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

Issue 7 - Spring 2018

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 to the office safely at the end of the day.

Hard to believe it is April already and we are gearing up for the field season. We're happy to have Theresa Schaffner on board as on as a career seasonal biological technician. You'll get a chance to meet her this summer when she's out with the vegetation crew.

We continue to enjoy working with Dan Licht and the University of Wyoming to monitor bats for most parks this year. We've also been working with Amy Symstad (USGS), the EPMT, Fire Ecology, and seven parks on how to develop better adaptive management strategies for annual bromes.

Darren Thornbrugh finished the protocol implementation plan for the stream and river channel characteristics monitoring. It is currently undergoing peer review and will be finalized this year. Stop and see us when you are in Rapid City. We're looking forward to another year of monitoring with you in the parks!

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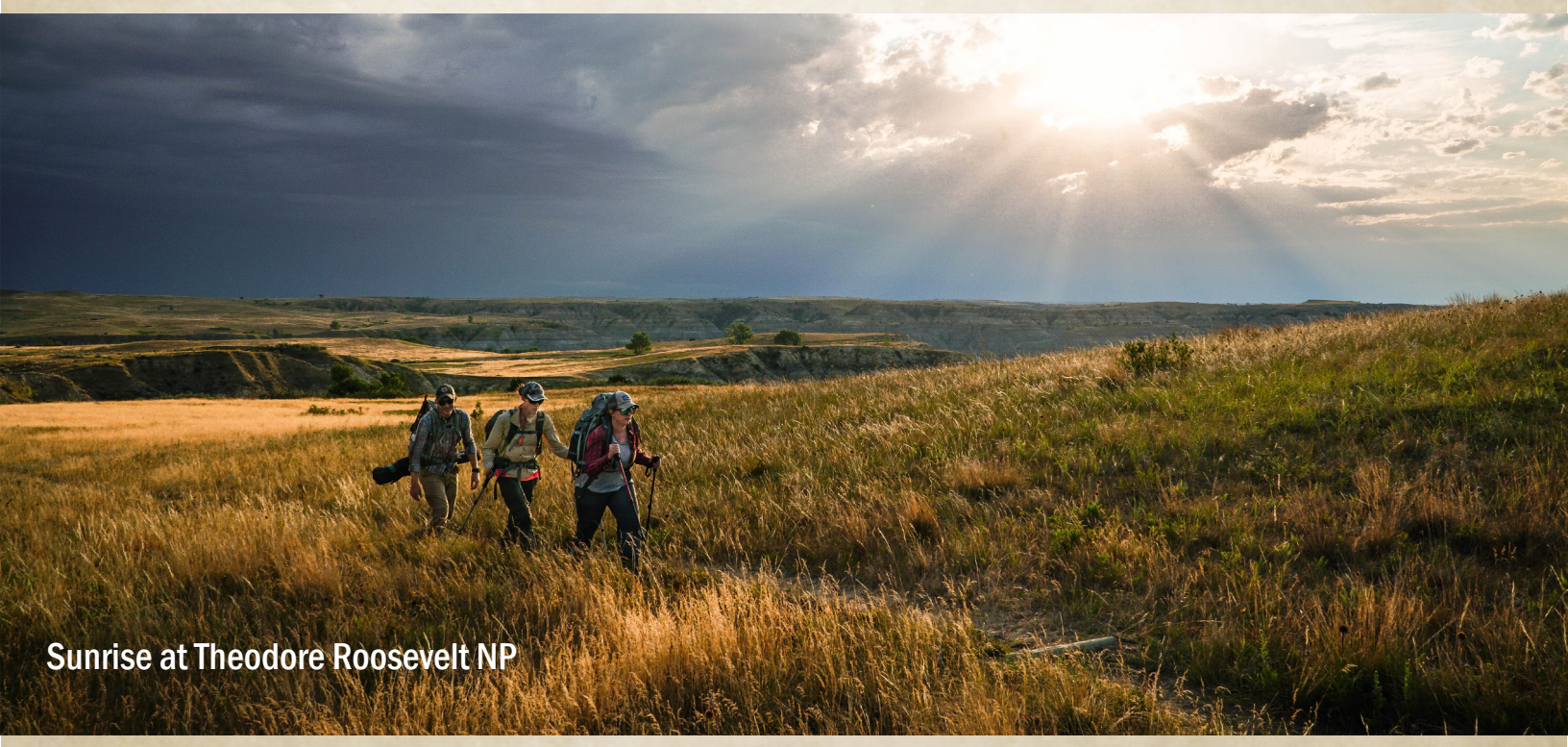


