

Upper Columbia Basin Network Inventory and Monitoring

National Park Service
U.S. Department of Interior
Pacific West Region



Basin Bulletin

Volume 8, Issue 1
Winter/Spring 2014

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UPPER COLUMBIA
BASIN NETWORK
UCBN

PLUS!

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<http://www.leg.wa.gov>



National Park Service
U.S. Department of
Interior



The National Park Service has implemented natural resource inventory and monitoring on a servicewide basis to ensure all park units possess the resource information needed for effective, science-based managerial decision-making, and resource protection.

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Distribution

Please distribute this newsletter on to any person or group who is interested!

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Upper Columbia Basin Network Inventory and Monitoring Program



PARKS IN THE NETWORK

Big Hole National Battlefield (BIHO)

City of Rocks National Reserve (CIRO)

Craters of the Moon National Monument and Preserve (CRMO)

Hagerman Fossil Beds National Monument (HAFO)

Minidoka National Historic Site (MIIN)

John Day Fossil Beds National Monument (JODA)

Lake Roosevelt National Recreation Area (LARO)

Nez Perce National Historical Park (NEPE)

Whitman Mission National Historic Site (WHMI)

<http://science.nature.nps.gov/im/units/ucbn/>
Taking the pulse of the National Parks

The Program Manager's Corner

Another busy year has slipped by. We completed our UCBN Annual Report for 2013, which once again highlighted some fun and productive collaborations with staff at the UCBN parks. A scientific article on conifer encroachment at City of Rocks National Reserve was accepted for publication in the PLoS ONE journal. And another journal article has been revised based on peer review comments and should be published soon – this one on modeling bunchgrass and invasive annual grass abundance at John Day Fossil Beds National Monument (JODA) to help establish management and restoration priorities. Also, the State of the Parks report for JODA was recently published. This report was developed by park staff with UCBN assistance and summarizes the status and trends of the natural, cultural and historic resources in the park. The report is available online at www.nps.gov/stateoftheparks/. The UCBN completed annual reports for each of our on-going monitoring protocols, as well as updated resource briefs. All of these materials are available on our UCBN website, which has undergone some significant reorganization and improvement (see <http://science.nature.nps.gov/im/units/ucbn/publications.cfm> for reports, journal articles, and resource briefs). If you have any comments or suggestions on our website, please let us know.

Other collaborations in 2013 have generated new projects. For example, assessment of restoration options at Nez Perce National Historical Park's Weippe Prairie spurred a project evaluating the effect of different treatments on camas density and bulb growth (led by Devin Stucki) and a project examining rodent diversity and abundance (led by Heidi Becker). Another example involves enhancement of our sagebrush steppe monitoring using repeat photography at historic and newly established photo points, and by augmenting the spatially-extensive temporary plots with a set of permanent plots, some of which may come from past fire effects monitoring. This project is led by Dan Esposito and Tom Rodhouse. One more example is collaboration between the UCBN, Lake Roosevelt, and the NPScape program to characterize current land use development levels based on county parcel data and landscape imagery.

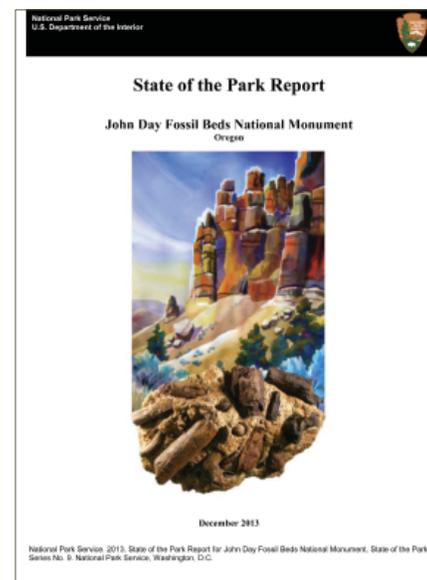
These various projects and our on-going monitoring protocols were the focus of a series of UCBN webinars this winter. These webinars shared information and promoted discussion on the UCBN's 2013 activities and 2014 plans, and were intended to make up for the unfortunate cancellation of our science meeting in early October due to the government shutdown. All resource managers and superintendents were informed of scheduled webinars, and many participated. Please watch for additional announcements on upcoming webinars. The webinars are recorded, so they can be viewed after the fact by those unable to attend. Any questions or suggestions regarding these webinars are welcomed.

