



Basin Bulletin

Volume 12, Issue 1
Winter/Spring 2018

Long-eared Myotis and Long-legged Myotis bats in one of the caves at Craters of the Moon National Monument and Preserve. Photo by Michael Durham

Cover story: Presenting the Northwest BatHub

Tom Rodhouse, UCBN Ecologist, introduces the NW Bat Hub, hosted by Oregon State University-Cascades Campus for interagency collaboration for bat conservation.

Updates from limber pine monitoring

Devin Stucki, UCBN Vegetation Ecologist, provides findings from last year's limber pine monitoring season, including details about the discovery of a new tree pest in Craters of the Moon National Monument.

New visualization tool

Jeff Lonneker, UCBN Data Manager, shares details of the development of a new data visualization tool that will enable better viewing and use of data.



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Plus:

- Read news and updates from our Program Manager on pg. 3
- Meet the new UCBN Vegetation Ecology Field Crew Lead, pg. 7
- Have you ever heard of assassin flies? Learn more on pg. 8





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

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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/>
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The Program's Manager Corner

Gordon Dicus

It's been a busy winter for the UCBN, and all of us are welcoming the arrival of spring. We are now ramping up for summer field work, and our parks are beginning to hear from us about coordinating field visits and completing safety planning. Many of those communication outreach efforts will come from someone new – Melissa Nicolli joined the UCBN team late last fall. Melissa is featured in this newsletter (see page 7), and is looking forward to meeting our colleagues as she leads a field crew in various vegetation monitoring projects.

Another, even newer face among the UCBN I&M-ers is Declan, who tips the scales at over 9 pounds and is quickly growing toward 2 feet long. Devin Stucki and his wife, Emerald, welcomed Declan into the world on March 9th. A big congratulations to Devin and Emerald! And congratulations also to the UCBN team and our collaborators in long-term American pika monitoring, who were awarded the 2018 Science and Management Partnership Award by

the Inventory and Monitoring Division. This award recognized UCBN staff (Tom Rodhouse, Devin Stucki, and Jeff Lonaker) and park staff at Lassen Volcanic National Park (led by Michael Magnuson), at Lava Beds National Monument (led by Jessica Reid), and at Crater Lake National Park (led by Sean Mohren) for developing and sustaining a pika monitoring program that is revealing the strong potential for low-elevation lava-dominated landscapes to serve as refugia for pika populations that are highly sensitive to impacts from rising temperatures. The award also recognizes the contributions of an important partner – Oregon State University's Human and Ecosystem Resiliency and Sustainability (HERS) Lab. The American pika is a charismatic creature, and our monitoring recently caught the attention of the local media (see the article in the Bend Bulletin at <http://www.bendbulletin.com/localstate/5967828-151/tracking-pikas-in-hostile-territory>).

Another collaboration that con-

tinues to grow is the bat monitoring initiative that engages the UCBN, particularly Tom Rodhouse, and several partners, including the HERS Lab, numerous NPS parks and other I&M Networks, and other agencies, state and federal. In the cover story of this newsletter, Tom presents the background and objectives of this ambitious project. This winter we were able to work with Michael Durham, a Portland-area videographer, to develop a short video on bat monitoring efforts across the Park Service. Keep an eye on our UCBN website, where we will share that video once it's completed.

As always, the UCBN staff is excited for another season of field work. Kraig Esswein, who returns for another stint on the UCBN field crew, provides a description of robber flies in the Featured Creature section of this newsletter. Keep an eye out for our UCBN staff in the parks, and be sure to ask about their projects and interesting observations.

City of Rocks National Reserve Landscape



Introducing the Northwest BatHub

Tom Rodhouse - UCBN Ecologist

Welcome to the Northwest Bat Hub (<https://osucascades.edu/HERS/northwestern-bat-hub>), a new center hosted by Oregon State University-Cascades Campus for collaborative monitoring and study of bat populations across the northwestern US, including the Upper Columbia Basin Network and beyond. We have been fortunate in gaining support for this venture from NPS Biological Resources Division as well as from outside partners including the US Fish & Wildlife Service, the US Forest Service, Bureau of Land Management, and Oregon Department of Fish & Wildlife. We continue to grow this support and expand our geographic scope and capacity. We now have a genuine bat expert, Roger Rodriguez, to lead the Bat Hub, a GIS and data management assistant, Diana Popp, and statistical support from our US Geological Survey colleague Dr. Kathi Irvine. Last summer the Hub launched its first region-wide field survey with two stalwart technicians, Erin Beuttenmuller and Trent Hawkins. This year we are busy positioning our resources to enable two crews to deploy across Oregon and Washington. We are working with Idaho Department of Fish & Game to outline how we can expand field survey support in Idaho.

