

RAE SELLING BERRY SEED BANK & PLANT CONSERVATION PROGRAM



Fall 2013 Newsletter

From the Director



*Dr. Ed Guerrant visiting Western
Australia's Threatened Flora Seed Centre*

The dry summer ended with a deluge in September, the days are getting cooler, leaves are changing color, and through it all our work to conserve our state's and region's rare plants continues. In this newsletter, we highlight some of our summer activities, and people who have contributed to our conservation work.

In one article, we take a look at our two latest high school conservation interns, Emily Hodel and Evan Muschler, who came to us again this summer through the Saturday Academy's Apprenticeships in Science and Engineering program. We highlight what some might see as an unexpected partnership with the Department

of Defense (DoD), in a multi-year project to collect seeds of rare plants from Camp Adair, in the Willamette Valley near Corvallis.

It may come as a surprise that some of the best patches of reasonably undisturbed habitats left can be found on DoD and other federal properties. To be sure, some land is heavily used, highly polluted and otherwise degraded, but buffer zones and other more lightly used areas have provided refuge for many rare species. Perhaps this is best exemplified in our region by the Hanford Nuclear Reservation (Dept. of Energy) in Washington, in which the core working areas are heavily impacted. But since the Hanford site was acquired by the federal government in 1943, peripheral areas have recovered to the point they represent some of the most diverse sagebrush steppe habitat left. Nearby, the Army's Yakima Training Center supports one of only two areas left in Washington with significant sage-grouse populations, and in recent years more have been seen at Hanford.

In another article, Kris Freitag looks at some of our seed collecting work with the Bureau of Land Management and Seeds of Success, and how it is connected to sage-grouse conservation efforts across much of the Western interior of this country. Although our conservation work focuses on seed plants, our partnership in this effort illustrates the interconnectedness of diverse organisms.

I'll finish this note with a follow up on a couple of projects covered in last fall's newsletter, computer mapping and our relational database. Based on the strong foundation set up by volunteer Kara Manseau, we have been upgrading the maps on

MAKING A DIFFERENCE

VOLUNTEERING

Your support helps us to do our best work.

Please call Kris at (503) 725-2468 or email kfreitag@pdx.edu if you would like to support our program.

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Stay up-to-date with the Seed Bank on our Facebook page!

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our web page to show both the general locations where our rare plant collections were made, and also the general extent of the known range of each species. Another ArcGIS volunteer, Adam Vogt, spent much of the summer extending Kara's work, and is currently working on ways to automate our map making capabilities. Though nowhere near as challenging as the launch of the Obamacare web site, getting our relational database up and running has been more challenging than originally thought. That said, we are in the early stages of populating the various tables with our data, and we look forward to a full launch in the not too distant future. It will take a lot of work to get our existing data in Excel files formatted correctly to import into our database, and much of it is being done by volunteers. If any of you would like to assist us in this or other tasks, you are most welcome; you will be volunteering your time in meaningful work.

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ASE Interns and Rare Plants Work Well Together



*Emily Hodel and Evan Muschler
at Camp Adair*

For the second year at PSU, and the seventeenth year overall, we were fortunate again to be able to host and mentor high school students through Saturday Academy's Apprenticeships in Science and Engineering (ASE) program.

Active in the outdoors, with a calm intelligence and attention to detail, Emily Hodel came to us from Lincoln High School, where she is now a senior. Her work as an Outdoor School counselor, a peer mentor and tutor showed in her no-nonsense attitude and mature interactions with us, our volunteers and her fellow ASE intern. Evan Muschler is now a junior at Lake Oswego High School. His very active mind often led the charge as we went throughout our day. His initiative, sense of inquiry and energy seemed to blend very well with Emily's calmness. Within the first few days they found three unique things they had in common and formed an easy and enjoyable bond.

The vagaries of funding opportunities and contract timing meant that our ASE interns did not get out in the field as much as some previous interns have done. The summer of 2012 was exceptional in that regard, with considerable time spent collecting seeds. Our contracts largely dictate the nature of the tasks we do to fulfill our mission. Regardless of what contracts we have, much of our work typically has us spending days leaning over a keyboard or a microscope taking data on germination tests, working with seeds, words and numbers. But some of our time is spent working in the field, and we were glad that we were able to afford them those opportunities.



