

RAE SELLING BERRY SEED BANK & PLANT CONSERVATION PROGRAM



Spring 2016 Newsletter

From the Director



Director Ed Guerrant

We are again in the midst of a beautiful Oregon spring, with flowers in profusion and the winter behind us, and we're forging ahead. It has been a busy time, mostly working to finish ongoing long term projects. One of these is an approach I developed to assist the BLM to prioritize for seed collection some 636 species in Oregon and Washington designated as sensitive and strategic. I outlined the project in the last newsletter and follow up with a short piece in this issue.

We were again fortunate to benefit from the **Gilbert and Laurie Meigs Conservation**

Education Scholarship Endowment fund. Two Environmental Science and Management undergraduate students, Meagan Burns and Kristen Meyer, were awarded the scholarship for winter quarter. Both provided critical support, entering literally decades of seed germination experimental data into a form that the relational database (another long term project) can use. Though previously analyzed, this data will now be usable as we search for broader patterns.

Danielle Packard, a student in the Geography Department, is volunteering with the Seed Bank and receiving academic credit for doing an exciting project that will be of great value to us. She has been assembling a broad array of Geographical information System (GIS) computer mapping data on soil types and properties, which she will then match to the sites from which our seeds were collected. One of the wonders of GIS is that, for example, point locations of collection sites can be matched with areas on other data sets, in this case of soil properties, and then that information can be extracted. Knowing which species and collections came from which soil types will help guide us in seeking additional sites of those species.

I would like to thank all of you who responded to our year end annual appeal, through which a record total was generously donated. It is much appreciated and very important. Financing our work has always been and is still a serious challenge, and has been becoming more so. For example, the Federal Government, which had been a primary source of support for maintaining biological specimen collections, has drastically cut back spending, leaving many important collections without adequate funding. Again, thank you to all who contributed to our annual appeal.

MAKING A DIFFERENCE

VOLUNTEERING

Join us in monitoring rare plant populations in Oregon! **Citizen's Rare Plant Watch** sites are within 2 hours drive of Portland, in a variety of habitats. Small groups will be led by an experienced leader, but we will have much to teach each other. Though we provide "on-the-job" training, we highly recommend our April 24 training session, from 1-5pm at the **Happy Valley New Seasons Market**, who have generously made their community room available to us for free!

Please call Kris at (503) 725-2468 or email kfreitag@pdx.edu if you would like to support our program, provide a valuable service and have some plant-geeky fun.

MAKE A GIFT TODAY

GIVE ►

Have you included or considered including the Rae Selling Berry Seed Bank in your estate plans? If so, or if you would like to learn more, please contact Scott Shlaes, Director of Development for Sustainability Initiatives at [\(503\) 725-2998](tel:(503)725-2998) or shlaes@pdx.edu

Stay up-to-date
with the Seed

I would like to finish by acknowledging the tremendous value of volunteers—they are essential for our work, and that of many other organizations. There is always meaningful (though sometimes a bit tedious) work to be done, much of which can be done by people without specialized academic training. A passion for the environment and a desire to contribute your time and energy is all that is required. If you are interested in volunteering to do something meaningful, please contact us. We can always use the assistance.

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Berry Intern in the Capital

Lindsey Riibe



Lindsey at Tidal Basin

In October, while finishing up my first **Conservation and Land Management Internship** with the Rae Selling Berry Seed Bank, I was asked to present my **Seeds of Success** seed collecting adventures on Steens Mountain at the Bureau of Land Management state botanists meeting. I hadn't thought much about what I was going to do once my internship ended, but assumed it would require a million job applications via

USAJobs.gov and scouring the internet for the best plant conservation grad school programs. But for now, these daunting tasks have been put on hold.

It was at the botanists meeting in Oregon that I met the Plant Conservation Lead for the Bureau of Land Management, Peggy Olwell, and decided that I would move to Washington, DC for a second CLM internship. So, that is where I am now.

Working at the Washington Office in DC has been quite the change of work environment—from the remote solitude of Harney County to the hustle and bustle of the capital city. Although my daily tasks at times feel far removed from the field botany I so enjoyed, the work happening in DC is what keeps all those botany positions funded and the native plant materials programs running.



Claytonia virginica at DC's Rock Creek Park

Currently, most of the energy within the Plant Conservation Program is focused on implementation of the National Seed Strategy for Rehabilitation and Restoration 2015–2020. Involvement in this effort has me communicating with representatives from 12 Federal Agencies such as US Fish and Wildlife Service, National Park Service, US Forest Service, and US Geological Survey, as well as with the Smithsonian Institution and the United States Botanic Garden.



Bank on our Facebook page!