We look forward to another fruitful field season in 2014, and we greatly appreciate the continued assistance and support from our UCBN parks. Resource managers and superintendents will be hearing from the UCBN I&M staff about field plans, job hazard analyses, and readiness reviews.

Here's to a safe, productive, and happy new year!

~ Gordon Dicus, UCBN Program Manager

John Day Fossil Beds National Monument
recently published State of the Parks Report



UCBN Inventory and Monitoring Program Schedule 2014

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
MONITORING										
Bats	CRMO	CRMO								
Camas lily				NEPE	BIHO					
Lemhi penstemon and invasive weeds					BIHO					
Limber pine						CRMO	CRMO			
Osprey				LARO		LARO				
Pika							CRMO	CRMO		
Riparian Vegetation				NEPE WHMI	NEPE WHMI	NEPE WHMI				
Stream Channel Characteristics				NEPE WHMI	NEPE WHMI	NEPE WHMI				
Sagebrush-steppe vegetation				LARO	JODA	JODA				
Sage-grouse		CRMO	CRMO							
Water quality					NEPE WHMI	NEPE WHMI	NEPE WHMI	NEPE WHMI	NEPE WHMI	NEPE WHMI
Aspen	No additional data collection until 2015.									
INVENTORIES										
Vegetation mapping	All UCBN parks. Final maps and reports completed.									



Monitoring activities for which field operations are conducted by park staff.



Monitoring activities for which field operations are conducted by UCBN staff, or by UCBN staff in cooperation with park staff.



Monitoring activities for which field operations are conducted by NPS partners.

Inventory and Monitoring Projects happening in UCBN parks

Our two featured parks in this issue are Nez Perce National Historical Park (NEPE) and Whitman Mission National Historic Site (WHMI). Different monitoring activities will take place in these parks this summer.

At Weippe Prairie (NEPE), UCBN staff alongside park staff and citizen scientists will monitor camas lily. 2014 makes it the 10th year of monitoring! The citizen scientists are young students that come from three local high schools. NEPE staff provides lessons on camas natural and cultural history, and also on the use of compass and GPS. This in-classroom training prepares students to collect data at the site.

The Network will also be conducting water quality monitoring in Lapwai Creek (NEPE-Spalding site), Jim Ford Creek (NEPE-Weippe Prairie site) and Doan and Mill Creeks (WHMI). The Network aquatic biologist will deploy a continuous water quality monitor to record hourly measures of tem-

perature, dissolved oxygen, specific conductance, pH, and turbidity. In addition, each month from June to November, he will conduct site visits to recalibrate the instrument and evaluate data quality. This will be the third year of monitoring for water quality in both parks.

Stream Channel Characteristics and Riparian Vegetation monitoring will be conducted by the Forest Service PACFISH/INFISH Biological Opinion (PIBO) field crew in all 4 creeks. This will be the second round of stream channel and riparian monitoring, and will help the UCBN understand changes that have occurred in both parks since monitoring began 3 years ago.

If you would like to know more about these activities or would like updates or receive data, feel free to contact us or stop by when we are conducting fieldwork.

Traditional resource management and camas at Weippe

Devin Stucki - Biotechnician, Upper Columbia Basin Network

Camas lily bulbs have long been harvested by the Nez Perce people as a staple winter food source. The practice of harvesting camas, including the digging of camas bulbs and the occasional burning of camas prairies after digging, is thought to favor camas growth and to increase camas densities by encouraging seed germination, reducing competition from other plants, and keeping meadows and prairies open and free from tree encroachment. With these concepts in mind, the UCBN Inventory and Monitoring Program and the Nez Perce National Historical Park have initiated a project to determine the effectiveness of these traditional management techniques for camas density restoration in Weippe Prairie.

