

Society for Range Management



Jan 28 – Feb 01, 2024 | Sparks, Nevada

## Technical Program Schedule

*All times noted are in Pacific Standard Time*

### **Saturday, January 27<sup>th</sup>**

**8am-5pm: SRM Board of Directors Meeting**

Room: Central Pacific

### **Sunday, January 28<sup>th</sup>**

#### **TOURS**

**8:30am-1:30pm: Technical Tour 1: Markleeville Ecology tour - Beyond Just the Range**

**10:30am-4pm: Social Tour 1: Virginia City and Ghost Tour**

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**7:00am-5:00pm: Registration**

Foyer on the 2<sup>nd</sup> Floor

**9am-5pm: Job Fair**

Location: Main Foyer near Registration on the 2<sup>nd</sup> floor

**6:00am-11:30pm: Student Plant ID Study Room**

Room: Sierra 3

**8:00am-11:00pm: HSYF Home Room**

Room: Redwood 6

**7am-8am: 2024 Planning Committee Room**

Room: Redwood 5

**8am-5pm: Advisory Council**

Room: Alpine 3

**8am-5pm: Agency Recruitment #1 NRCS**

Room: Redwood 3

**8am-5pm: Agency Recruitment #2 USFS**

Room: Redwood 2

**8am-5pm: Agency Recruitment #3 BLM**

Room: Redwood 5

**8am-11pm: HSYF Home Room**

Room: Redwood 6

**8:30am-1:30pm: Technical Tour 1: Markleeville Ecology tour - Beyond Just the Range**

Offsite

**10:30am- 4pm: Social Tour 1: Virginia City and Ghost Tour**

Offsite

**9am-11am: Geospatial Science and Technology Committee**

Room: Southern Pacific D

**8am-Noon: Membership Committee**

Room: Alpine 1

**8am-Noon: Range Science Education Council (RSEC)**

Room: Southern Pacific C

**8am-Noon: Finance Committee**

Room: Southern Pacific E

**8:30am-Noon: Watershed/Riparian Committee**

Room: Central Pacific

**9am-Noon: Rangelands Steering Committee**

Room: Alpine 2

**10am-11am: Ecosystem Services Committee**

Room: Southern Pacific B

**10am-Noon: Certified Professionals in Rangeland Management & Certified Range Management Consultants**

Room: Southern Pacific A & G

**10am-Noon: RAM Committee**

Room: Southern Pacific F

**Noon-1pm: Joint Finance and Endowment**

Room: Southern Pacific E

**1pm-3pm: OCW**

Room: Southern Pacific D

**1pm-2pm: Rangeland Invasive Species Committee**

Room: Southern Pacific C

**1pm-5pm: Endowment Fund Development Committee**

Room: Southern Pacific E

**Noon-1pm: REM Editorial Board**

Room: Alpine 2

**1pm-3pm: REM Steering Committee**

Room: Alpine 2

**3pm-5pm: Publications Standing Committee**

Room: Alpine 2

**1pm-4pm: PPAC**

Room: Alpine 1

**2pm-4pm: Program Accreditation Committee**

Room: Southern Pacific A&G

**3pm-5pm: Targeted Grazing Committee**

Room: Southern Pacific C

**3pm-5pm: Diversity & Inclusion Committee**

Room: Southern Pacific D

**3pm-5pm: Native American Rangeland Advisory Committee (NARAC)**

Room: Southern Pacific B

**4pm-5pm: Awards Committee**

Room: Southern Pacific A & G

**4pm-5pm: Livestock Foraging Behavior Committee**

Room: Southern Pacific F

**4pm-5pm: GLC Committee**

Room: Alpine 1

**5pm-6pm: Student Conclave Mixer**

Room: Cascade 1

*Description: The Student Conclave Mixer is an opportunity for undergraduate range clubs to connect with each other, meet the Student Conclave Officers, and hear what to expect from the student competitions. Attendance is recommended to learn more about all that is offered during the week. The Student Conclave Officer Team has activities prepared and will give instructions for a daily scavenger hunt with awesome prizes. Come join us to connect with other undergraduates and make the most of your time in Sparks.*

**5pm-6pm: Extension Meeting: Renewable Resources Extension Act (RREA)**

Room: Cascade 3

*Description: Extension meeting to provide input as it relates to rangeland and wildlife management for the renewal of the Renewable Resources Extension Act (RREA) and what are the priorities. We will provide some refreshments*