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Oxalis in the city, by Lindsey

The National Seed Strategy has been a cooperative effort since its conception, and it is inspiring to see collaboration between

agencies at this level. With lands protected/managed by so many different agencies and organizations across the country, collaboration is essential in restoring the health and function of our ecosystems. Before beginning my internships through the Chicago Botanic Garden, I never would have thought the Bureau of Land Management was at the front of such concerted efforts for plant conservation.



Cacti at the US Botanic Garden

I have also been involved with the Plant Conservation Alliance (PCA), a joint partnership among 12 federal agency members and over 300 non-federal cooperators. In addition to its work on the National Seed Strategy, which was released in 2015, PCA also developed the National Framework for Progress in Plant Conservation in 1995. I am thrilled to be working with such a radical force for botanical justice!



Viola in a DC lawn, by Lindsey

I must admit I miss my home, the Pacific Northwest, but I'm looking forward to the remainder of my time in Washington, DC. I am extremely grateful for the opportunities my CLM internships have afforded me thus far, and I am honored to be working with such an effective plant advocate and fierce feminist, my mentor Peggy Olwell.

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Prioritizing Species for Collection: Update

Ed Guerrant

In [last fall's newsletter](#), I described a project I have been working on to assist the Bureau of Land Management in Oregon and Washington to

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*Widespread in the west,
Allium bisceptrum (twincrest onion)
is still considered sensitive*

answer the question, "Once you have a list of species to consider, how do you go about prioritizing them for collection?" I have been designing a ranking system for the 636 taxa (i.e., species, subspecies and varieties, in this article termed "species") that have been designated as Sensitive and Strategic Species (SSS) in Oregon and Washington. That project is now completed, and it has turned out to be even more interesting

than I anticipated.

First, there is no one "correct" way to prioritize species. I chose to evaluate and rank each by a variety of criteria. These criteria can be viewed individually, in pairs, or all together to inform collection priorities.

Perhaps the most basic criterion concerns the species' total geographic range: Is a species limited to Oregon or Washington, or to both and no other state, or is it also found in other states or Canadian provinces, and if so, how many and which? It turns out that these species are found in from 1 to 61 states and provinces. That surprising fact begs the question: Why should a species found in 61 states or provinces be considered Sensitive or Strategic by the BLM?

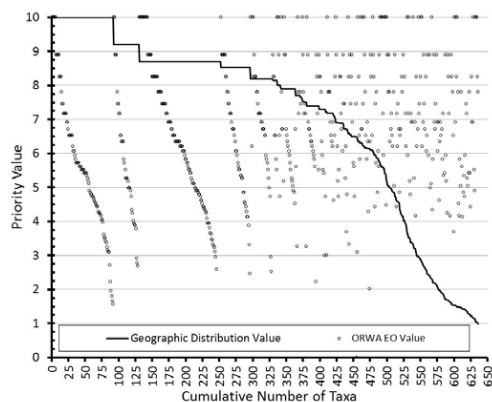
That answer is addressed by the next criterion: the number of populations of those species found in Oregon and Washington. Information about population numbers, size, condition and so on comes from the natural heritage programs in Oregon ([Oregon Biodiversity Information Center or ORBIC](#)) and Washington ([Washington Natural Heritage Program or WNHP](#)). ORBIC and WNHP keep track of all known populations, which they designate 'element occurrences,' or 'EOs' of rare and endangered species.



*Eriogonum chrysops (golden
buckwheat) is narrowly endemic in
Oregon*

In order to evaluate different variables, I first assigned a priority value to each variable for each species. I limited the range of each to a maximum of 10 (highest priority), so no one variable would outweigh another simply because the absolute numbers associated with each vary greatly. For example, the number of populations could be in the low hundreds for a given species, so for purposes of comparisons this was re-scaled to a value between 0 and 10. So, too, the proportion of populations located on BLM land, which is necessarily a value between 0 and 1, was re-scaled to a range of 0 to 10. In this way the two variables have equal weight, and make it easy to increase or decrease the relative importance of each factor as desired.

I understand that not all readers are comfortable with graphs, but please bear with me as I discuss the two shown here. Graph No. 1 shows the Priority Value from low (0) to high (10) on the

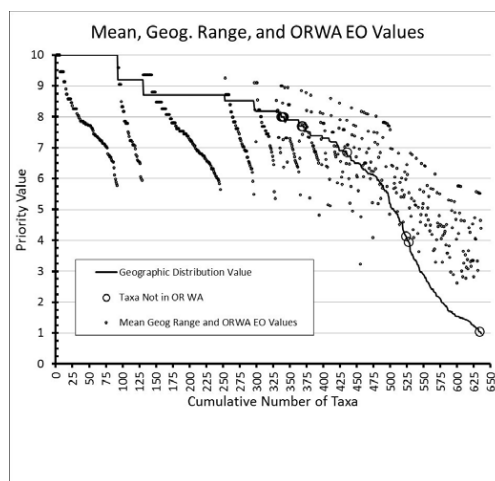


Graph No. 1

vertical scale, with cumulative number of species indicated by a solid line and arranged in order of Geographic Distribution Priority Value from high on the left (10) to a low of about 1 on the right. The small circles represent the priority values for each species associated with the number of populations again adjusted to the range 0 to 10.