The Bat Hub was established to provide a center of gravity for interagency collaboration for the study of bat populations which

are at great risk due to white-nose syndrome, wind energy developments, and accelerated environmental changes. Our focus is on standing up the North American Bat Monitoring Program (NABat) in the region, but we hope to be able to support other kinds of projects and to pursue other kinds of questions about bat population persistence and extinction risk in the future. To date, we have integrated John Day Fossil Beds and Crater Lake into the Oregon NABat surveys, with a keen eye on pulling Lake Roosevelt into the Washington start-up effort this summer. Our primary methods of survey involve the deployment of remote automated bat detectors to locations in parks and on partner lands during the summer to record bats. We then use those recordings to determine species presence and activity patterns. We use this information across the entire region to develop models and maps of distribution and risk. Bats are so highly mobile that this approach provides much-needed regional context to understand the status and trends of bats within individual parks. It doesn't help us much to focus only on bats within a single park boundary without knowing what is going on outside the park as well.

Future projects that we are trying to develop now include assisting parks with specific bat-habitat management questions that can also yield survey

data compatible with the NABat program – two birds with one stone, so to speak. In 2017 we helped Crater Lake and Lassen Volcanic National Parks implement surveys of bats in forest fuels reduction (thinning) project areas, with a long-term goal of evaluating how bats respond to that activity. We nested those projects within the regional NABat framework. Another project we are trying to launch will engage citizen scientists to help us survey for the rare and elusive spotted bat, which is hard to record or capture using traditional methods because it flies so high over canyon walls. An alternative is to target rim rock and cliff areas for conducting listening surveys, without the need of fancy technology. It turns out that spotted bats produce calls audible to the unaided human ear. We can turn this in to a great opportunity to engage our visitors to help us collect scientific data and to teach them about bats and park stewardship.

Stay tuned as we advance these goals and please visit us on the web at <https://osucascades.edu/HERS/northwestern-bat-hub>.



© Michael Durham / www.DurmPhoto.com

White pine monitoring highlights from 2017

Devin Stucki - UCBN Vegetation Ecologist



Limber pine (*Pinus flexilis*) at Great Basin National Park.

The UCBN continued long-term white pine monitoring in 2017, assisting the Mojave Desert Network with a pilot monitoring effort at Great Basin National Park to evaluate limber pine and bristlecone pines, and beginning the third round of plot revisits since plot establishment began in 2011 at Craters of the Moon National Monument and Preserve (CRMO).

While conducting limber pine monitoring in CRMO, Douglas-fir tussock moth (DFTM) caterpillars were discovered on trees within a monitoring plot. DFTM is a native tree pest that causes damage to Douglas-fir trees, as well as other true firs and spruce.

The defoliation caused by DFTM can weaken or even kill affected trees when DFTM populations are high, and the cyclic outbreaks can last for several years. Management once an outbreak has begun can be difficult and expensive.



Douglas-fir tussock moth caterpillars, cocoons and flightless female observed at CRMO.



Douglas-fir tussock moth caterpillars.

The UCBN notified CRMO resource management about the find, which had been recorded only once in the park several decades ago. As time went on, defoliation caused by the DFTM became apparent on Douglas-fir trees within the affected stand and could be seen from the highway near the visitor center.

Local forest health officials with the USFS visited CRMO and evaluated the outbreak. They predicted that many of the already defoliated trees may not survive another outbreak year due to the levels of defoliation that had already occurred. They also predicted that other stands in the area may be susceptible to DFTM outbreaks in the future.

The UCBN worked with CRMO to quickly develop monitoring methods that can be used to quantify defoliation of trees during an outbreak year, and also track live and dead trees between years so that overall mortality can be assessed following an outbreak. The UCBN and CRMO resource management worked together to establish monitoring plots in the affected stands. These plots will be revisited and more plots may be established in other stands in the future to further assess DFTM presence and outbreak severity.



