

RAE SELLING BERRY SEED BANK & PLANT CONSERVATION PROGRAM



Spring 2014 Newsletter

From the Director



*Dr. Ed Guerrant in Taiwan
in 2012*

As I am writing this, we are on the cusp of change. The vernal equinox has come and gone, and several staff changes are imminent. Kris Freitag, who had been at The Berry Botanic Garden for a decade before moving to PSU in 2011, is reducing her hours significantly. On the plus side, we have just awarded the first two Gilbert and Laurie Meigs Conservation Education Scholarships. We welcome Kimberly Hack and Daphne Cissell, our first Meigs Scholarship winners, and we look forward to working with them.

I would like to take this opportunity to acknowledge the tremendous contribution Kris has made to the Seed Bank, first at The Berry Botanic Garden and here at PSU. She was not originally with the Conservation Program at the Garden, but worked into the position over the course of several years before the move to PSU. Her contributions are many and varied, and were critical to making the transition from the Garden to PSU as smoothly as we did. In addition to seed collection and germination studies, Kris is the person most responsible for producing the newsletter itself. I am pleased that she will be able to continue with us, even if for a reduced amount of time. She has been and fortunately will continue to make extremely valuable contributions to our joint conservation efforts.

And we are extremely fortunate to have later this year an additional full time Conservation and Land Management Intern for five months. This internship is a joint project of the Chicago Botanic Garden and the National Office of the Bureau of Land Management. Interns spend a week in Chicago for orientation, and are typically then placed in the field for five months, usually with BLM mentors. The funding for our intern was generously provided by the OR/WA BLM. We are glad to have Mr. Isaac Sandlin, a former volunteer and budding conservation biologist as our intern (see article below). He will work almost exclusively collecting seeds in eastern Oregon, mostly common species from BLM lands for large scale restoration efforts (and for banking with us), but also collecting rare plants.

In closing, let me say that however much change is in the air, there is continuity too. Our seed banking and other plant conservation work continues.

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Past Volunteer to Take SOS Internship

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.

MAKE A GIFT TODAY

GIVE ►



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

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We were delighted to find out recently that Isaac Sandlin, one of our first volunteers here at PSU, will join us again, this time as our intern in the [Seeds of Success program](#) this summer. He is one of over 100 interns this year chosen to work primarily in 13 western states through the [Conservation and Land Management \(CLM\) internship](#). As Isaac told us in the article he wrote for our first PSU newsletter, he has been working in the conservation field since 2007; this internship should greatly assist him in acquiring experience and contacts in his chosen field. His degree from the University of North Carolina is in Journalism, and he worked for some time in that

field before he was introduced to plant conservation work at the University of North Carolina Botanic Garden in 2007. Since his arrival in Portland in 2010 he has been taking the full array of science classes necessary to pursue a graduate degree in conservation biology.

The five-month Conservation and Land Management Internship is administered through the Chicago Botanic Garden and funded through the Bureau of Land Management (BLM). More than 800 interns have taken part in this internship program since its establishment in 2001. Most of the internships include work in botany or wildlife-related fields that may include monitoring and assessing threatened/endangered species and habitats. Most of the positions have no age limit, providing opportunities for college graduates such as Isaac. Interns assist biologists and conservation professionals in the BLM, National Park Service (NPS), U.S. Forest Service (USFS) and other federal agencies. 40-50% of all interns participate in the Seeds of Success program.

This means that there will likely be other CLM interns working in the BLM's Burns and Prineville Districts with Isaac this summer, collecting seeds of common native plants that are of value to the greater sage grouse for food and cover or working on other related projects. (A fascinating and enjoyable resource for interns and those curious about how they work--and play!--during their eye-opening five months is the [CLM Internship Program Blog](#)). We are fortunate to have such an enthusiastic and highly capable crew of individuals doing vital work in our state. We are also very happy to have an articulate individual such as Isaac to spread the word about the importance of plant conservation to the health of our state, nation, and earth in this time of climate change. A concern for conservation and a talent for writing is a powerful combination. We are proud to support Isaac in his path to becoming a conservationist.

