



## Basin Bulletin

Volume 10, Issue 2  
Summer/Fall 2016



Impact at the Clarno Unit, in John Day Fossil Beds National Monument, following the 2011 wildfire

### **Cover story: Long-term fire effects on native and invasive grasses in John Day Fossil Beds National Monument**

Tom Rodhouse, UCBN Ecologist, provides a summary of a research project that reports on 15 years of fire effects in a sagebrush-steppe community.

### **New staff at Craters of the Moon and John Day Fossil Beds National Monuments**

Meet a new superintendent and resource manager that have joined our network.

### **The Columbian ground squirrel**

This rodent is found in Canada and the northwest of the United States, and it is commonly seen in Big Hole National Battlefield. Learn more about it in our Featured Creature section.



UPPER COLUMBIA  
BASIN NETWORK  
**UCBN**

## Plus:

- Get an update on the different happenings in our network from our Program Manager on pg. 3
- Have you checked out the new Inventory and Monitoring Video? See more details on pg. 6







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!

Questions about the newsletter?

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## 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 UCBN is now on Facebook!

Follow us at: <https://www.facebook.com/npsucbn/>

## The Program's Manager Corner

### Gordon Dicus

Another busy summer field season is coming to a close. The UCBN I&M Network is fortunate to have Devin Stucki, who continues to lead the fieldwork for several of our monitoring protocols, including coordination of temporary field assistants and communication with park staff on safety planning and logistics. Thanks to Devin, we have wrapped up another field season of sagebrush steppe vegetation monitoring and white pine monitoring at CRMO. He was also integral to our camas lily monitoring at NEPE's Weippe Prairie unit and at BIHO, our Lemhi penstemon monitoring at BIHO, and he is helping us evaluate the potential for white pine monitoring at Great Basin National Park. As we move into fall and winter, Devin will play a key role in quality review of this year's field datasets, analysis of data, and development of summary reports.

I am pleased to announce the arrival of Jeff Lonneker as the new UCBN Data Manager. Jeff acquired his Master's degree from the University of Idaho

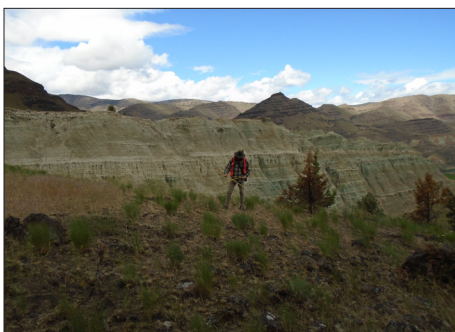
and resides here in Moscow. He brings an excellent set of GIS and spatial analysis skills to the UCBN, in addition to his background in forestry and wildlife ecology. For the past several years Jeff has been working for the US Geological Survey's National Gap Analysis program, which compiles and analyzes land cover data, vertebrate species distributions, and land stewardship to assess conservation status and identify both species-rich areas and conservation "gaps" for vertebrate species in the US. After settling in with the UCBN I&M program, Jeff will get to attend the annual I&M Data Managers training in Colorado in November. All of us in the UCBN I&M Network are excited to have Jeff join our creative efforts to improve the delivery of I&M data and information to park staff, university partners, and the public.

As many of you already know, Eric Starkey, long-time UCBN Aquatic Biologist, departed in May for a new position as Aquatic Ecologist at the Southeast Coast Network. Eric did an outstanding job establishing

UCBN monitoring protocols for water quality, stream channel characteristics, and riparian condition. We will miss his efficiency and abilities, but we're glad he's still in the I&M program and look forward to future collaboration opportunities.

The I&M program is undergoing a transition as our monitoring protocols move from evaluating resource status to analyzing resource trend. The program has built an excellent foundation for conducting high-quality science to complement and inform park management decisions, and strives to grow that capacity into the National Park Service's second century of preservation and stewardship. During an October meeting, the I&M Network Program Managers will discuss program goals and collaborative efforts to expand our ability to integrate I&M science with park management.

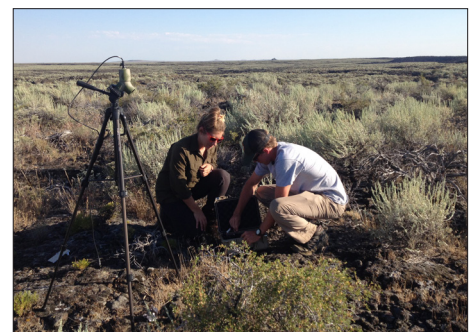
As always, the UCBN I&M Network remains committed and excited to continue working closely with park staff, other I&M Networks, and university partners.