*Nelson's checkermallow,
Sidalcea nelsoniana*

These excellent young people took any and all work asked of them this past summer, diligently filling in spreadsheets and worksheets, learning how to make, and making

**"Hero for the Planet" new Chair of
Center for Plant Conservation**

**Seed Banks "Critical" to Saving
Plant Species**

**Scientists Revive 400-Year-Old
Frozen Plants**

CONTACT US

Seed Bank Director, Ed Guerrant
PhD
ed.guerrant@pdx.edu
(503) 725-2456

Laboratory Manager, Kris Freitag
kfreitag@pdx.edu
(503) 725-2468

Location:
SRTC Room B1-81
1719 SW 10th Ave
Portland, Oregon 97201

Mailing address:
Environmental Science &
Management
PO Box 751-ESM

Fax:
(503) 725-9040



Kincaid's lupine, *Lupinus sulphureus* ssp. *kincaidii*

digital maps, photographing seeds, and cleaning hundreds of seed accessions. But they also were able to spend time with the plants where they lived—to get a better feeling for their value and the threats they face.

Conservation work can make for unexpected collaborations. The [Department of Defense's Legacy Resource Management Program](#) for the past three years has funded our collections from two rare plants. Populations of *Sidalcea nelsoniana* (Nelson's checkermallow) and *Lupinus sulphureus* ssp. *kincaidii* (Kincaid's lupine) at Camp Adair, outside Corvallis, OR are under active management. Emily, Evan and Kris played a part by assisting in marking plants at bloom, monitoring development and collecting and cleaning seeds when mature. The cleaned seeds went to the National Center for Genetic Resources Preservation in Fort Collins, Colorado for storage.

We also encountered another rare plant, one that is most at home in rural Clackamas County. In May, Kris noticed a blooming specimen of *Delphinium leucophaeum*, the pale larkspur, on a property near her home. The interns were able to participate in scouting out and collecting from a previously unknown population of this beautiful plant. They also were largely responsible for processing the 52 accessions of seed we collected.



Pale larkspur, *Delphinium leucophaeum*

Emily and Evan brought keen minds and lots of positive energy and elbow grease to our conservation work. We miss them, and wish them well in what are certain to be successful careers in science. Thanks to you, the friends of the Rae Selling Berry Seed Bank, who gave to our Annual Appeal that funded these internships, we have had another opportunity to teach, learn and laugh with two wonderful young people.

Here are examples of photographs that Emily and Evan took of some of the seeds that they cleaned this past summer:



Crater Lake rockcress, *Boechera horizontalis*



Nez Perce mariposa lily, *Calochortus macrocarpus* var. *maculosus*



Smallhead goldenweed, *Pyrocoma liatrifomis*

Greater Sage-Grouse Focus of Conservation Efforts

Kris Freitag



Greater sage-grouse, *Centrocercus urophasianus* (Image: Nat'l Park Svc)

Out in the eastern half of Oregon and across plain and desert from Montana to North Dakota and Colorado to Nevada is a bird that has become iconic of the great open spaces of the West. Like the passenger pigeon before it, whose range once spread over eastern North America, the greater sage-grouse is in decline. Unlike the pigeon, whose value was fully appreciated only after it was too late to prevent its extinction, the sage-grouse's plight has mobilized organizations and individuals across the country.

The greater sage-grouse (*Centrocercus urophasianus*) is the largest grouse in North America. It is a source of fascination to the average person because of its striking appearance during its elaborate courtship ritual, which takes place in special arenas called leks. The strutting, displaying male grouse is now a familiar image. Sage-grouse require a mix of sagebrush (its primary food) and forbs, open areas and areas with good cover for nesting and feeding. Its requirements are essentially healthy sagebrush steppe, the desirability of which both wildlife managers and ranchers can agree on. Residential construction and energy development have greatly reduced suitable habitat for the sage-grouse, as well as associated plants and animals.

In 2010, the US Fish and Wildlife Service decided that the grouse would be categorized as "warranted, but precluded," preventing its listing under the Endangered Species Act (ESA) until 2015. The hope is that the concentrated efforts of public and private organizations already dedicated to preserving habitat and enhancing populations will have demonstrable results, preventing the need for ESA listing. Results would not so much be rebounding populations, as short-term rebounds are not necessarily indicative of sustainable recovery, but more the development of sound--and implemented--strategies, leading to improved habitat.



Healthy sagebrush habitat (Image: Matt Lavin)

The Bureau of Land Management (BLM), one of the largest public land holders (with the US Forest Service) of greater sage-grouse habitat, has been a key player for many years before the current increased focus on sage-grouse preservation. Since 2001, the BLM has also been the federal partner with the Royal Botanic Gardens, Kew, in the Seeds of Success (SOS) program. With the expiration of that 10-year partnership in 2011, the BLM in Oregon is focusing the SOS program's seed-collection funding in the state onto habitat improvement for sage-grouse.