**5pm-8pm: Trade Show Opens/Endowment Fund Silent Auction Begins**

**5pm-8pm: Welcome Reception & Welcome Mixer**

Room: Grand Ballroom 2 & Cascade 2

**Monday, January 29<sup>th</sup>**

**Tours:**

**4pm-7:30pm: Social Tour 2: Local Brew Tour**

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**7am-8am: 2024 Planning Committee Room**

Room: Redwood 1

**7am-6pm: Registration OPEN**

**8:00am-10:00am**

**8am-5pm: Trade Show**

**8:00-10:00am: Plenary**

Room: Grand Ballroom 1

**8:00-11am: URME Exam**

Sierra 4 & 5

**8:00-10:00pm: Student Plant ID Study Room**

Room: Sierra 3

**8am-5pm: Agency Recruitment #1 NRCS**

Room: Redwood 3

**8am-5pm: Agency Recruitment #2 USFS**

Room: Redwood 2

**8am-5pm: Agency Recruitment #3 BLM**

Room: Redwood 5

**8am-6pm: Leadership Task Force Room**

Room: Central Pacific

**8am-11pm: HSYF Home Room**

Room: Redwood 6

\*HSYF Tour: All Day, Offsite

\*HSYF Professional Interaction Dinner, Offsite

**10am: Coffee Break in the Trade Show**

**10:20am – 12:00pm**

**10:20am-5pm: Undergraduate Extemporaneous Speaking Contest: Room A**

Room: Redwood 7

**10:20am-5pm: Undergraduate Extemporaneous Speaking Contest: Room B**

Room: Redwood 8

**Symposia: Nevada Department of Wildlife Restoration**

**Organizer: Moira Kolada**

**Room: Cascade 3**

Agenda

10:20am: Mark Freese: Nevada Department of Wildlife Habitat Restoration Projects: a state agency management perspective

10:40am: Matt Glenn: Pre-Emergent Herbicide Strategies to Restore Crucial Wildlife Habitat: Lessons Learned

11am: Brittany Allen: Seeding and Seedling Planting Strategies by Nevada Department of Wildlife to Rehabilitate and Restore Functional Habitat for Wildlife

11:20am: Moira Kolada: Pinyon Juniper Treatments Designed with Wildlife In Mind

11:40am: Tori Cernoch: Nevada Department of Wildlife's Adventures in Spring Protection – What We're Doing and Why

12:00pm: Lee Davis: Monitoring, Planning, and Where We Go From Here

### **Symposia: Co-Laboring in the West: Stewardship Economies and Rangeland Conservation**

**Organizer:** Breanna Owens, Jared Talley, Kris Hulvey, Zach Altman

**Room:** Southern Pacific C

Session Overview: Communities and landscapes are in constant flux and flow. How do we hold the tension of old and new; public and private; production and consumption; art and science; what we know and have yet to learn? Patty Limerick offered, "When someone figures out how to countermand and set right the disconnect between production and consumption, everyone who wants the best for the West and the nation must write that person a thank you note." Rather than an individual, groups of people are working along perpendicular pathways in communities all across the West diligently and thoughtfully co-laboring (collaborating) to advance economically viable rangeland stewardship. These are their stories.

#### Agenda

**10:20:** Jared Talley, Boise State and Bre Owens, NatGLC

*Introducing the conversation - co-laboring in the West*

**10:40:** John Austel, 4J Horse and Livestock Co. and Lynn Huntsinger, UC Berkeley

*Grazing and monitoring for ecosystem health on Rancho Jamul*

**11:00:** Merrill Beyeler, Beyeler Ranches and Daniel Bertram, ID Office of Species Conservation

*Practice and economics of ranching and salmon recovery in Salmon, ID*

**11:20:** *Group Discussion – facilitated audience discussion on topics covered, along with continued Q & A with panelists*

*Session will continue from 1pm-3pm*

### **Symposia: Free-Roaming Equine Science Round-up**

**Organizer:** Eric Thacker

**Room:** Sierra 2

Session Overview: An update on Free Roaming Equine Science; Sponsored by the Free-Roaming Equine Ecosystem Sustainability Network (FREES)

#### Agenda

10:20: Niki Frey

Public values shape public trust of wild horse management.

10:40: Kate Schoenecker

Domestication history influences potential horse competition with wildlife.

11:00: Jake Hennig

Resource selection and occurrence overlap between feral horses, greater sage-grouse, and pronghorn in cold-arid-steppe.