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Partners and Plants

Nez Perce Tribe Wildlife Division and Oregon Department of Agriculture's Native Plant Conservation Program are two of our partners in conservation. Here are a few of the species that we are helping them to preserve.

Applegate's milkvetch, *Astragalus applegatei*, is a legume; like most of

OTHER LINKS

[The Mammoth Cometh](#)

[Seeds on seeds on seeds: Why more biodiversity means more food security](#)

[Long-term Demographics and Climate Change Effects on Rare Native Plants](#)

[Colorado Vault Is Fort Knox For The World's Seeds](#)

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(Image: Melissa Carr)

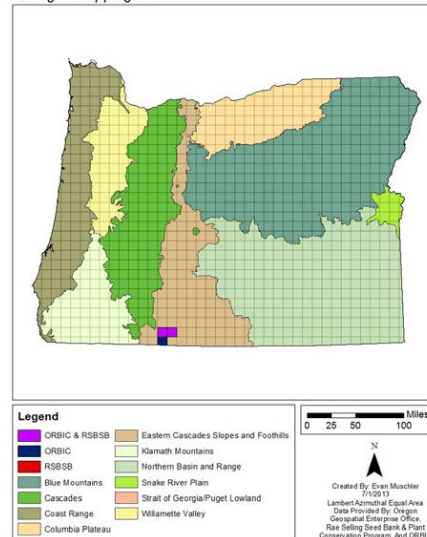
Applegate's milkvetch is limited to a very narrow range in the vicinity of Klamath Falls, Oregon. Only six populations of this plant remain, three of which are quite small. Development around the city and non-native weeds are major threats. The Nature Conservancy is actively protecting one population, but it continues to decline.



Also a legume, Douglas' clover, *Trifolium douglasii*, is likely typical of the genus, providing nectar for bees and other insects. It grows in wet areas and prairie remnants.

its kind its symbiotic relationship with specific soil microbes enhances its ability to absorb nutrients. It occurs in seasonally moist, alkaline soils that traditionally supported bunchgrasses.

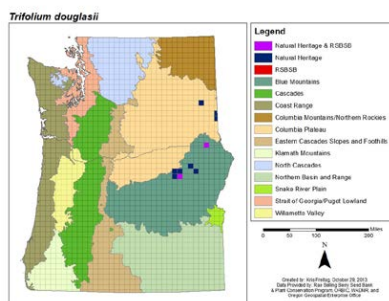
Astragalus applegatei



Like most astragalus, this milkvetch has vaguely heart-shaped, flattened seeds that come in a variety of colors. Small enough populations exist that inbreeding could reduce seed production and further weaken this species.



(Image: Nez Perce Tribe, Wildlife Division)



Found only in parts of Oregon, Idaho and Washington, Douglas' clover is listed as a sensitive species in Washington. Its numbers have been much reduced by agriculture and non-native grasses.

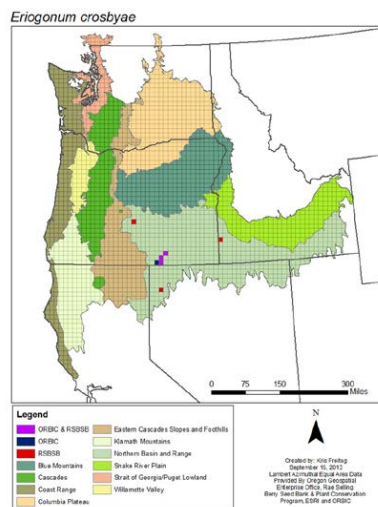
These *T. douglasii* seeds have a typical bean shape of leguminous plants. Sometimes a seed appears sound, but instead of being solidly filled with healthy embryo and endosperm, it contains a similarly yellow larva encased in a thin seed coat. This makes sorting of good seeds more difficult, as well as affecting species survival in the wild.