Sunrise at Theodore Roosevelt NP

Stream and River Channel Monitoring

Waterway monitoring is ramping up

Pilot sampling for the Stream and River Channel Characteristics Monitoring protocol was conducted by NGPN this year. These field methods follow Environmental Protection Agency (EPA) National Rivers and Streams Assessment Physical Habitat Characterization methodology for wadeable streams. The protocol is currently in review in 2018 and will be implemented in 2019.

Channel characteristics sampling was completed on Grizzly Creek at MORU, on the Knife River at KNRI, and on the Laramie River at FOLA in September 2017. At all sites, measurements of stream depth, wetted width, channel cross-section profile, substrate structure, bank characteristics and riparian vegetation structure, stream flow, woody debris tallies, thalwag profile, and channel complexity were collected. Field work completed this season sets a baseline for stream channel characteristics for these park units.

Physical changes to stream and river channels can be key indicators of risk to environmental resources within and outside of parks. These changes can drive the alteration and replacement of established natural habitats and may threaten cultural resources, facilities, and other infrastructure where it exists. Stream channel physical change is a basic concern to the NPS since it also influences changes in other resources like surface and subsurface water quality and quantity, species distributions, recreational visitor use, and even resource extraction. Early identification of changes in baseline stream and river channel characteristics, and an understanding of normal variability, is vital to recognizing potential ecological problems in parks' stream and river resources.

Piloting data collection

Measuring stream width at Fort Union Trading Post NHS

This season's pilot sampling at park units was used to evaluate the functionality of EPA methodology for physical habitat characterization for adoption in the NGPN protocol. The Streams and Rivers Channel Characteristics Monitoring sampling trips at MORU, KNRI, and FOLA were very successful at evaluating the methodology and collecting data. Fortunately, we also experienced very favorable weather for late-season field work. NGPN crews shared some good company, stories, good food, some inspiring quiet solitude at the parks while sampling this year.

Thanks to the staff at MORU, KNRI and FOLA for accommodating the research efforts at their parks and we look forward to the next time we sample your rivers and streams.

Exotic Plant Management Team Highlights

Success on the management and outreach fronts

Summary of Accomplishments

During the 2017 field season, the Northern Great Plains Exotic Plant Management Team (NGP EPMT) deployed a new data collection system built around Arc Collector which allows for decreased hardware costs and rapid device upgrades. Data management costs have also decreased even after assuming data management responsibilities for 5 partner parks. Thirteen of our partner parks have adopted this collection method and their park data can now easily be uploaded to the National Invasive Species Information Management System database. Helicopter operations were continued in high priority areas at THRO and BADL. We also assisted FOUS with a restoration project to maintain restored prairie and preserve the cultural landscape.

Exotic plant treatment at Mount Rushmore N Mem

Badlands NP

Black Hills Invasive Plant Partnership

The NGP EPMT helped launch the launch the Black Hills Invasive Plant Partnership in 2017 along with private landowners, conservation organizations, state and local governments, and federal partners. This partnership strengthens cooperation and collaboration between partners and enhances invasive species management in the Black Hills and surrounding areas. This is a large and ecologically diverse area that includes lands in South Dakota and Wyoming, including five NPS units. The objective of the partnership is to address landscape-scale invasive species management; a formidable challenge for any single entity.