The pattern of geographic distribution priority values progresses in a stair step manner, beginning with 92 species that have the highest priority value of 10. These include only those found in a single state, either Oregon or Washington. The first step down comprises the 38 species that are found in both Oregon and Washington, and in no other state. The wide step with a priority value of just under 9, is another 122 species that are found in either Oregon or Washington and one adjacent state (ID, NV, or CA), followed by a narrower step (44 species) that are found in both OR and WA, as well as one adjacent state. After another clear step, which brings us to just over half the total species, the priority values drop from around 8 to a low of about 1.

It turns out there are some species that are geographically widespread, but where only one or a few populations are known in OR or WA. The priority value assigned to each species, based on the number of populations in Oregon and Washington, ranges from a high of 10, the highest priority possible, to a very low priority value. Priority values based on overall geographic distribution and number of populations in Oregon and Washington are more or less independent of one another. The question then becomes how to consider both total geographic distribution and local occurrences at once? In the simplest case both would receive the same relative weight, such that the *average*, (or *mean*) of geographic range and population numbers priority values of each species *becomes* the priority value. This case is shown in Graph No. 2, where the line is left in for purposes of comparison, but the circles now represent the mean of the priority values of the geographic distribution and population numbers of each species in Oregon and Washington.



Graph No. 2

We also incorporated information about who owns or manages the lands, since, say, if all known populations of a species are on BLM land, there is a greater incentive to focus on it than on one with no known populations on BLM land. In addition, we included whether there are collections of seeds in the seed bank, and so on.

Another wrinkle to consider is that from the BLM's point of view, those rare species that occur only in Oregon and/or Washington are qualitatively different than those whose conservation is shared with the BLM in other states and with other state governments.

I will finish with a nod to a lament attributed to President Harry Truman: "Give me a one-handed economist! All my economists say, 'On the one hand, on the other.'"

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Berry Volunteers Connect

Volunteer **Alix Danielsen** is currently taking a break after the birth of her son! (We don't have a picture yet.) Congratulations, Alix! She came to the seed bank this winter and dove right into the ever-present work of seed processing. She says: "My interest in the plant world originated in the wine industry, where I worked in the vineyards and sold wine grapes. I eventually transitioned over to agricultural conservation management, where I was sucked into the world of native plants, the importance of protecting them, and their role in maintaining biodiversity. I've been trying to teach myself about native plants ever since, using my little Portland city lot as an experimental site, and have gotten involved with the Native Plant Society of Oregon, and now the Seed Bank, in an effort to further my knowledge and contribute to the awareness and protection of native plants."



Volunteer Alix Danielsen



GIS Volunteer Danielle Packard

Within a few weeks of earning a Bachelor's in Geography at PSU, GIS Volunteer **Danielle Packard** has this to say about her path to the Seed Bank: "My entire life I've had a passion for botany, biogeography, and the preservation and protection of plant species. After talking to Dr. Ed Guerrant about what the Seed Bank was looking for, and learning more about the work being done by the Seed Bank, I knew this was a project of passion for me, and I knew I wanted to be a part of it. I am currently doing GIS analysis of soils data as it pertains to the plants the Seed Bank monitors and collects seeds from, as part of a practicum. The hope is that through the analysis of numerous data parameters, we can learn more about why these plants are found where they are and where else they might be, in order to possibly locate other areas where plants can be found, monitored and protected. I'm excited to be a part of the efforts of the Rae Selling Berry Seed Bank & Plant Conservation Program, and hope that I can help be a part of all of us understanding more about our botanical riches."

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Making a Difference - Private Support



Intern Kristen Meyer

Thanks to the many individuals who together gave a record amount to the Seed Bank at PSU in response to our annual appeal. It is much appreciated and very important.

The **Gilbert and Laurie Meigs Conservation Education Endowed Scholarship** is a perennial example of what our friends' support offers to us. Again this winter, two Portland State University student interns have been conscientiously at work on our enormous database project.

Kristen Meyer, who has continued her internship into spring term, in her own words: "I am a transfer student from PCC, majoring in Environmental Science. While exploring my interests, I have taken several biology courses, including Ornithology, Marine and Freshwater Biology, Forest Biology, and Botany. It was my first course in botany where my interest in plant ecology and conservation sparked. I am therefore honored to be a part of the Rae Selling Berry Seed Bank & Plant Conservation Program at PSU. Outside of school, I have volunteered with West Multnomah Soil & Water Conservation District as an Urban Watershed Mentor and the City of Portland's Bureau of Environmental Services as a Green Streets Steward, and I am a farming intern at Schoolyard Farms. My passion for plants stems from the fact that we all live in a watershed, and with protection, we can restore and maintain a healthy, thriving ecosystem for generations to come."

