SER GREAT BASIN SOCIETY FOR ECOLOGICAL RESTORATION

ANNUAL NEWSLETTER
January 2020

chapter.ser.org/greatbasin

Restoration at the wildland urban interface, GBSER 2020 meeting

The 2020 annual meeting of GBSER will be held jointly with the Great Basin Consortium biennial meeting (8th meeting). The event will be held at Boise State University on March 17-19th. Please see http://greatbasinconsortium2020.com/ for more information and to register. *Registration is currently free.* Please consider presenting at the meeting, either a talk (limited spots available), or preferably a poster. Presentation abstracts are due Jan 31. The tentative program is:

Tuesday March 17th

8:00–10:00 Pre-meeting symposium – Bridging the science of genome-to-phenome with management of sagebrush: Idaho EPSCoR

10:00–1:00 Field trip – Orchard Research Area: Sagebrush common garden, possibly look at other experiments depending on time/interest.

1:00–4:00 Field Trip – Boise Foothills: History of trials, tests, and management with various stops

Wednesday March 18th

9:00–11:30 **Welcome and opening plenary**

- Welcome from Mayor McLean
- Keynote by John Ruhs, Director BLM Idaho
- Short movie on restoration in Boise, "When the Pot Boiled Over", followed by discussion
- Restoration in the WUI: A dynamic zone of human interface and innovation in science and management of arid lands – People, basic science, and translation

11:30-1:00 Lunch (on own)

1:00-2:30 The Sagebrush Conservation "Strategies": What they are and how to use them to solve your management challenges

2:30-2:50 Break

2:50-4:40 SageSTEP 10-year update

4:40-5:00 Break

5:00-7:00 Poster session and social

Wednesday Organizational Meetings

8:00–11:30 Committee Meeting – Great Basin Native Plant Project (GBNPP)

11:30–1:00 Committee Meeting – Great Basin Cooperative Ecosystem Studies Unit (CESU)

11:30–1:00 Committee Meeting – Great Basin Environmental Program (GBEP)

Thursday March 19th

8:00–9:40 Great Basin Native Plant Project session

9:40-10:00 Break

10:00-11:30 Unmanned Aerial Vehicle (UAV) applications in science and management

11:30-1:00 Lunch (on own). ***Annual business meeting for Great Basin Chapter of SER (GBSER)***

1:00-2:30 Sagebrush Seed Working Group symposium

2:30-3:00 Break

3:00-4:30 Linking science and adaptive restoration in sagebrush steppe

4:30-5:00 Society for Ecological Restoration Great Basin Chapter Awards

Concurrent sessions for contributed talks will be added as talks are received.

Thursday Organizational Meetings

11:30-1:00 Committee Meeting – Great Basin Fire Science Exchange (GBFSE)

Friday March 20th

8:00-3:00 Field Trip – Soda Fire; weather and interest level providing

8th SER World Conference on Ecological Restoration, 2019

GBSER had a large showing of members at the SER World Conference in Cape Town, South Africa, in September 2019. Notably, some of our members led well-attended symposia on seeds for restoration and managing for resistance and resilience.

Student meeting travel awards

Restoration has been an important need for our upland and waterway habitats in the Great Basin, and its importance is only increasing as fire, invasive species, and other stressors are causing. Looking to the future, it is critical that we continue to motivate an interest in education about restoration, and more importantly the engagement of individuals to become restoration ecologists. Towards this, GBSER will continue to offer support to graduate students to attend professional meetings in restoration ecology, particular meetings that our chapter or society is involved with.

Student travel awards will be available again from the Paul Doescher memorial fund to support flights, lodging, food, or registration costs for students to attend the 2020 GBSER meeting in Boise. Interested students should email Trevor Caughlin at trevorcaughlin@boisestate.edu with proposals stating 1) how much their travel is expected to cost, 2) the title and abstract of their presentation, and 3) their degree program information (school, department, degree, major advisor), and a great photo for us to include with the award announcement honoring them in our next newsletter.