Sagebrush steppe vegetation monitoring around the Blue Basin Overlook at John Day Fossil Beds National Monument.



Lemhi penstemon (*Penstemon lemhiensis*) monitoring at the Horse Pasture at Big Hole National Battlefield.



CRMO staff setup equipment (Anabat SD2 detector) to conduct acoustic sampling for the North American Bat Monitoring Program.



## New faces in our network

### Wade Vagias

Superintendent - Craters of the Moon National Monument



Wade Vagias assumed his duties as Superintendent for Craters of the Moon National Monument and Preserve in south-central Idaho in October 2015.

He oversees management of a NPS unit the size of Rhode Island, a staff of approximately 35 during the summer season, and

an annual base budget of approximately \$1.5 million. Wade previously served as the Management Assistant at Yellowstone National Park where his portfolio included resolving the nearly two-decade-long winter use planning debate, legislative affairs, partnerships, and relationships with gateway communities and elected officials. Prior to Yellowstone, Wade worked in the Washington Office in the Wilderness Stewardship Division.

Before joining the Park Service, Wade was a research associate in the Department of Parks, Recreation, and Tourism Management at Clemson University in South Carolina. He earned his Ph.D. while at Clemson and his

dissertation evaluated the Leave No Trace visitor education program in three National Park Service units. Other professional experiences include faculty appointments with Lock Haven University of Pennsylvania and Butler County Community College of Pennsylvania, river ranger with the Bureau of Land Management, raft guide with the Nantahala Outdoor Center, and mountain operations at Snowbird Ski Resort in Utah.

He holds an adjunct faculty appointment at Colorado State University and Montana State University where he serves on various Masters and Ph.D. committees of students conducting research in parks and other protected areas.

### Shelley Buranek

Integrated Resource Management Chief - John Day Fossil Beds National Monument



Shelley Buranek is the new Natural and Cultural Resource Chief at John Day Fossil Beds National Monument (JODA) in Eastern Oregon. She started her career in wildlife biology working with prairie falcons at Pinna-

cles National Park and went on to work with critters as diverse as bison, bats, and aquatic mites and native bees. She has worked with great people at a variety of National Parks, including Yellowstone, Great Smoky Mountains, and Badlands National Parks, as well as shorter stints at Congaree and Joshua Tree National Parks.

For her Masters degree, Shelley studied her favorite critter, the Prairie Falcon, while working for the U.S. Geological Survey. Shelley has also worked for the U.S. Fish and Wildlife Service in the Endangered Species Pro-

gram, where she collaborated with other federal agencies, non-governmental agencies, and private industry to restore native species.

Most recently, she worked for the U.S. Forest Service on a special project to facilitate agreement between ranchers, forest service professionals and environmentalists.

Her experiences in other agencies and parks have helped her bring a broad outlook to her new position as Resource Chief at JODA. She looks forward to working with Park and I&M staff within the Network.

# Fire effects on John Day Fossil Beds National Monument

Tom Rodhouse - UCBN Ecologist

In March of 2016 I helped Oregon State University graduate student Claire Reed-Dustin and Professor Ricardo Mata-Gonzalez complete and publish Claire's study of fire effects in the John Day Fossil Beds National Monument. The study was published in the journal *Rangeland Ecology and Management*. The study was based on a collection of surveys conducted over 15 years in fire effects monitoring plots established in the late 1990's and early 2000's just prior to a series of prescribed burns conducted in the park during that period. The park has long struggled with the difficult challenge of managing fire and weed invasion, and it was hoped that the prescribed fires might reduce encroaching juniper and dense sagebrush overstory without adversely impacting the native bunchgrass steppe. Claire's analysis revealed that the native bluebunch wheatgrass recovered quickly following fire, especially on cool north-facing slopes. Unfortunately, she also found that the non-native invader cheatgrass also increased rapidly following fire and persisted at elevated post-fire abundance through the long study period, with no sign of eventual reduction back to pre-burn levels. Medusahead also increased substantially over the study period, although because it was largely absent at the beginning of the study it was hard to firmly ascribe fire as the cause of the medusahead increase.

Claire's findings are consistent with the growing understanding that low-elevation sagebrush steppe environments throughout the sagebrush biome in the western US are highly invulnerable following fire. This presents a tough set of trade-offs for managers: burning may be good for the native bunchgrasses, and lack of fire can allow juniper and sagebrush to outcompete and reduce the density of bunchgrasses. Yet, allowing fire to reduce woody cover in order to benefit desirable bunchgrasses leads to the unintended consequence of accelerated invasion by noxious annual grasses.