Biological technicians setting up plots for limber pine monitoring at CRMO.

Turning real-time field data into online maps

Jeff Lonneker - UCBN Data Manager

As technology changes, so does the UCBN I&M program. The majority of our protocols take advantage of digital data entry using either field computers (small weatherproof laptops) or smaller field data collection devices (field tablets). Some of the data we collect is quite complex and requires a robust and detailed 'front-end' database which allows for many fields and variables to be collected. However, some of our data collection is minimal and we have taken advantage of lightweight field tablets running a software program called Pendragon.

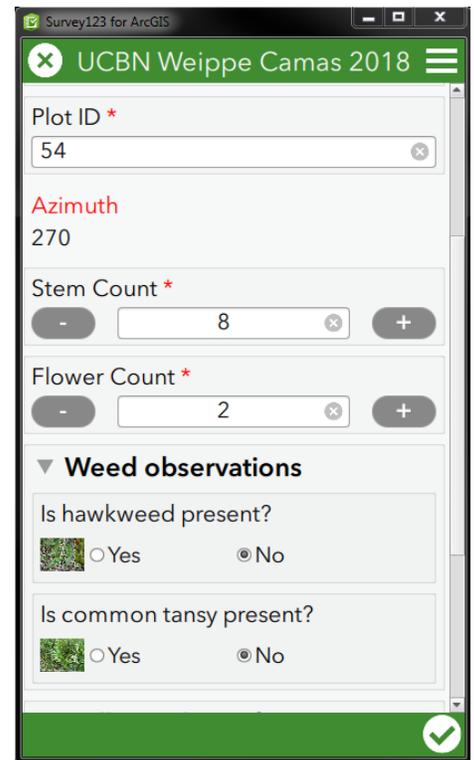
Pendragon forms allow quality assurance (QA) to be designed into the forms ensuring erroneous entries are caught and adjusted before they make it into a final dataset. For instance, if someone tries to enter a 300 foot tall limber pine at CRMO, they will be prompted to adjust that to a more reasonable value.

Over the next few field seasons the UCBN I&M program will be transitioning away from Pendragon forms and converting over to a new data collection application, from the Environmental Systems Research Institute (ESRI), called Survey123 and Collector for ArcGIS. This switch will have multiple benefits. Some of those benefits will help meet departmental IT requirements, while others will provide added value to our datasets in the form of dynamic

real-time mapping during survey events and cloud backups of datasets. To the first point, these two programs are applications that can be run on just about any cell phone, tablet or laptop. They can also run on most mobile platforms including Android, iOS and Windows. So, as IT hardware requirements change our data collection forms will not.

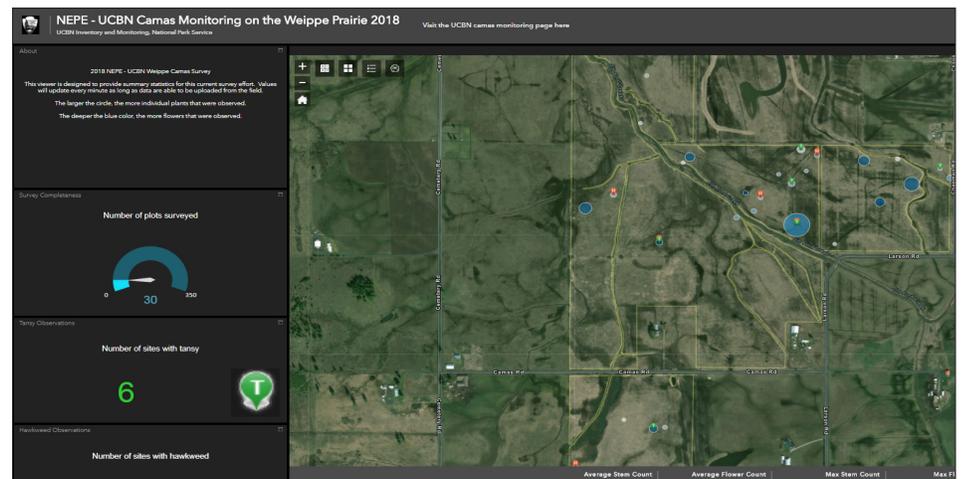
Real-time visualization of survey efforts will allow park staff to participate vicariously. As a crew collects data and then clicks 'submit', those data are immediately ingested into an online database and displayed on a map. This map can display densities of camas or penstemon, highlight noxious weed observations or just about anything we can dream up.