(Image: Tom Kaye)

Crosby's buckwheat, *Eriogonum crosbyae*, is a mat-forming species found in places of low plant diversity with tuffaceous sandstone, generally on rounded, gentle slopes.

Crosby's buckwheat is threatened by range improvement projects and grazing; it is designated as threatened in Oregon. Habitat loss due to gold mining activities also poses a risk to the long-term survival of the species.



For a recent contract, we received nearly 1,300 seed accessions of *Eriogonum crosbyae* to sort and store. Another opportunity to be thankful for



volunteer assistance in our work!

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Berry Volunteers Connect



Lindsey on Moku'auia Island, north of Oahu

Lindsey Riibe spent some time in Hawaii recently--but not just as a tourist! She says: "Fall term I took part in an exchange program that sent me to the University of Hawaii at Manoa [outside of Honolulu]. While there I took nothing but botany classes, learning the systematics of vascular plants, the countless interactions between plants and animals and even some environmental ethics. Thanks to Ed Guerrant, I contacted the Lyon Arboretum before my arrival and made plans to volunteer at the Hawaiian Rare Plant Program.

"Volunteering at the Hawaiian Rare Plant Program gave me the opportunity to learn about some of Hawaii's rare flora and to visit their high elevation nursery,

which houses some of the only surviving individuals of some of Hawaii's endangered species. I also took part in restoration projects in the Waianai Mountains as well as on Moku'auia Island, returning habitat to native sandalwood trees and nesting shearwater chicks. By volunteering I was able to experience parts of Oahu not many people get to see."



Federally listed Hawaiian native, splitleaf cyanea, Cyanea grimesiana

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Making a Difference - Private Support



Gilbert and Laurie Meigs

Gilbert and Laurie Meigs are long-time supporters of the Berry Botanic Garden in many different ways, from volunteering in both the Conservation Program and in the greenhouse with the Horticulture Program, to serving on the Board. They have also generously funded the Gilbert and Laurie Meigs Conservation Education Endowed Scholarship from which we recently made the first awards. The scholarship is intended to provide funding for students studying

plant conservation or botany. We anticipate deriving great benefit from this enhancement of our staff, and we are grateful to be thus able to support students in gaining experience.

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

Glacial Balance

Tuesday, April 22, 5:00 p.m.
PSU, Room to be determined
Free



Image: Calyponte

Join the Institute for Sustainable Solutions on Earth Day for a free screening of the film "Glacial Balance," followed by a discussion with local glacier expert Professor Andrew Fountain. "Glacial Balance" is a journey along the spine of the Andes mountains, from Colombia to Argentina, getting to know the individuals who are first affected by the dwindling tropical glacier reserve--the canaries in the coal mine. Along the way, we are accompanied by scientists who give us a perspective on what is happening in the natural world and what we can expect. And from that, we learn of the chain reaction effect that these disappearing glaciers are having on us and the rest of the world.

[More details>>](#)

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Earth Day 2014 -Theme: "Reverse Migration"

Saturday, April 26, 10:00 a.m - 6:00 p.m.
Kenton Park
8417 N Brandon Ave, Portland



This year's Earth Day celebration will feature:

- 100+ sustainable businesses and organizations
- 2 stages of live music & entertainment
- Kids' Village & Procession of the Species parade
- The Soapbox Speakers' Stage
- Health and Wellness Village
- Better Transportation Fair
- Full effort to recycle all materials
- Poster design contest for the theme "Reverse Migration"
- Bicycle rides to the celebration from starting points all around the city

•Volunteer opportunities in the Kenton Neighborhood through Earth Day clean-up projects!

The Earth Day Celebration is an annual event organized by the Portland Earth Day Coalition, a collection of individuals, organizations, businesses and neighborhood associations. This event brings over 4,000 people to a different community in Portland every year for what is probably the country's largest community-organized, non-trans-national-corporation-sponsored Earth Day Celebration.