11:20: Derek Scasta

Feral horse cause-specific mortality relative to mustering (gathering) and individual demographic attributes in the USA.

11:40: Eric Thacker

Distribution of competition potential between native ungulates and free-roaming equids on western rangelands.

*Noon: Break for lunch; session resumes at 1pm*

### **Workshop: 0454 Progress, Proposals, Passages**

**Organizer: Susan Edinger Marshall, Marc Horney**

**Room: Alpine 1**

Session Overview: Following the 2023 0454 workshop we will highlight progress made, including: annual reporting profession, innovative educational offerings to fill gaps among existing professionals, agency futuring, and other advances. We will discuss proposals to smooth the path for new and transitional 0454 personnel. This will include changes in human resources transparency and hiring practices, plus studies to understand recruitment, retention, equity, and job satisfaction issues. The final sub-session titled passages will be future-focused; exploring common ground with leadership initiatives, youth education and outreach, and taking advantage of rising interest in Rangeland Management with the upcoming International Year of Rangeland and Pastoralists.

#### Agenda

##### Progress

10:20-10:30am: Susan Marshall, Gilbert Jackson

*Introductions, review of past progress*

10:30-10:40am: Patti Novak-Echenique and Theresa Becchetti

*Preview "Educating the Next Generation"*

10:40-11:10am: Tamzen Stringham

*Beyond the brick and mortar - 0454 education*

##### Proposals

11:10-11:20am: Gilbert Jackson

*Annual Report Card/Infographic - Mock up and information available*

11:20-11:30am: Gilbert Jackson, Miles Ritch

## *Employment Development/Ways to hire*

### Passages

11:30-11:45am

*Activity -Ask participants - Why did you hire on, why did you stay, why did you leave ("Asking for a friend")*

11:45-12:00pm: *Report back*

### **Workshop: Stock-Smart: Dynamic Stocking Rate Decision Support for the 21st Century**

**Organizer: Tip Hudson, Aaron Whitemore, Sonia Hall**

**Room: Alpine 2**

*\*\*Participants should bring a computer to work with Stock-Smart during the session.*

Session Overview: Good grazing avoids over-harvest through appropriate stocking and adaptive management. How many animals for how long remains a primary management decision: too many animals for too long can impair grazed natural ecosystems. The known unknown variable in most rangeland landscapes is vegetation quantity accessible to domestic herbivores. Underestimating the influence of terrain and water on animal distribution can dramatically overestimate available forage. Stock-Smart allows land managers to fine-tune available forage by user-defined distance to water and slope steepness, yielding an ecologically responsible starting stocking rate. This session offers a scientific overview and hands-on training in this new decision support tool.

### Agenda

Tip Hudson & Sonia Hall (WSU): Why do we need another decision support tool? Intended uses and applications for Stock-Smart

Matt Reeves (USFS scientist): Deep dive on data. What is the Rangeland Production Monitoring Service (RPMS) and how is it different from other annual net primary production (ANPP) remote-sensed products?

Matt King (U of Arizona programmer): What's in the black box? Geographic information system calculations integrating vegetation production data and user-defined terrain use factors.

Case study: Iric Burden (USFS), Adaptive grazing management using RPMS on the Kaibab Plateau

Case study: Jeff Burnham (Washington Dept. Fish & Wildlife), using Stock-Smart to achieve wildlife management objectives on state land

Tip Hudson: Coached, hands-on training session. Speakers will instruct participants in accessing Stock-Smart, setting up an account, and inputting details to explore stocking rates for a real situation (either the participant's own operation, or a use case for which speakers have stocking history data available). Participants will be able to relate the Stock-Smart outputs to the speakers' presentations, as well as to compare them to their own knowledge of the situation they are exploring. They will also be instructed to develop some



scenarios they are interested in exploring, such as water development or adding virtual fences. Given the easy-to-use nature of the Stock-Smart interface, this training should provide the basic training that will prepare participants for using the tool on their own in the future.

### **Contributed Oral Session: Rangeland Monitoring**

**Room: Southern Pacific A & G**

10:20am: Jason Cox

Utah's range trend vegetation monitoring: Using landscape scale monitoring to inform wildlife and habitat management

10:40am: Leah Dreesmann

A statistical approach to quantifying sources of variability in vegetation monitoring data

11:00am: Loreen Allphin

Monitoring of long-term grazing paddocks in cold, salt desert shrub communities on the experimental range, Utah, USA.