Prisons help produce native plants for restoration

The “Sagebrush in Prisons Project” involves GBSER members such as Anne Halford. The project is leading to many tends of thousands of sagebrush seedlings for restoration in the Great Basin. https://www.idoc.idaho.gov/content/story/successful_year_for_sagebrush_in_prisons_project_0

Satellite remote sensing may provide a window into the history of vegetation in the Great Basin

Measuring the long-term outcomes of restoration projects across vast areas of rangeland in the Great Basin is a long-standing challenge. Recent advances in remote sensing classification could assist land managers and restoration ecologists in understanding vegetation dynamics, with particular value for large-scale, ecoregional or county-level analyses.

Two new remote sensing data products aim to measure fractional cover of vegetation across the Great Basin: the National Land Cover Shrubland Database (NLCD) and the Rangeland Analysis Platform (RAP). Both of these datasets are built upon the Landsat satellite record. Landsat is made publicly available by the U.S. Geological Survey, with a historical reach of multiple decades.

The NLCD Database was developed following decades of testing and development by researchers from the U.S. Geological Survey Earth Resources Observation and Science research center, and includes annual cover estimates for the keystone shrub species, big sagebrush, as well as perennial grasses and forbs, shrubs, and annual vegetation. This dataset is expected to be made available on the Multi-Resolution Land Characteristics Consortium website (mrlc.gov) within the next year. The RAP database covers rangeland habitat across the Western United States, in fractional cover categories similar to the NLCD data but generated with an automated machine-learning process. The RAP data also include an interactive platform that can be used to explore vegetation dynamics with minimal remote sensing expertise (rangelands.app).

Proposed bill would provide protection and restoration on >1 M acres in Northern Great Basin

A bill was recent was recently proposed in November 2019 by U.S. Senator Ron Wyden (D-OR) to provide wilderness protections, adaptive management and monitoring, and restoration actions for 1.3 million acres of land in southeast Oregon, specifically in Malheur county. A new seed warehouse is among the requested resources. For more details, the text of the proposed bill can be found at: www.congress.gov/116/bills/s2828/BILLS-116s2828is.pdf

Student Chapter

GBSER is delighted to hear that the students at Brigham Young University in Provo, Utah, have formed a student chapter for SER this past year. The membership cost is much lower for these students as a result. We hope to see these students in March 2020 at the GBSER meeting, and we also hope to see more student chapters created at other Universities. A chapter was started at Utah State University several years ago.

Meet Anne Halford, an active member of the GBSER

Anne Halford is the Idaho State Botanist with the Bureau of Land Management Resources and Science Division in Boise, ID. She obtained her B.S. in Environmental Science from the University of Colorado-Boulder and M.S. in Plant Ecophysiology from the University of Nevada-Reno. She has 28 years of experience as a restoration practitioner and botanist designing, implementing and monitoring arid land rehabilitation and restoration projects in the Great Basin. Anne's work has focused on rare plant, sagebrush-steppe, aspen and meadow habitat restoration projects that often involve large-scale seed collections, plant propagation and installations of plant material. She implemented and operated an Interagency Native Plant Propagation Center in the eastern Sierra for BLM that produced material from between 30-50 different native species annually. Anne's current work focuses on setting up west-wide native seed increase contracts which allow for the development of materials by Seed Transfer Zones. Anne works extensively with local, state, federal and academic partners to increase science-based restoration practices on Public Lands and has received several awards from the Department of Interior and partners recognizing this collaborative work.

GBSER AWARDs

GBSER is one of the only collaborative groups dedicated to Great Basin landscapes that formally recognizes individuals who have made substantial impacts to improving the ecological condition of our landscapes. This activity is important for helping ourselves and the public understand that challenges and opportunities for restoration in the Great Basin, and the key roles that people play in the greater effort. Towards this, we are hoping to both increase the number of nominations for awardees and also the diversity of awards given. We hope to recognize a researcher, a practitioner, and a student every year, but we can't do this without nominations. To make a nomination, email the officers the name(s), short biographies, and rationale for awardees.

