started working for the National Park Service in 2009 at the Water Rights Branch in Fort Collins, Colorado. She moved to Rapid City, South Dakota in October to begin working as a regional hydrologist. Sharla is available to assist parks and networks in Midwest and Intermountain regions with hydrologic problems including Wild and Scenic River issues. She earned her undergraduate degree at Texas A&M University and her M.S. degree at Colorado State University. Her graduate focus was on data analytics and using stochastic modeling to forecast the effect of changes in climate on water supplies. Sharla can be reached at Sharla_Stevenson@nps.gov or via phone at 605-939-8058.

Adam Weaver

This is Adam's first year as an employee with the NPS working as a GIS and Data Management Technician. He is involved as a volunteer trip leader in both Wind and Jewel Caves, working on the mapping projects and the ongoing exploration of these systems. The NGPN has been a great place to learn more about the NPS and the parks in our area.

Chris Davis

Chris has previously worked at Rocky Mountain and Yosemite National Parks where he designed and implemented studies to evaluate revegetation and ecological restoration, exotic species management, and rare plant species distributions. Chris will be the vegetation field lead at NGPN. He has a BS in Life Sciences from Arizona State University and recently completed work on his MS in Ecology from Colorado State University, where he studied the effects of herbicide applications on plant communities in Rocky Mountain NP. He's looking forward to experiencing working in smaller park service units and exploring the Black Hills with his family.

Acronyms

AGFO	*Agate Fossil Beds National Monument*
BADL	*Badlands National Park*
DETO	*Devils Tower National Monument*
FOLA	*Fort Laramie National Historic Site*
FOUS	*Fort Union Trading Post National Historic Site*
JECA	*Jewel Cave National Monument*
KNRI	*Knife River Indian Villages National Historic Site*
MORU	*Mount Rushmore National Memorial*
MNRR	*Missouri National Recreational River*
NGP EPMT	*Northern Great Plains Exotic Plant Management Team*
NGPN	*Northern Great Plains Network*
NIOB	*Niobrara National Scenic River*
NABat	*North American Bat Monitoring Program*
RMBO	*Rocky Mountain Bird Observatory*
SCBL	*Scotts Bluff National Monument*
THRO	*Theodore Roosevelt National Park*
USGS	*U.S. Geological Survey*

Northern Great Plains Network
231 East St. Joseph Street
Rapid City, SD 57701
http://science.nature.nps.gov/im/units/ngpn/

The Great Plains Gazette is a publication of the Northern Great Plains Inventory & Monitoring Network. All photos in this document are courtesy of the National Park Service unless otherwise noted.

Network Coordinator
Kara Paintner-Green

Editing and Design
Joseph Ladd

Contributors
Kara Paintner-Green
Joseph Ladd
Angela Jarding
Dan Licht
Isabel Ashton
Brennan Hauk
Chris Davis
Sharla Stevenson
Adam Weaver

NGPN Documents

Available for download on our website!

Resource Briefs

Landbird Monitoring Results 2014
- Agate Fossil Beds NM
- Badlands NP
- Devils Tower NM
- Fort Laramie NHS
- Fort Union Trading Post NHS
- Jewel Cave NM
- Mount Rushmore NMEM
- Niobrara NSR
- Knife River Indian Villages NHS
- Scotts Bluff NM
- Theodore Roosevelt NP
- Wind Cave NP

Landbird Monitoring Results 2015
- Badlands NP
- Missouri NRR
- Niobrara NSR

Reports

Plant Community Monitoring Annual Reports 2014
- Agate Fossil Beds NM
- Badlands NP
- Devils Tower NM
- Fort Laramie NHS
- Fort Union Trading Post NHS
- Jewel Cave NM
- Mount Rushmore NMEM
- Knife River Indian Villages NHS
- Scotts Bluff NM
- Theodore Roosevelt NP
- Wind Cave NP

Water Quality Monitoring Protocol 2014