Already, improved communications and knowledge-sharing between group members has increased joint-treatment planning, and has also led to the expansion of public outreach campaigns to a reach wider audience. A new high-priority invasive species list has also been developed, which will improve early-detection and rapid-response planning. This list will also be shared with land managers to alert them to new invasive species of concern that may be in their area. Technical assistance provided by the partnership to landowners and other entities has already improved treatment effectiveness and reduced herbicide usage. Public outreach campaigns that span multiple media and wide dissemination are planned for release in 2018.

NGPN Bat Monitoring

A growing long-term data set and new white-nose research

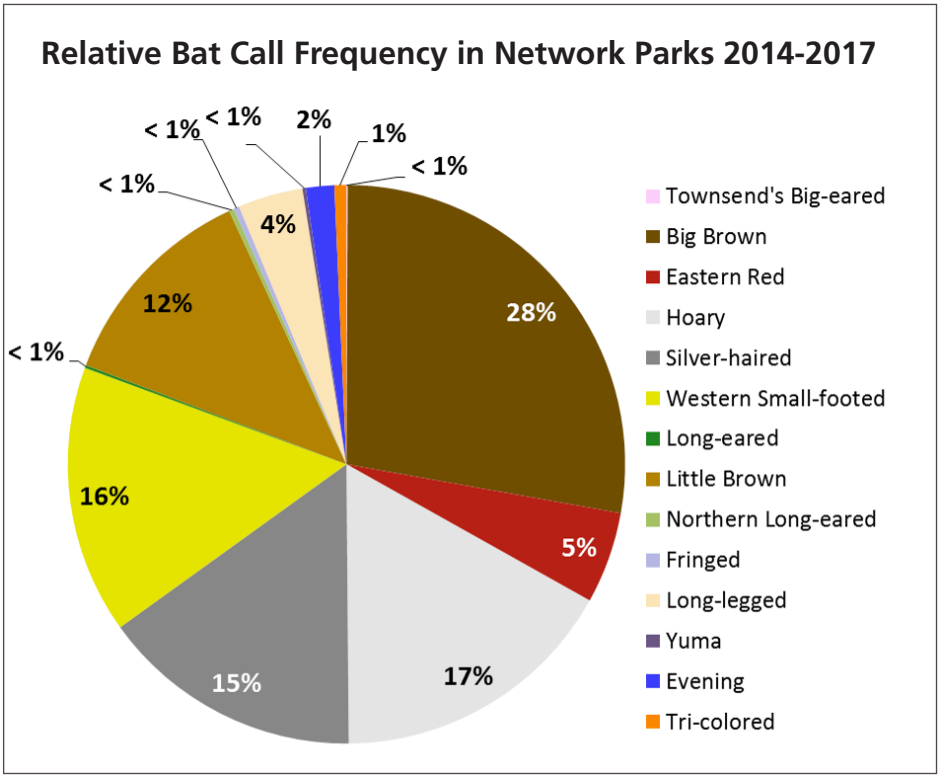
Summer 2017 marked the fourth year of NGPN bat monitoring. It was the second year that a portion of the fieldwork was conducted by the University of Wyoming (UWY) under a cooperative agreement that will run through the year 2020. The UWY technician, Mary Mercier—under the leadership of Ian Abernethy—collected data at the six Network parks using the North American Bat Monitoring Program (NABat) protocol (BADL, JECA, MNRR, NIOB, THRO, and WICA). The Midwest Regional (MWR) Biologist Dan Licht conducted monitoring at six other Network parks (AGFO, FOLA, FOUS, KNRI, MORU, SCBL) using a similar protocol which doesn't use the NABat sampling frame. (DETO has its own bat monitoring program and is not part of Network monitoring at this time.)