At this stage in the project we have established a total of 32 permanent plots, each with an area of 1 m². The plots are located in areas with very similar elevations and soil types. In June 2013 we counted mature and seedling camas plants, the number of camas plants in flower, and we characterized the ground cover for each plot. Plots were then randomly assigned one of four treatment types including digging, burning, digging and burning,

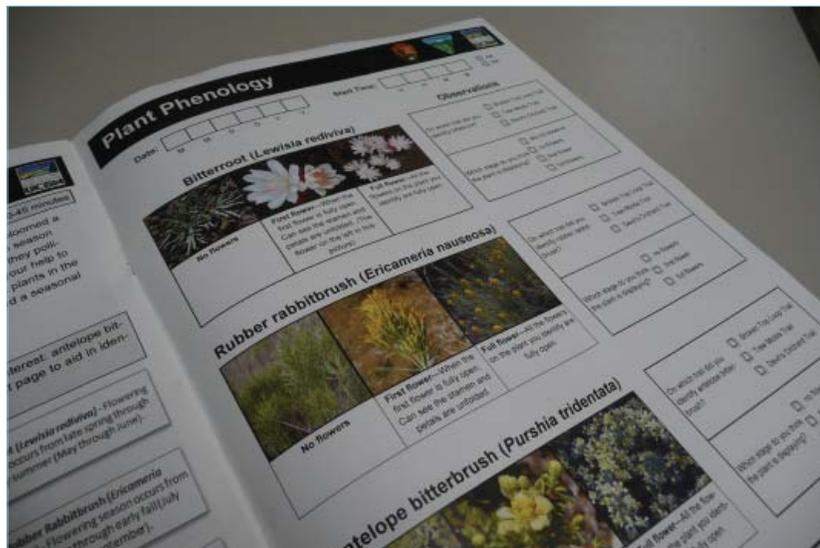
or no treatment (control). These plot treatments were carried out in September 2013. Camas plant counts and ground cover characterization will be repeated in these plots during early summer 2014 and beyond to detect changes that may result from the treatments. Additionally, another round of plots will be installed to increase the sample size. Long term monitoring of these plots will contribute to the broader understanding of the effects that these traditional resource management tools may have on camas in Weippe Prairie.



NEPE staff digging for camas bulbs in the traditional way within plots at Weippe Prairie.

Turning Citizens into Scientists

Lennie Ramacher - Interpretive Ranger



Left: Visitors complete a variety of activities, such as monitoring cone production on limber pine trees, in becoming a Citizen Scientist at Craters of the Moon National Monument.

Right: Participants learn about the timing of plant development and its importance to resource management in a phenology activity.

Over the last decade the Upper Columbia Basin Network Inventory & Monitoring program has given Craters of the Moon National Monument (CRMO) staff a deeper understanding of park resources. In turn, staff incorporates this new scientific knowledge into interpretive displays and programs. Recently, park staff considered how to turn visitors from passive gleaners of this information into active participants. What if, instead of reading a statistic on pika distribution, visitors actually engaged multiple senses to learn about their park? That's why we chose to create a new Citizen Scientist activity booklet, based on the popular Junior Ranger program, targeted at older teens and adults.

The activities developed are one part interpretation, one part resource management. An activity on soundscapes has visitors spend time at two different locations listening for and recording every sound they hear. The activity brings the participants to diverse areas of the park – from the visitor center patio to the doorstep of the Craters of the Moon Wilderness – and illustrates the different uses inherent in those areas. Other activities feature resources that are part of ongoing I&M surveys, like the charismatic pika. As CRMO is a home to rare low-elevation population of pika, participants visit at least one of three known pika hangouts. They observe, listen for, and note the presence or absence of the elusive rock rabbit. Other activities include: air quality, limber pine cone production, plant phenology, and the prevalence of Clark's nutcrackers. While participants need only complete 3 of the 6 activities to earn their prize – a CRMO lapel pin – the activities provide insight on some of the less-obvious “weird and scenic” park features beyond the volcanic geology. They also open avenues for consideration of larger issues, such as climate change, and their effect on specific resources.