Threetip sage, *Artemisia tridentata* (Image: Stan Shebs)

So our SOS collecting activities in 2014 will emphasize native plant species important to the grouse for food and cover. Banking large quantities of ecologically important seeds with the grouse in mind will also provide a resource for all local restoration activities. As federal agencies and active and powerful partnerships, such as the [The Sage Grouse Initiative](#), direct more efforts toward imperiled sagebrush habitat, more and more such resources will be available and needed.



*Sage-grouse neighbor, jackrabbit
(Image: Matt Lavin)*

Much of our collecting in 2014 is likely to occur in BLM's Burns District and eastern Prineville District, part of Oregon's sagebrush steppe, rich in agriculture and recreation, plants and wildlife. We are excited to be part of this great effort, whose successes—or failures—will determine so much more than the fate of one beautiful and unique bird.

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Berry Volunteers Connect



Volunteer Adam Vogt

Adam Vogt worked diligently with the seed bank for two months this summer as our GIS volunteer. He helped our interns learn to make maps and work with ArcGIS. He also investigated new ways of doing what we're doing and expanding into new areas. We enjoyed his intuitive, insightful approach to life and relationships. Alas, he left us to finish his degree at University of Oregon, and we are very glad for him. He has continued to support our program from afar, by making his work for us into a project in his advanced GIS programming course.

Volunteer librarian **Audrey Moser** was a member of The Berry Botanic Garden for years. She recently catalogued her 300th book in our lab library. As she eloquently puts it:

Why I volunteer--

Because I can

Because I must

To keep my mind functioning,

To keep being challenged,

And to keep my body moving.



Volunteer Audrey Moser

Why I volunteer at the Rae Selling Berry Seed Bank--

Because it is fun,

My cohorts (students & other volunteers) are friendly,

The supervisors are appreciative, kind, respectful and flexible.

and I feel worthwhile and valued.

Because I love and value plants;

I never want to live in a world without them;
The mission meets my values;
The work I do here supports the mission
and needs to be done.

Therefore, I will continue "to bloom where I am planted."

Alaina Emde joined us during winter term and helped us with enthusiasm and attention to detail for several months, even though she was actually attending Lewis & Clark College! The drive was a lot of extra time for her, but she wanted to experience work with plants and conservation, to decide what is next for her. She is now in Bellingham and we wish her well!



Volunteer Alaina Emde

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Making a Difference - Private Support

We have a special acknowledgement to make. Evan Muschler, one of our summer high school interns, took the initiative to make a connection with the Hillsboro branch of the microscopy company, FEI. Jessica Riesterer with FEI agreed to donate to the seed bank electron micrographs of the seeds of 12 of our rare plant species. We look forward to publishing those images in our newsletter and on our web site when they are completed. Thank you Jessica, FEI and Evan!



Private gifts and grants make all the difference in the life of our program. You can go directly to our [giving page](#), or for more information on ways to make a gift, please contact Scott Shlaes, Director of Development for Sustainability Initiatives, at 503-725-2998 or shlaes@pdx.edu.

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Upcoming Events

Finding Ourselves in Nature: The Human Connection to the Natural World

Dr. Susan Clayton
Wednesday, October 30, 7:00 p.m.
Hollywood Theater
4122 NE Sandy Blvd
Free admission

A conversation with Dr. Susan Clayton, Whitmore-Williams Professor of Psychology at the College of Wooster. Humans need and value nature. But why? How does nature support symbolic and personal values that make up our very sense of ourselves? Join Dr. Clayton to explore the human psychological relationship to nature, and how people and human behavior might be affected by



environmental changes brought about by climate change and population growth. (Image: USFWS)

[More details>>](#)

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Nature's Trust

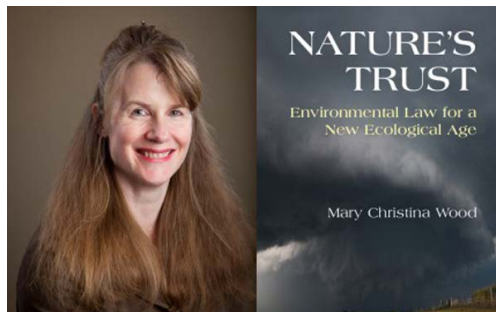
Mary Christina Wood

Tuesday, December 3, 12:00 p.m.