Preliminary results from 2014-2017 monitoring show no apparent trends in NGPN bat populations over that time period; however, there was often great between-year variability. For example, in 2017 some road surveys conducted at the NABat parks showed an increase in population whereas others showed a decrease. This variability highlights why ecological monitoring studies often require data covering large time spans to discern long-term trends from short-term variations.

Based on the analysis of bat recordings using acoustic analysis software, the most commonly classified species across the NGPN continue to be the big brown bat, hoary bat, silver-haired bat, western small-footed myotis, and little brown bat. The lone federally listed species in the NGPN region—the northern long-eared bat—was again only rarely classified at NGPN parks in 2017. As recently as a decade ago, this species was considered to be common in the region.

The NGPN has now collected approximately 1.4 million bat recordings from 2014 to 2017 and these recordings were gathered from 2,286 stationary point survey nights and 97 road survey nights. The Network continues to be a leader in bat acoustic monitoring and likely has one of the largest bat recording datasets collected under the NABat protocol. Using these data, a 2014-2016 NPG bat monitoring report and a smaller 2017 data summary report have been submitted to the regional office for review.

The NGPN, MWR Biologist, and UWY will continue acoustic monitoring work in the summer of 2018. These partners are also collaborating on a project that will use mist-net capture and swabbing of bats at NGPN parks to look for the presence of the fungus that causes white-nose syndrome disease and to collect supplemental demographic information about bat populations, like sex ratio, age, and reproductive status. This field work is slated to begin in the spring of 2018 and continue in the spring of 2019.



Annual Brome Adaptive Management

Developing strategies for controlling aggressive invasive grasses

Invasion by non-native annual brome grasses (cheatgrass and Japanese brome) has resulted in the reduction of native plant diversity, a key indicator of high-quality prairie and woodland, in parks across the Northern Great Plains. There are few management actions specifically targeting these grasses, and annual bromes have persisted or increased in abundance in some parks as a result. This, combined with uncertainty about the effectiveness of annual brome management treatments and the limited capacity to apply those treatments makes managing annual bromes a complex problem.

The Annual Brome Adaptive Management project (ABAM) is addressing this problem through a cooperative effort that includes partners from several NPS divisions, National Parks, and the USGS. The goal of ABAM is to develop an adaptive management system that can guide parks and their supporting networks in making more effective and strategic vegetation management decisions. At the heart of this adaptive management system is a predictive model that will identify suitable management actions based on a variety of ecological data inputs.

Last spring, ABAM park and network staff identified the general objectives of annual brome adaptive management, identified currently feasible management actions to achieve these objectives, and began outlining components of the model that will be the heart of the management framework. The USGS partners have completed a draft model that integrates information about plant communities, environmental factors, and management actions, and how they all interact to affect annual brome growth. A panel of annual brome experts helped further refine the model by clarifying relationships between major drivers of brome populations and other park vegetation. Ultimately the purpose of the model is to predict which management actions will best improve vegetation condition at an acceptable cost based on the current and historic vegetation communities and management actions.

Each year, the model will recommend management actions, and following treatments, monitoring data will be collected and input into the model, and the updated model can provide improved predictions of management action effects. This long-term protocol is intended to persist for decades, and is unique in the NPS. If effective, this adaptive approach could be used to address other complex management issues in parks across the nation.

The ABAM project is funded through the NPS Service-wide Comprehensive Call. The full list of ABAM partners includes: the NGPN and Rocky Mountain Inventory and Monitoring Networks, the NGP EPMT and Northern Rocky Mountain Exotic Plant Management Teams, the NGP Fire Management Office, the USGS Northern Prairie Wildlife Research Center, and seven parks: AGFO, BADL, DETO, FOLA, SCBL, WICA, and Little Bighorn Battlefield National Monument.