11:20am: Rheinhardt Scholtz

Monitoring early warning signals to Resist-Accept-Direct (RAD) grassland collapse

11:40am: John Scasta

Refinement of the Robel pole for rangeland grazing applications: insights from diverse applications

### **Contributed Oral Session: Mapping**

**Room: Cascade 1**

10:20am: Sujana Parajuli

Prototyping sentinel-2 data to develop 10-m NDVI-based exotic annual grass maps in Snake River Basin using machine learning

10:40am: Shane Green

Integrating concepts of ecological sites, state-and-transition models, rangeland health, and NRCS conservation planning

11:00am: Lucas Phipps

Quantitative assessment of vegetative states and thresholds in the Wyoming Sagebrush plant community in Nevada

11:20am: Felix Ratcliff

Developing ecological sites to guide grazing on San Diego County conserved lands

11:40am: Sean Kearney (*Recorded presentation*)

Mapping standing biomass from satellite imagery in heterogeneous rangelands: Updates from a sagebrush-grassland ecotone

**Contributed Oral Session: Global Producer**

**Room: Southern Pacific B**

10:20am: Nicolas Caram

The role of grasslands and rangelands in global beef production

10:40am: Mohammed N. Sawalhah

Effects of pandemic lockdown on Jordan rangelands Vegetation

11:00am: Luci Lu

Land tenure security determinants and trade-offs: A hypothetical game

11:20am: Tunga Ulambaya

Testing a multifunctionality framework for Mongolian mountain forest steppe grazing systems: Enhancing wellbeing for humans and wildlife

11:40am: Tolib Mukimov

Prevention of pasture degradation under climate change by mobilizing plant resources Salsola Paletziana LITV

**Contributed Oral Session: Program Communications (session 1 of 2)**

**Room: Southern Pacific E**

10:20am: Michelle Jeffries

Accessible adaptive management: An introduction to the Land Treatment Exploration tool

10:40am: Devii Rao

An updated California rangeland decision assistance tool: The CRSA

11:00am: Cali Roth

A decision support tool for rangeland grazing planning and management

11:20am: Krista Ehlert

Leveraging producer scientists to inform a decision-support tool for real-time management in extensive rangeland systems

**Contributed Oral Session: Woody Plant Encroachment**

**Room: Southern Pacific D**

10:20am: Scott Morford

Mapping tree encroachment impacts to ecosystem services: biome-scale insights from remote sensing & ML

10:40am: Samantha Cady

Rangeland vulnerability to tree encroachment in the Great Plains and Western United States

11:00am: Craig Carr

Conifer in-growth and expansion in the western US: A regional evaluation with implications to sustainable beef cattle production.

11:20am: Landon Neumann

Eastern red cedar encroachment creates cooler microclimates and increased soil carbon and infiltration

11:40am: Sydney Noble

Possible hysteresis in a woody dominated state grazed by bison

### **Contributed Oral Session: Historical**

**Room: Cascade 5**

10:20am: Gregg Simonds

Alexander Von Humboldt- The invention of nature

10:40am: Hailey Wilmer

Lost seasonal ranges reshape transhumant adaptive capacity: Thirty-five years at the US Sheep Experiment Station

11:00am: Karin Sonnen

Nunivak Island Then and Now; a review of 10 permanent vegetation monitoring locations through the last 32 years on this Alaska Bering Sea Island, home to herds of muskoxen and reindeer.

11:20am: Kierstin Acuna

Effects of a reintroduced herbivore on native and exotic vegetation in a grassland community over the past 25 years

11:40am: Eric Sant

Assessing change using historic ~1m imagery

## **Monday, January 29<sup>th</sup>**

### **Noon-1pm: LUNCH BREAK**

Lunch Concessions Available for Purchase in the Trade Show

Room Sierra 1 is set with round tables to enjoy your lunch and chat with fellow attendees or take in the trade show and visit with our exhibitors!

### **11:30am-1pm: Student Conclave and YPC Business Lunch**

Room: Chalet Terrace (5<sup>th</sup> Floor)

### **Noon-1pm: Past President's Lunch**

Location: Oyster Bar Restaurant

## **Monday, January 29<sup>th</sup>**

**1:00pm – 3:00pm**

**Symposia: USDA Research**

**Organizer: Charlie Clements**

**Room: Southern Pacific A & G**

Session Overview: The USDA, Agricultural Research Service, Great Basin Rangelands Research Unit (GBRRU) has been conducting research in Great Basin environments for more than a half century. This symposium will present an array of research covering a number of topics including post-fire rehabilitation, soil erosion, effects of pinyon-juniper woodland encroachment, and mechanical and chemical control of cheatgrass for rangeland rehabilitation practices. Scientist and research technicians from the USDA-ARS Reno, Nevada Unit will present some of their most current research projects covering a diversity of rangeland issues.