Let us know if you would like to receive links to these maps. We would be happy to have you follow our data collection in real-time. In the meantime, explore our invasive weed viewer here <https://arcg.is/qX4mn>.



Above: Mobile data entry form that will be used to collect camas data on the Weippe Prairie during the 2018 field season.

Below: Map showing real-time camas lily data collected, including number of plots surveyed, average stem count, average flower count and presence of invasive species.



New faces in our network

Melissa Nicolli - Vegetation Ecology Field Crew Lead, Upper Columbia Basin Network

Melissa Nicolli is the new Vegetation Ecology Field Crew Lead at the Upper Columbia Basin I&M Network. She grew up in Saint Louis, MO with parents who were extremely interested in the outdoors. From an early age, family vacations were spent visiting National Parks across the Western US. This sparked her love for the outdoors and led to her education in conservation.

She attended Southeast Missouri State University receiving a BS in Wildlife Biology, with an emphasis in Botany. During her undergraduate career, she worked with some very inspiring professors, who helped her discover her love for field work and desire to live in the Western US. This desire was only intensified after a season working for the US Fish and Wildlife Service at Hart Mountain National Antelope Refuge in Southeast Oregon.

After graduating in 2013, she worked at Craters of the Moon NM&P. This is where she was first introduced to the Inventory and Monitoring Program and got to work with some great ecologists, like Devin Stucki! That summer she helped the UCBN collect data on limber pine and pika monitoring.

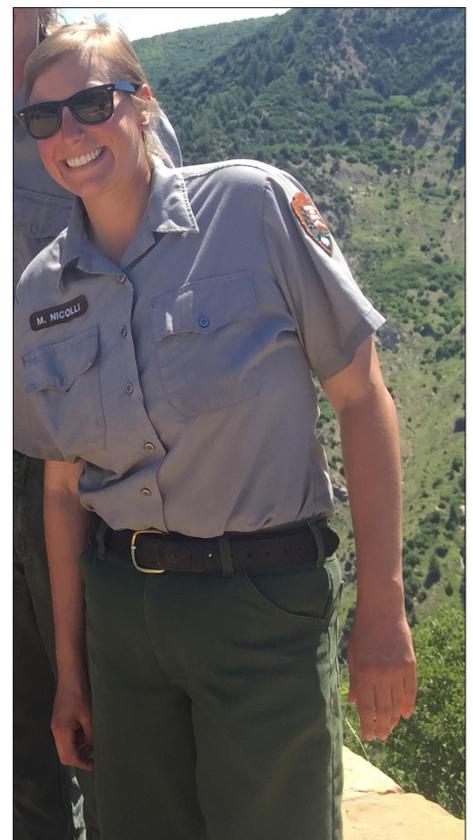
Melissa continued her career working for the NPS, with exception of a winter doing prescribed burning for the Missouri Department of Con-

servations and another winter of environmental education for the Missouri Botanical Garden. Besides spending a hot and humid summer at Shenandoah NP in VA, all of her other federal positions have been based West of the Rockies. She worked as a rare plant crew lead for several seasons at Mesa Verde NP where she really honed her botanical skills and started to take a deeper interest in monitoring environmental impacts on plant species success.

Following several inspiring summers at Mesa Verde, Melissa joined the Chihuahuan Desert I&M Network where she greatly expanded her grassland and desert succulent identification skills. She worked on the upland vegetation monitoring and spring water quality monitoring crew. During this work she got to see some of the most remote and untouched locations in parks like Big Bend NP and Guadalupe Mountains NP.

Most recently, Melissa spent a summer season working as a terrestrial vegetation monitoring crew lead for the Klamath I&M Network. She took on a leadership role in a very new environment with most of the work taking place among towering giants in Redwood State and National Parks. She also experienced a nostalgic feeling for her time at Craters of the Moon while working in the similar terrain of Lava Beds NM.