Meagan Burns says: "I am earning an Environmental Science degree, which I'm hoping to use in restoration work after I graduate. Most of my experience has been centered around water quality, so I wanted to try and get involved in something that was more focused on plant life. Working at the seed bank gave me an opportunity to work with people that have a vast knowledge of all kinds of plants, common and endangered. I'm glad I was able to give a small contribution to the seed bank's important endeavor."



Intern Meagan Burns

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

Native Plant Appreciation Week

April 23 through May 1
Throughout the Portland Metro area

Nine days of dedicated Oregon native plant education and awareness! Oregonians enjoy an amazing diversity



Fairy slipper, Calypso bulbosa
(Image: Kathy Zimmerman)

of native plants; they help connect us to this land, deeply rooted in Oregon soils since before humans set foot here.

Hosted by the **Portland Chapter of the Native Plant Society of Oregon (NPSO)**, NPAW has been celebrated across Oregon for over a decade. NPSO, an all-volunteer, non-profit organization, protects and conserves threatened and endangered plant species, carries out rare plant surveys and monitoring

programs, develops guidelines and policy regarding native plant gardening, ethics, grazing, mining, and forest management, and works on plant salvage and reintroduction.

Highlights of NPAW week include:

- April 23: Lost Lagoon Farm Restoration (self guided tour)
- April 24: Open garden tour of a gold-certified Backyard Habitat
- April 24: Native Plant Keying Workshop (class and field trip)
- April 27: Canemah Bluff Natural Area (after work guided tour)
- April 29: Sandy Canyon Hike
- May 1: Urban Native Plants and their Local Pollinators workshop

[More details>>](#)

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Sandy River Delta Eco-Blitz

Saturday, April 23, 2016

9:30 a.m. - 3:00 p.m.

Sandy River Delta, Troutdale, OR 97060

Free and open to the public

This eco-blitz is part of a region wide, on-going effort to find and collect data on the Portland-Vancouver metro area's wildlife, sponsored by the **Intertwine Alliance**. the **Sandy River Basin Watershed Council** hosts this event. It is free, open to all ages, and no experience is necessary. Community members will be paired with identification specialists who will lead them on an outing to observe species of interest.



Rubus spectabilis, salmonberry
(Image: David McMaster)

[For more details and to register \(preferred, but not required\)>>](#)

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Naturescaped Yard Tour



Garden tour

Saturday, May 14, 2016
11:00 a.m. - 4:00 p.m.
Registration required

Hosted by PSU's **East Multnomah County
Soil and Water Conservation District**

Get a look behind the scenes at naturescaped yards and gardens that are bursting with color and creativity on this free self-guided tour! Yard Tour is a great opportunity to meet the do-it-yourself gardeners who have created low-maintenance landscapes that feature native

plants, attract wildlife and conserve water, without relying on synthetic fertilizers or pesticides.

[For more details and to register \(beginning May 2\)>>](#)

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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.

In Our Country: North Carolina Botanical Garden

The concept of the Conservation Garden was developed at the **North Carolina Botanical Garden** in the early 1990s to represent the many conservation-related activities that were always at the heart of the Garden's mission and programs. They began using the phrase "conservation garden" and, in 1996, Director Peter White published an article in *The Public Garden* that broadly articulated the meaning of conservation in a botanical garden context. ("In Search of the Conservation Garden," *The Public Garden* 11[2]: 11-13, 40.)



NC native, large yellow lady-slipper,
Cypripedium parviflorum var. *pubescens*
(Image: D. Gordon E. Robertson)

Since the late 1990s, the entry sign has carried the phrase "A Conservation Garden" as a by-line, carved on wood from red cedar trees that grew on their nature trails and that were felled by Hurricane Fran in 1996. In 2004, they were presented with the Program Excellence Award of the American Association of Botanical Gardens and

Arboreta (now the American Public Garden Association) for their work as a conservation garden.

[Continue reading at the North Caroline BG site>>](#)

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Gladiolus italicus, wild gladiolus
(Image: Isidre Blanc)

In the World: Jardí Botànic de Sóller of Spain's Balearic Islands

The Botanic Garden was started in 1985 and was opened to the public in 1992 as a center of conservation, research and education for Mediterranean flora and especially flora of the Balearic Islands.

The Seed Bank of JBS has initially given preference to endangered species in the Balearics, but its goal is to preserve all taxa of the Mediterranean islands and their areas of influence. The Mediterranean

biogeographically forms a unit, rich in flora and with a high number of endemic species. Not many island institutions are dedicated to the conservation of this floristic wealth, much less seed banks.

[Continue reading; open in Google Chrome to translate>>](#)

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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