**Agenda**

1:00: Introduction/Moderator Jeremy Drew (Principle Resource Concepts Inc./CARET; College Agricultural Research and Extension Team)

1:05: Pete Vadas, USDA-ARS National Program Leader

*“Overview of rangeland research in the USDA-ARS and the role of ARS Office of National Programs”*

1:15: Duane Coombs, Big Springs Ranch

*“The Need for Agricultural Research on Great Basin Rangelands”*

1:30: Keirith Snyder, Ecologist USDA-ARS-GBRRU

*“The effects of pinyon and juniper on components of the water budget: how much water do trees use?”*

1:45: Kirk Tonkel, Biological Science Technician USDA-ARS-GBRRU

*“The Arthropods Inhabiting Juniper Berries in the Western US and Their Role in Seed Mortality”*

2:00: Harry Quicke Regional Stewardship Manager; ENVU

*“The Importance of Agriculture Research in Invasive Annual Grass Control”*

2:15: Charlie Clements Rangeland Scientist USDA-ARS-GBRRU

*“The Use of Pre-emergent Herbicides in Cheatgrass Control and Rehabilitation”*

2:30: Dan Harmon, Agricultural Research Technician USDA-ARS-GBRRU

*“The Importance of Plant Material Testing on Great Basin Rangelands”*

2:45-3:00: *Panel Discussion/Moderator Jeremy Drew*

**Symposia: Climate Adaptation Strategies for Conservation of Ranching and Rangelands of the Great Plains and Southwest**

**Organizer: Andres Cibils, Mr. Skye Aney, Dr. Jean Steiner**

**Room: Southern Pacific C**

Session Overview: Current and predicted climate change trends in the Great Plains and Southwest call for novel approaches to managing rangeland and ranching. Researchers, extension specialists, and educators

working on two large USDA NIFA-funded Coordinated Agriculture Projects, The Prairie Project and the Sustainable Southwest Beef CAP will address a set of broadly-shared stakeholder questions about conservation of rangelands in the face of climate change. Speakers from each team will provide paired perspectives on challenges and climate adaptation solutions associated with stakeholder concerns about woody plant encroachment, fire, and grazing in the Great Plains and the Southwest.

#### Agenda

1:00- 1:10: Jean Steiner and Andres Cibils

Opening remarks – welcome

#### Setting the stage

1:10 – 1:25: Emile Elias, USDA Southwest Climate Hub and Fifth National Climate Assessment team  
*Climate change in the Great Plains and Southwest: syntheses, trends, and projections*

1:25 – 1:40: Christine Miller Hesed, North Central Climate Science Adaptation Center (virtual)  
*Questions of importance to the conservation of North Central grasslands of the United States in a Changing Climate*

#### Paired science-informed perspectives from the Great Plains and Southwest

1:40 – 2:10: Brandon Bestelmeyer, USDA ARS Jornada Experimental Range and Dirac Twidwell, University of Nebraska

*How will climate change impact woody plant encroachment and how will the effectiveness of current efforts to manage woody encroachment change?*

2:10 – 2:40: Sam Fuhlendorf, Oklahoma State University

*How will the effectiveness of current prescribed burn practices be affected by a changing climate, and how will those practices need to be altered to be more effective in a changing climate?*

2:40 – 2:55: Break; Session resumes at 2:55pm, see the agenda below in the 3:20pm-5pm time block

#### **Symposia: Co-Laboring in the West: Stewardship Economies and Rangeland Conservation**

**Organizer: Breanna Owens, Jared Talley, Kris Hulvey, Zach Altman**

**Room: Southern Pacific B**

*Continued from 10:20am-Noon Session*

Session Overview: Communities and landscapes are in constant flux and flow. How do we hold the tension of old and new; public and private; production and consumption; art and science; what we know and have yet to learn? Patty Limerick offered, “When someone figures out how to countermand and set right the disconnect between production and consumption, everyone who wants the best for the West and the nation must write that person a thank you note.” Rather than an individual, groups of people are working along perpendicular pathways in communities all across the West diligently and thoughtfully co-laboring (collaborating) to advance economically viable rangeland stewardship. These are their stories.