Cheatgrass-dominated plant community

Plant Community Monitoring

A Super Season Seven

The vegetation monitoring crew completed its seventh year of monitoring in 2017. The combination of relatively cooperative weather, great staff, and good luck resulted in all planned plot visits being 100% completed for the season. A total of 125 plots were visited by the vegetation crew last summer, including 114 plant community plots and 11 riparian plant community plots. In the fall, NGPN and NGP Fire Effects monitoring crews joined forces to collect data from an additional 90 forest structure plots at WICA to evaluate forest composition and health.

The vegetation crew also spent plenty of time getting their feet wet last season with a variety of water-focused monitoring efforts, including riparian monitoring at WICA and AGFO as well as helping with pilot sampling for the new NGPN stream and river channel characteristics monitoring protocol.

NGPN staff drying off

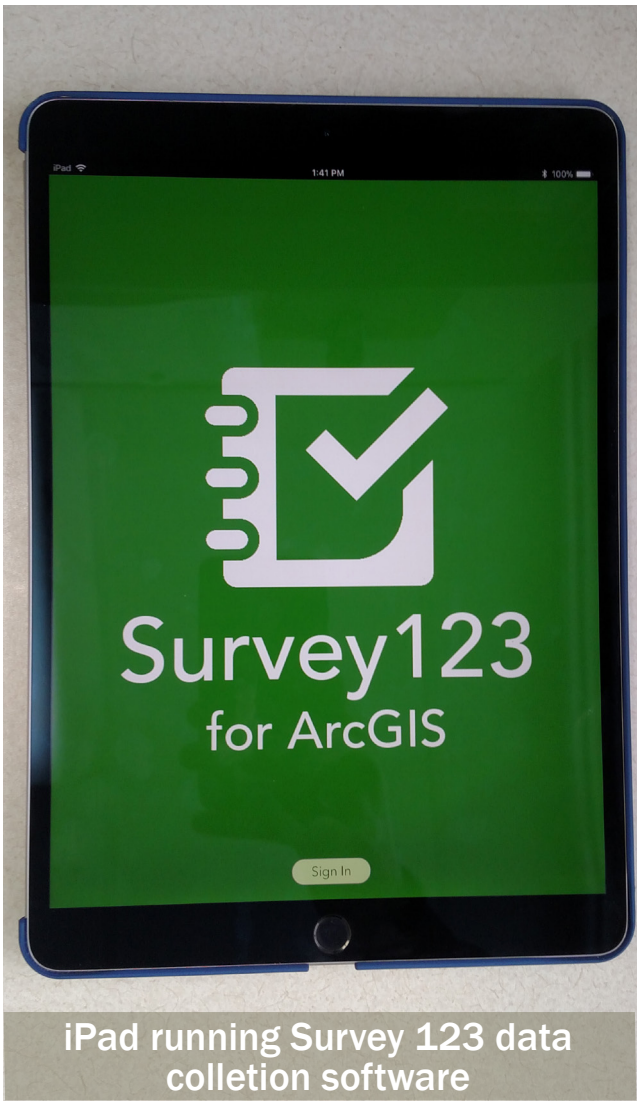
Wood lilies at Wind Cave NP

One change to how the vegetation program shares and reports data was introduced in 2017. We developed a reporting schedule that rotates between producing in-depth natural resource reports and short data-series reports for each park. The general strategy is based on a three-year cycle for each park where two annual data reports will be followed by one natural resource report over each cycle. Slight variations on this cycle will occur for parks where forest monitoring data are collected every five years. This reporting strategy allows NGPN staff to focus more time and energy on the large and complex natural resource reports while still being able to distribute all park data in a timely manner.

A sunny day at Badlands NP

Is Mobile the future of field data collection?