Stuart Hardegree – 2020 recipient of Distinguished Restorationist in the special category of science-management partnership, in addition to research contributions

Dr Stuart Hardegree has provided important leadership in the development and maintenance of science-management partnerships in the Great Basin, with a focus on restoration, in addition to leading the science of weather effects on restoration and hydrothermal requirements for restoration seed germination. He has strategically

focused his efforts in these critical areas for nearly two decades.

Stuart has been a plant physiologist for the USDA Agricultural Research Service's Northwest Watershed Research Center since 1990. Prior to that, he held a similar position in the Southwest US for three years following earning his PhD from University of California, Berkeley.
Dr. Hardegree's basic research on intra- and interspecific variability in the duration of suitable temperature and water required for germination forms a key part of the conceptual and modeling framework that is used for predicting restoration success.

Stuart has led a number of significant interdisplinary projects that fold his germination and restoration studies into a broader scope of understanding weather effects in sagebrush steppe and other ecosystem types. He has served a number of important editor roles, including decades of service to Rangeland Ecology and Management and Environmental and Experimental Botany.

He was a co-founding member of the Great Basin Research and Management Partnership, Ecologically Based Invasive Plant Management Program, and the Great Basin Chapter of the Society for Ecological Restoration, and the USDA Climate Hubs. He has served key leadership roles in the many years he served these organizations. Notably, Dr. Hardegree was the Research Leader for his ARS unit, and during his leadership tenure he promoted greater contributions of the hydrology, soils, and vegetation technical resources towards understanding, managing, and restoring sagebrush ecosystems. This legacy still continues.

Bruce Roundy - 2020 Distinguished Restorationist for research

Dr. Bruce Roundy was a range scientist with the USDA-Agricultural Research Service for 7 years prior to becoming a professor of range management at the University of Arizona and Brigham Young University (BYU), and is now an Emeritus faculty at BYU. He has made significant contributions to rangeland ecology and management and restoration. Dr. Roundy has published well over 100 peer-reviewed manuscripts on a diverse set of topics regarding restoration of sagebrush steppe ecosystems, and has given a host of presentations at national and international conferences and symposia primarily focusing on rangeland improvements and restoration ecology.

Bruce has been a pioneer in the field of rangeland restoration ecology, seed and seedbed ecology, and pinyon-juniper woodland management. Because of Dr. Roundy's research following critical plant development stages relative to seedbed water and temperature dynamics, we now have a better understanding of why some planted species succeed or fail, as well as strategies to improve establishment success. Dr. Roundy has worked on many collaborative research studies including the SageSTEP research program. His work with the SageSTEP project directly addresses the questions of ecological resilience which is framing much of the successional ecology discussion in rangeland science and management today.

He and his students have researched multiple scales looking at pinyon-juniper woodland encroachment and fuel reduction treatments. Studies have ranged from assessing carbon-nitrogen responses to juniper mastication to characterizing plant community structure using remote sensing and image classification techniques. Additionally, Bruce installed a large number of weather stations across the SageSTEP network (Utah, Idaho, Nevada, California, Oregon, and Washington), ultimately increasing our understanding on long-term impacts of weather and soil variability on restoration treatment effectiveness. Dr. Roundy has influenced hundreds of students at the University of Arizona and Brigham Young University. He has received numerous awards for his hard work and commitment to rangeland restoration, including the Chapline Award in 2017 from the Society for Range Management. He has been a major advisor to 25 MS and 11 PhD students. Numerous former students acknowledge his dedication and investment into their rangeland education and are now land managers, range scientists, and leaders in the SRM organization.

Bryce Richardson – 2019 Distinguished Restorationist for research

Dr Bryce Richardson is a Research Geneticist with the Rocky Mountain Research Station's Moscow, Idaho Laboratory. He received his M.S. in Forest Resources from the University of Idaho and his Ph.D. in Plant Pathology from Washington State University. His research is directed toward investigating adaptive genetic variation in big sagebrush (*Artemisia tridentata*), blackbrush (*Coleogyne ramosissima*), and Great Basin native forbs with the aim of informing restoration applications within the context of climate change.