#### Agenda

**1:00: Intros - Bre Owens**

**1:10: Laurel Harkness, RVCC and Hallie Mahowald, WLA**

*Stewardship economies – people, place, and a sustainable return on investment*

**1:30:** Bill Milton, Milton Ranch and Shane Trautner, BLM Billings Field Office  
*Connecting community and landscape health in eastern MT*

**1:50:** Bret Riley, Sand Ranch and Megan Nasto, Working Lands Conservation  
*Data-informed adaptive management of wildlife and cow habitat in eastern NM*

**2:10:** Dale Lamborn, Three Creeks Grazing LLC; Taylor Payne, UT Grazing Improvement Program; and Kris Hulvey, Working Lands Conservation  
*Three Creeks Allotment consolidation project*

**2:30:** *Group Discussion – facilitated audience discussion on topics covered, along with continued Q & A with panelists*

### **Symposia: Free-Roaming Equine Science Round-up**

**Organizer:** Eric Thacker

**Room:** Sierra 2

Session Overview: An update on Free Roaming Equine Science; Sponsored by the Free-Roaming Equine Ecosystem Sustainability Network (FREES)

#### Agenda

1:00: Sherm Swanson  
Grazing Management for Livestock, Free-Roaming Horses and Burros, and Ecosystem Resilience

1:20: Sarah King  
Proximate factors affecting mortality or abandonment of free-roaming feral horse foals.

1:40: Ursula Bechert  
Fertility Control Options for Management of Free-roaming Horse Populations.

2:00: Kate Schoenecker  
PopEquus: demonstration of a new horse management tool.

2:30: TBD  
BLM Wild Equine Research Needs

2:45  
Panel Discussion: Science Needs and opportunities.

### **Workshop: Exploring poetic inquiry and multispecies ethnography: two creative methods in rangeland social sciences**

**Organizer:** Hailey Wilmer, Will Munger

**Room:** Alpine 3

Session Overview: This workshop is designed to bring managers, ranchers, students, researchers, and rangeland professionals together to explore new creative methods of understanding one another and our relationships with rangeland systems. We will focus on two emerging methods: multi-species ethnography and poetic inquiry. Multi-species ethnography describes the cultures formed by humans and other species. Poetic inquiry is an arts-based approach used to analyze and present research findings, to explore the emotional realm of rangelands, and to engage rangeland cultures and the public. Workshop attendees will have the opportunity to experiment with both methods and are encouraged to bring their own field notes, transcripts or other data to the session.

Host team: Maria Fernandez-Gimenez; Hannah Gosnell; Ethan Gordon; Matías Hargreaves Mendez; Ada Smith; Will Munger; Hailey Wilmer, with special virtual guests Natasha Fijn, Keri Brandt Off, and Andrea Pettitt.

Agenda:

1:00-1:20pm: Part 1: Introduction: Describe workshop goals, the need for new methods to understand social and social-ecological relationships through creative methods.

1:20-2:20pm: Part 2: Concurrent Poetry and Multispecies Ethnography Workshops: Interactive sessions with experts in each method. Apply new analysis methods to existing data and case examples.

2:20-3pm: Part 3: Whole group discussion & wrap up: Share out and brainstorm new applications and implications.

### **Workshop: Changing the Range by Accessing Free Range Data**

**Organizer: Nicole Kaplan, Holly Johnson, John Hendrickson**

**Room: Alpine 1**

Session Overview: Rangeland data historically have been site-based with local availability through hard copy, spreadsheets, and investigator experiential knowledge. This has limited cross-site, regional and national level efforts to assess trends and trajectories of production and biophysical/ecological responses. Recent efforts have made long-term livestock production data across many sites available through the National Agricultural Library (aka Free Range Data). These efforts will change the range by facilitating cross-site analyses, calibrating, and validating models, and assessing ecosystem service trade-offs. This workshop will demonstrate how you can access these long-term livestock data and provide expertise in helping you organize, document, and publish your data.