The 2011 wildfire that spread rapidly across the Clarno Unit of the John Day Fossil Beds illustrates the kind of perennial land management challenge facing park staff.

Based on Claire's study and other published studies it is clear that running fire through the John Day Fossil Beds is very risky and not recommended. However, it is important to also recognize that there is a gradient of risk that decreases with elevation and moisture. Again, from other published science we now know that the cooler, moister high elevation sagebrush steppe ecosystems found in other parts

of the Upper Columbia Basin are much more resilient to fire and more resistant to invasion, even following fire. Our UCBN long-term monitoring program covers the whole elevation and moisture gradient and allows us to examine these complex patterns in great detail. An exciting example of how these monitoring data can be used to help develop precise guidance for park managers was the mapping study that I published with help from Dr. Mata-Gonzalez, John Day Fossil Beds staff, and other colleagues back in 2014. At that time we were already able to draw upon Claire's as-of-yet unpublished thesis research and other science and build a contextual scientific framework for prioritizing the John Day Fossil Beds landscape for protection from fire and for restoration. Last summer the park experienced a wildfire and received help from a regional BAER team to develop an emergency response. Our prioritization map was used as the platform upon which the response plan was developed. This summer we went in and surveyed plots in that burned area, setting in motion an unusual opportunity to fully evaluate the adaptive management process.

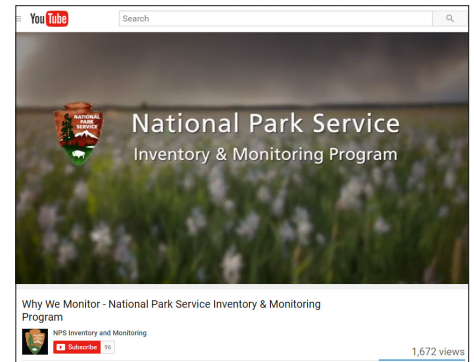
This collaborative approach to science-informed decision-making among University, I&M Program, and Park partners is an exciting model that we can strive to replicate in many parks across the National Park system.



## New video!

Do you ever wonder how the Inventory and Monitoring Networks across the nation benefit the national park sites you work at and visit. Follow this link to get a brief overview of why we monitor:

<https://www.youtube.com/watch?v=r0IvpBO6e7E&feature=youtu.be>



## Featured Creature Columbian ground squirrel



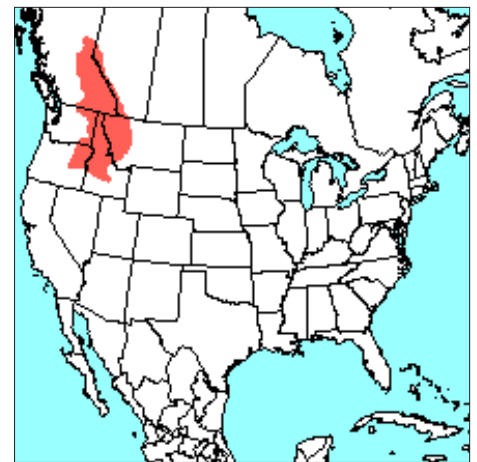
Columbian ground squirrel at Big Hole National Battlefield. Photos by Eric Starkey.

Columbian ground squirrels are the second largest member of the genus *Uritucelus*, from the rodent family, which includes marmots, chipmunks and prairie dogs. They average between 10-12 inches in length and their tail is 3 to 5 inches long. They can be found in intermontane valleys, sagebrush plains and subalpine meadows. Their burrows are found in sandy soils in open grounds.

They live in large colonies and are very territorial. They protect and mark their territories with scent glands located at the edge of the mouth and side of head. They usually eat grasses and bulbs; however they are also known to eat fruits, seeds and a small amount of insects or carrion.

Columbian ground squirrels are active for about 100 days of the year (usually between March and August). That means they spend 70% of the year in hibernation!

Hibernation occurs during late summer as a result of high temperatures and drying vegetation. During this period, bodily functions are reduced and Columbian ground squirrels slowly use their accumulated body fat. Females emerge from hibernation later than males, and soon after, the breeding period starts. Gestation lasts 24 days and females commonly have a litter of 3-5 young, around May-June.



Distribution map of the Columbia ground squirrel. Image obtained from the Smithsonian National Museum of Natural History website.

Species information obtained from:  
<http://fieldguide.mt.gov/speciesDetail.aspx?elcode=AMAFB05070>  
[http://naturalhistory.si.edu/mna/image\\_info.cfm?species\\_id=346](http://naturalhistory.si.edu/mna/image_info.cfm?species_id=346)  
<http://www.iucnredlist.org/details/42466/0>