[More details>>](#)

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Is There Hope for Wild Salmonids in the City?



Image: Dan Cox, USFWS

Wednesday, April 30, 7:00 p.m.
Smith Memorial Student Union 327/328
1825 SW Broadway, Portland
Free

Professor Alan Yeakley, Director of the School of the Environment, will discuss the influence of the urban environment on wild salmonid populations, and what the future holds for these icons of the Pacific Northwest.

[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: The Hawaiian Rare Plant Program

The mission of the Hawaiian Rare Plant Program is to aid in the prevention of further extinction of Hawaiian plant species by initiating and maintaining an in vitro plant and seed bank collection, and propagating plants for use in approved restoration and re-introduction projects.

Hawai'i has the dubious distinction of being the "Endangered Species Capital of the World," with 365 plant taxa (of which 7 are thought to be extinct) listed as Endangered or Threatened by the U.S. Fish and Wildlife



Image: USDAgov

Service and the Hawai'i Department of Land and Natural Resources. There are currently 46 additional taxa that are Proposed as Endangered, and another 18 species are Candidates for listing. A further 248 taxa are unofficially tracked as "Species of Concern" and may eventually merit

listing as Endangered or Threatened. Taken together this means that nearly 700 vascular plant taxa are declining or considered to be of conservation concern, roughly half of the native flora.

Due to its location, unique propagative methodology and affiliations, the Hawaiian Rare Plant Program contains Hawai'i's largest and most diverse collection of Hawaiian plant taxa. To date, the program's micropropagation laboratory has successfully grown approximately 300 of the 1400 known Hawaiian plant taxa using micropropagation techniques, of which 136 are federally listed as endangered or threatened. Currently, there are 16,268 plants comprised of 200+ native plant taxa inventoried within the in vitro germplasm collection and greenhouse. Ninety eight (49%) of these plant taxa are federally listed as endangered, 31 (15%) are species of concern, 3 (1%) proposed endangered, and 8 (4%) of these species labeled as candidate species. In the seed storage facility over 4 million seeds are banked, from approximately 2,000 accessions. These accessions represent more than 400 taxa of native Hawaiian plants. Of these, about 168 are federally listed as threatened or endangered.

[Continue reading at the Hawai'i Forest Institute site>>](#)

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In Our Country: Native Seed / SEARCH

The seed bank houses approximately 1,900 different accessions of traditional crops utilized as food, fiber and dye by the Apache, Chemehuevi, Cocopah, Gila River Pima, Guarijio, Havasupai, Hopi and many other cultures.



Image: Thomas Quine

Over one-half of the accessions are comprised of the three sisters -- corn, bean, and squash.

Nearly 100 additional species of crops and crop wild relatives are being preserved in the NS/S Seed Bank, including unique and often rare crop varieties: red-seeded amaranth used to dye piki bread; black-seeded sunflowers used as a dye stuff; drought-tolerant beans grown in the Pinacate region in northwestern Mexico (perhaps one of the hottest

regions in North America);

Each accession represents a specific crop "variety" grown by a particular farmer and is individually preserved and maintained. These landrace, folk or farmers varieties result from both natural and farmer selection pressures over time.

[Continue reading at the Native Seeds/SEARCH site>>](#)

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*Black tree fern, Cyathea medullaris;
Image: Pseudopanax*

In the World: New Zealand Indigenous Flora Seed Bank

The aim of the New Zealand Indigenous Flora Seed Bank is to collect the seeds of New Zealand flora as part of an ex situ conservation strategy to conserve the biodiversity within New Zealand's indigenous flora. Seed once banked will remain viable in the bank for decades, if not longer. As with any bank, withdrawals are possible but only for a limited range of purposes, such as for reintroduction of species where populations have been lost in the wild and, more rarely, for research projects that will help with ex situ or in situ conservation of the species. Seed may also be used for multiplication to replenish seed in the seed bank.

[Continue reading at the New Zealand Indigenous Flora Seed Bank 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