Bryce's extensive applied research in, and understanding of, the ecological and evolutionary processes that shape populations of plants in the northern Mojave and Great Basin is informing an applied science trajectory that addresses how climate and other environmental factors shape genetic structure of plant species and populations. Without this research of ecological genetic processes, conservation and restoration management would be missing the critical information necessary to help sustain and restore diverse and resilient Great Basin plant communities.

Bryce has an extensive and distinguished publication record (100+ publications) that provides insight and understanding of the critical importance of plant adaptation in restoration and mitigating climate change. He is has contributed to the development of on-line applied science management tools. Bryce is co-principal investigator for the Climate-Smart Restoration Tool, which launched in June 2019 and is helping land and resource managers match restoration sites with appropriate seed lots under current and projected environmental conditions. Land managers can use this Tool to help guide ecosystem restoration efforts, with a higher likelihood that the restored ecosystems will thrive under expected climate conditions.

Through his work, Bryce has been an influential advocate for Great Basin ecosystems and has been an integral part and contributor to the multi-agency Great Basin Native Plant Project; the Society of Ecological Restoration; and the United Nations, Food and Agriculture Organization, North American Forestry Commission, Forest Genetic Resources Work Group. The commission includes three research representatives from Canada, Mexico and the United States. The goal of the commission is to develop collaborative projects to address forest and plant genetic needs for restoration and conservation in North America. Bryce is also co-director of the USDA Southwest Climate Hub and a member of the Sagebrush Seed Work Group.

Meet Rory O'Conner and Matt Fisk

Dr. Rory O'Conner, postdoctoral scientist at the USGS in Boise Idaho, is soon starting a permanent Restoration Ecology position working in sagebrush steppe, with the USDA Agricultural Research Service in Burns, OR. Rory earned a BS from BYU Idaho, a Masters from BYU in Provo, Utah, and a PhD (2019) from Kansas State University. AT USGS, Rory is leading some remarkable discoveries recently about ecological drought and sagebrush restoration success across the Great Basin and over many decades of fire activity.

Matt Fisk (MS, University of Idaho) has been a long-standing and foundational participant in work that is central to the Great Basin SER. Starting much earlier in the 2000's he served as a technician for the USFS in Boise under Dr. Nancy Shaw, and contributed much project leadership and task

accomplishment for the collaborations that comprised the Great Basin Native Plant Selection and Increase Project.

For the last 5 years, Matt has been the lead USGS logistics technician for the Soda Fire rehabilitation monitoring project, one of the most intensive restoration studies ever accomplished to date. He has supervised over 50 different field technicians for this project, including teaching them plant identification, devising and teaching sampling strategies, overseeing a complex and large data set, and contributing to report writing and project dissemination. Matt has become very well networked with researchers and rangeland managers in many agencies and universities, which has proven to be an important resource for restoration practice and research.

It is rare to have someone with such a rich basic and applied background on Great Basin Native Plants also have the logistical and personal skills to take on such a complex and high-level project leadership role.

Join us

See our website for information on how to join us, https://chapter.ser.org/greatbasin/. We currently have 96 members. We have between 2 and 4 regular teleconferences with our officers and any member wishing to join the calls. Also, we seek to host or co-sponsor at least one field trip and symposium per year. We have one in-person meeting per year.

Officers

Interested in serving a role in the GBSER? There are opportunities to make distinctive contributions as an active member, including becoming involved enough to serve in one of the elected officer positions listed below. Distinguished Restorationists are invited to serve in an advisory role to the board of officials. After far too many years of serving a co-founding role, then president-elect for multiple years and president for even more years, Matt Germino is stepping back as past president. He has also done covered the newsletter since its inception nearly 10 years ago, and individuals who can provide a yearly commitment to organizing and writing most of it are needed.

Current GBSER officials are:

President (new!): Trevor Caughlin
President-elect: Please send us nominations
Past president: Matt Germino
Secretary/Treasurer: Stan Young

Distinguished restorationists are:

2014: Jeanne Chambers
2015: Nancy Shaw
2016: Mike Pellant
2017: Dave Pyke
2018, practitioner*:* Jerry Benson