Melissa is beyond excited to be working for the Upper Columbia Basin I&M Network. She is looking forward to working with some old and new faces in familiar and unknown parks. She is also very pleased to be living in beautiful Bend, OR with an added bonus that she already has family and friends who live there. Her recreation interests include backpacking, mountain biking, skiing, and attending live music events, making Bend the perfect destination.



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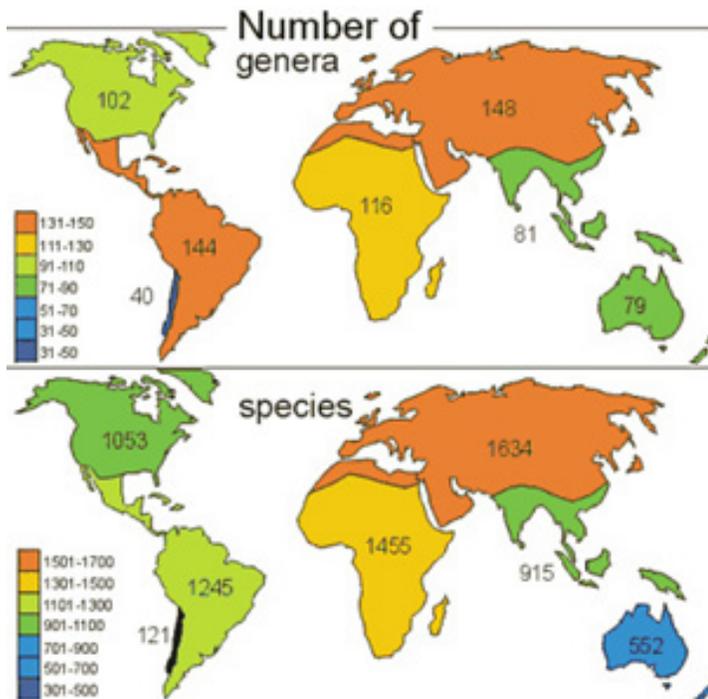
Featured Creature - Robber Flies

Kraig Essewin - UCBN Biological Technician

Robber flies are a diverse group of flying insects that make up the Asilidae family. Asilids are found worldwide with over 7,000 species described; in North America alone there are over 1,000 species. Adult lengths range from 3 mm to greater than 50 mm, with an average of 9-15 mm. Robber flies are found in many environments but they but they prefer arid and sunny habitats like the sagebrush steppe. Though species dependent, most robber flies are not active if temperatures fall below 20°C (68°F) and activity is greatly reduced in overcast weather. Females deposit eggs in soil or onto plants and asilid larvae predates upon other larvae, eggs or soft-bodied insects. Larvae often survive winter and pupate underground, emerging as their adult forms in late spring and early summer.



Robber fly eating a cicada in John Day Fossil Beds National Monument. Photo by Kraig Essewin.



Distribution map of Genera (top) and species (bottom) of Robber Flies.

Species information obtained from:

http://entnemdept.ufl.edu/creatures/beneficial/flies/robber_flies.htm
http://www.normanlavers.net/index.php#what_is_a_robber_fly
<http://www.geller-grimm.de/general.htm>

Robber flies are voracious predators that feed upon other insects including wasps, bees, dragonflies, grasshoppers, and other flies. Some species of asilids select preferred prey, but most are considered opportunistic hunters, their diets often depending on prey hatchings and local availability. Asilids are often broken into groups by hunting preference; some hunt from the ground, whereas others hunt from elevated vegetation. Most species patiently wait until prey flies by and then using superior speed and agility, capture prey mid-flight. Robber flies, like all true flies, have two wings rather than the four wings found on most flying insects. Instead of a second set of wings, asilids have evolved a set of halteres, the insect version of a gyroscope, which act to stabilize flight and allow acrobatic flight abilities. Once captured, prey is injected from the hypopharynx (mouth parts) with saliva that contains neurotoxic and proteolytic enzymes. These enzymes rapidly immobilize prey and liquefy its interior so that the asilid can suck out the remains. These fierce predators are important for sustaining ecological balance. They can be beneficial in gardens by eating harmful insects, but their diverse palate means that valuable garden insects are also at risk.