As mobile devices become more powerful and less expensive, NGPN is beginning to collect some field data with relatively inexpensive tablets and smartphones instead of purpose-built data collection devices. Though there are dozens of devices on the market, NGPN is mostly using iPads and iPhones. By using NPS-supported services like ArcGIS Online, Survey123, and the NPS Geospatial Portal, our field crews can quickly collect accurate data with less training than on our older systems. Wi-Fi or cellular data synchronization allow supervisors, coworkers, and project managers to have rapid progress updates and nearly real-time access to field-collected data, and has cut the time spent for office-based data processing by half or more.



iPad running Survey 123 data colletion software

Making this change required some investment, including purchasing new devices, installing NPS enterprise Wi-Fi access at the NGPN offices, training, and time to develop new maps and forms. So far, these costs are offset by time saved on data entry and correction, lower hardware costs, and higher productivity for both field and office staff.

We are currently evaluating how to use mobile data collection with the new Stream and River Channel Characteristics Monitoring protocol as well as how to integrate it into existing vegetation protocols. Crew safety and data quality are our top priorities, so we spend months developing and testing before sending any new technology out to the field.


Plant data collection at Devils Tower NM

Staff Updates

Welcome Theresa Schaffner, our new Permanent Biological Science Technician

Theresa first encountered NGPN last year while working as a seasonal employee for the Northern Great Plains Fire Effects crew, based out of Wind Cave National Park. She is excited to begin her permanent career with NPS. Prior to working in Fire Effects, Theresa worked in Resource Management for a year at Fire Island National Seashore in New York. Her primary responsibilities were trapping and tracking radio-collared White-tailed Deer, and monitoring vegetative change in dune regeneration and an old growth maritime forest. Following a short foray into the private sector, collecting climate change data in California, she landed back with the NPS in South Dakota. Theresa earned a B.S. in Sustainable Management from Bucknell University. In the off season, she stays with her boyfriend in New York City and family in Pittsburgh, identifying local plant species for anyone who will listen.

NGPN staff also welcomed two new babies in 2017

Two NGPN employees had new additions to their families last year.

Darren Thornbrugh, aquatic ecologist, and his wife Julianna welcomed baby Lily in August.

Carlos Serratos, GIS technician, and his wife Danielle welcomed baby Luna in September.

If you see these folks around your park, give them a pat on the back and a cup of coffee!

Thanks to our field help and seasonal staff

Thank you to our seasonal employees Carlos Serratos, Will Vogel, Rachel Oltjenbruns, and Logan LaFleur, as well as all of the park staff and interns who joined us in the field to help with data collection. Without their hard work our fruitful field seasons wouldn't be possible.

Also, congratulations to Logan on her acceptance to law school at University of Arizona, where she began classes last fall.

Monitoring Schedule

2018 Field Schedule

When you can expect to see us and our partners at your park!

Park	Bats	Birds	EPMT	Plant Community	Forest/ Riparian	Water Quality	Stream Channel	Aquatic Invertebrate
AGFO	June		August	May	August (Riparian)			July-August
BADL	June	May-July	June-October	June				
DETO			September	July	September (Forest)			
FOLA	July		August	May	August (Riparian)	March-November		
FOUS	July		June-September	July				
JECA	July		July	July				
KNRI	July		July	July				
MNRR	July-August	May-July				March-November	August-September	
MORU	June		July	July				
NIOB	July	May-July	July-August					
SCBL	July		September	May				
THRO	July-August	May-July	June-September	July-August				
WICA	July	May-July	August	June	August (Riparian)		August-September	

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
NGP FE	Northern Great Plains Fire Effects
NGPN	Northern Great Plains Network
NIOB	Niobrara National Scenic River
NABat	North American Bat Monitoring Program
SCBL	Scotts Bluff National Monument
THRO	Theodore Roosevelt National Park
USGS	U.S. Geological Survey
WICA	Wind Cave National Park

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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.

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NGPN Documents

Available for download on our website!

NGPN reports, briefs, and protocols are available on the Reports and Publications page, including:

Plant Community Monitoring 2017 Data Series Reports

Badlands National Park
Devils Tower National Monument
Fort Laramie National Historic Site
Fort Union Trading Post National Historic Site
Knife River Indian Villages National Historic Site
Scotts Bluff National Monument