The program doesn't just further interpretive goals. Data collected by participants is logged into a database developed by resource management staff. Over time, the data may provide park managers one more tool to better protect resources while giving visitors the opportunity to becoming stewards of their park.

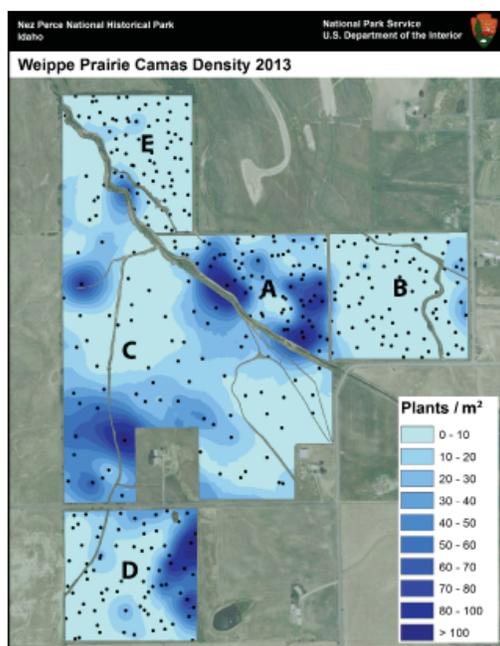
Making sense of I&M non-sense: The insides of GIS

Meghan Lonneker - GIS Analyst, Upper Columbia Basin Network

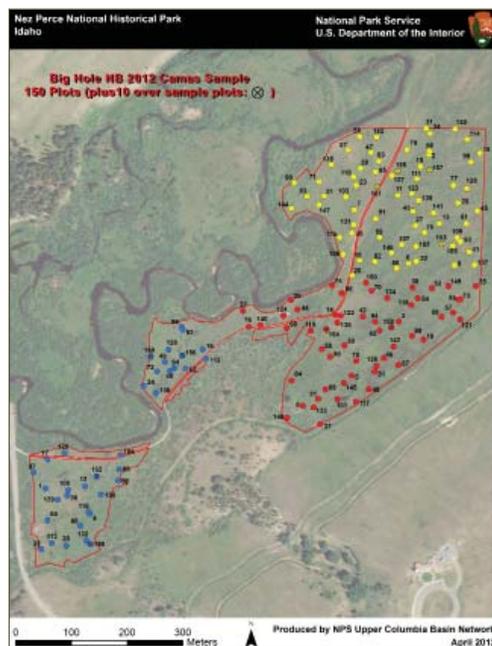
Geographic Information Systems (GIS) are a collection of computer software used to display and manage geographically referenced data, analyze spatial relationships and model spatial processes. In the GIS environment there are a lot terms tossed around that can confuse even the most experienced user. For example, to geographically reference something means to establish its location in physical space using a coordinate system. There are geographic coordinate systems such as latitude and longitude which map locations on a spherical surface which represents a simplification of the actual earth. There are also projected coordinate systems which further simplify the representation of the earth by mapping locations on a flat surface using a map projection like Universal Transverse Mercator (UTM).

A layer is another common GIS term that can be confusing. A layer is a visual representation of a geographic dataset (such as roads, trails or elevation countours) on a map. In ArcGIS, the term layer refers to such dataset, including the symbology associated with the dataset. Feature layers display vector data (points, lines, and polygons) that are stored in shapefiles, feature classes, and geodatabases. Raster layers can be either image files (e.g., JPEGs and TIFFs) or raster datasets (e.g., rows and columns of grid cells assigned a numeric value, such as a precipitation model or a digital elevation model). Shapefiles are vector data storage formats that contain one feature class. Feature classes are a collection of features with the same geometry (point, line, or polygon) and geographically referenced with the same coordinate system; feature classes can be stored as shapefiles or within a geodatabase. A geodatabase is a robust tool for storing and displaying a variety of spatial data, and enhances our ability to share spatial data collections with other users. These explanations only scratch the surface of GIS terminology, but it's a start.