World Affairs Council of Oregon (Madison Room)

1200 SW Park Avenue

\$10 general; \$5 WAC members



(Image: Worldoregon.org)

In the face of global ecological crisis that climate change is accelerating, what can ordinary citizens do? Environmental law expert Mary Christina Wood explores new approaches to global climate change policy. Based on fundamental principles of sovereignty, rooted in ancient law of both the indigenous and industrialized worlds, Wood argues for a revolutionary and controversial new approach to “atmospheric trust litigation” that would hold governments morally accountable to protect our natural resources on behalf of the beneficiaries—the citizens of today and tomorrow. Could Nature's Trust laws be a road-map for citizens empowerment to take action? Could this approach truly stave off further environmental degradation? Can we afford not to try?

Register at Worldoregon.org

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Sixth Western Native Plant conference

Monday-Wednesday, December 9-11

Heathman Lodge

Vancouver, Washington

Current topics in propagation, conservation, restoration and policy. Sponsored by Western Forestry and Conservation Association.



[More details>>](#)

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The Wide World of Seed Banking

Saving seeds for future use is as old as human civilization and as timely as today's headlines. Our focus has been on rare and endangered species, but the world of seed banking is far more expansive. It probably began with storing seed for next year's crop, and agricultural plants are likely still the most common focus of seed banks around the world. But recent decades have seen an explosion of seed banking of a

much wider array of plants for many different purposes. In this section, we seek to provide a glimpse of the wide and wonderful world of seed banks, often in their own words.



In Our Region: Desert Botanic Garden

The Desert Botanical Garden Research Department, through the Desert Plant Research Center, seeks to understand and conserve the desert's unique plant life, and reveal intricate relationships that exist among the plants, environments, and people in their desert region. They gain knowledge through investigations conducted in

four areas of research: Conservation Biology, Plant systematics and evolution, Ecology and Ethnobotany. "Gaining this understanding betters our chances to reverse the current trends of plant and animal extinctions, ecosystem degradation, and the shrinking capacity of some environments to support human populations."

[Continue reading at the Desert Botanical Garden site>>](#)

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In Our Country: National Center for Genetic Resources Preservation

Vision: Excellence in the preservation and security of genetic resources for use by current and future generations.

Mission: To acquire, assess, preserve and provide a collection of genetic resources to secure the biological diversity that underpins economic and environmental sustainability of agriculture through research, stewardship, and communications.

Guiding Principle: The National Center for Genetic Resources Preservation pursues its strategic objectives by strengthening coordination with public and private sectors. The Center recognizes that genetic resources are global assets and will develop communication, outreach, training and technology transfer activities accordingly.



The seed collection program is built primarily on the cooperation of private landowners and the hard work of more than 100 trained volunteers. Volunteers in the field who can watch and monitor the plants make it possible for the project to collect in more places at once. Many landowners get excited about the project and become seed collectors themselves. Another key part of the project is outreach and education, which emphasizes the importance of a diverse native plant population. Native plants play critical roles in the ecosystem, providing wildlife habitat, contributing to water quality, flood management and soil stability.

[Continue reading at the National Center for Genetic Resources Preservation site>>](#)

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Seeds of Australian flora

In the World: Australian Seed Bank Partnership

"We have created, for the first time, a formal network of nine conservation seed banks and five other flora-focused organisations bridging the gap between policy makers, researchers, seed collectors and on-ground conservation and restoration activities." So says the web site of the Australian Seed Bank Partnership. Multiple seed banks, governmental and non-governmental

organizations provide a thoroughness of institutional plant conservation coverage not currently seen in the U.S. The Threatened Flora Seed Centre, New South Wales Seed Bank and Tasmanian Seed Conservation Centre are just a few of the seed banks joining to protect natives, and especially endemics of their geographical regions.



Dr. Andrew Crawford with stored seed at TFSC



Native Australian orchid, Thelymitra sp.



Weathered Banksia "cone"

Above are images from Ed's trip to Western Australia. See "From the Director" for a picture of Ed with a flowering Australian endemic, *Banksia* sp.

[Continue reading at the Australian Seed Bank Partnership site>>](#)

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Stay informed on upcoming events and news by regularly visiting the [Rae Selling Berry Seed Bank web site](#).

This e-newsletter is a publication of the Rae Selling Berry Seed Bank & Plant Conservation Program at Portland State University