So now, what do we at the UCBN use GIS for? Well, the UCBN uses GIS as a tool in our development of protocols, our collection and organization of field data, and in our displaying, analysis and modeling of the data. For example, we analyze plot data within GIS to explore spatial patterns, such as camas plant density across the Weippe Prairie landscape. GIS has helped us develop predictive models for native bunchgrass and noxious weed distributions at John Day Fossil Beds National Monument. We also use GIS to simply display features like park boundaries, sampling frame delineations, and plot locations; and these simple maps make useful figures in reports and planning documents.



Maps showing the density and quantity of camas plants at Weippe Prairie, Nez Perce National Historical Park.



Map showing the random sample points (you may hear them referred as "GRTS") for camas data collection at Big Hole National Battlefield.

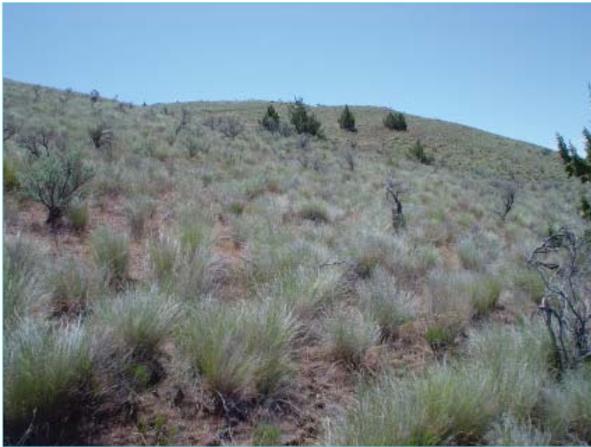
6 Featured Grass 9

Bluebunch wheatgrass

Bluebunch wheatgrass (*Pseudoroegneria spicata*) is a perennial native bunchgrass that looks like wheat, can grow up to 4 ft tall and appears to have a blue-greenish color. It has a wide distribution; it can be found in the northern Great Plains, northern Rocky Mountains and the Intermountain region of the western United States. Bluebunch wheatgrass is common in many habitats, and is the foundation of our park sagebrush steppe ecosystems. It is abundant in areas that receive between 10-20 inches of annual precipitation.

It is very well suited for grazing, as it is rich in protein levels. Thanks to its extensive root system, this drought resistant plant is widely used to restore habitats that have been degraded, and it allows growth of other native species.

One of the major threats to bluebunch wheatgrass is the increase and advancement of invasive species. In John Day Fossil Beds National Monument, two invasives of primary concern are cheatgrass (*Bromus tectorum*) and medusahead (*Taeniatherum caput-medusae*). It is also susceptible to overgrazing; although, a resting period between grazing rotations helps grazed populations of bluebunch wheatgrass to remain healthy and productive.



Healthy Bluebunch wheatgrass at John Day Fossil Beds National Monument.



Infestation of cheatgrass and medusahead at John Day Fossil Beds National Monument.

Species information obtained from:
http://plants.usda.gov/factsheet/pdf/fs_pssp6.pdf
http://www.usu.edu/weeds/plant_species/nativespecies/bluebunch.html

What are the main uses of bluebunch wheatgrass?

Solve the puzzle for each word and complete the sentence below:

REAGOF	<input type="text"/>
CILTOKSEV	<input type="text"/>
LIDFILEW	<input type="text"/>
GEENEATVOTRI	<input type="text"/>
DDAREDEGE	<input type="text"/>

Bluebunch wheatgrass is an important _____ grass for both _____ and native _____ in western North America. It is widely used for _____ of _____ habitat in the region.

Answers: forage, livestock, wildlife, revegetation, degraded