Agenda

1:00-1:05: Bret Hess, Western Association of Agricultural Experiment Station Directors

*Western Association of Agricultural Experiment Station Directors - Why long-term data can help change the range*

1:05-1:15: Nicole Kaplan and Holly Johnson, USDA, Agricultural Research Service

*How to wrangle and prepare your data for publication*

1:15-1:25: Kevin Sedivec, North Dakota State University

*Perspectives from a data provider*

1:25-1:40: Bret Taylor, USDA, Agricultural Research Service

*Are all the data there? An animal scientist's perspective about posting meaningful datasets*

1:40-2pm: Drew Scott, USDA, Agricultural Research Service  
*Remembering experimental design when collecting and organizing data*

2-2:20pm: Edward J (EJ) Raynor, Colorado State University; Olivia Hajek, USDA, Agricultural Research Service  
*Historical aspects and re-use of the data to meet grand challenges today*

2:20-2:40pm: Nino Chkhenkeli (remote), USDA, National Agricultural Library  
*Services supporting open science for data exploration and re-use with demonstration of tools*

2:40-3:00pm: *Q and A for the presenters and attendees*

## **Workshop: What's the 411 on Reviewing Scientific Papers**

**Organizer:** Rory O'Connor, Katie Wollstein, Lauren Svejcar

**Room:** Alpine 2

Session Overview: Peer-review functions to advance rangeland science, ensuring that published research is valid and rigorous. Beyond this, rangeland students, professionals, and researchers continually benefit from engaging with new research, assessing and providing feedback to other scientists, by performing peer-review for scientific journals. This workshop is for people who seek to:

- Understand the role of peer-reviewers including selection as a reviewer, roles, and responsibilities.
- Gain insight into the peer-review process, including interactive instruction on reviewing a manuscript and preparing a constructive critique.
- Engage with a panel of journal editors and experienced reviewers who can answer questions about reviewing scientific manuscripts.

### Agenda

1:00pm: Katie Wollstein and Lauren Svejcar  
*Why is peer review important?*

1:10pm: Rory O'Connor  
*Role of peer reviewer.*

1:20pm: *Process of performing peer review. – hands-on activities of doing a review*

- How to provide critical and constructive feedback?
- Laying out a good review.
- What is a minor, major, reject/resubmit decisions?

2:10pm: *Break*

2:30pm: *Round Table with speakers and facilitators.*

- Editors of Rangelands and Rangeland Ecology and Management will discuss the purpose of those journals.
- General Q&A about the review process and reviewing papers.

## **Contributed Oral Session: Climate**



**Room: Cascade 4**

1:00pm: Anna Maher

A compendium of management-relevant, decision-support tools to support climate adaptation on northwest U.S. rangelands

1:20pm: Maria Stahl

Protecting rangelands in a changing climate: Comparing Raramuri Criollo landscape use patterns with red Angus cattle in the Colorado Plateau

1:40pm: Olivia Hajek

Assessing the production-precipitation relationship across diverse agroecosystems and climate gradients in the US

2:00pm: Justin Luong

Trait mechanisms underlying secondary invasion for California rangelands during drought

2:20pm: David Augustine

Does drought intensify the effects of black-tailed prairie dogs on livestock production and net revenue in semiarid rangelands?

2:40pm: Magda Garboski

Assessing the influence of functional traits on drought resistance and tolerance in 10 rangeland plants

**Contributed Oral Session: Education**

**Room: Cascade 3**

1:00pm: Krista Ehlert

Successes, challenges, and takeaways from developing a rangeland curriculum for middle school students in South Dakota

1:20pm: James Oltjen

Rancher motivations for adopting sustainability practices and joining sustainability programs

1:40pm: Sakina Dixon

Prairie project educator cohorts: A promising initiative to increase awareness of the need and strategies to protect and preserve the southern Great Plains among K-12 and college educators and students

2:00pm: Stephen Bramwell

Developing a southwest Washington grazing school to support livestock production and rare habitat

2:20pm: Jessalyn Bachler

Foraging in the northern Great Plains: A case study of a successful rangelands curriculum lesson for all ages

2:40pm: Stephanie Bestelmeyer

Introducing K-12 students and teachers to change on the range: free hands-on lessons about sustainable beef production in the southwest

### **Contributed Oral Session: Invasives**

**Room: Southern Pacific D**

1:00pm: Esben Kjaer

Nitrogenous nightmare: Soil nutrient changes favor smooth brome invasion over Kentucky bluegrass

1:20pm: John Paul Wasan

Absinthe chemical warfare: Investigating allelopathic effects on native and invasive species of the Canadian Prairies

1:40pm: Katherine Hovanes

Impact of priority effects and native plant community on performance of buffelgrass (*Pennisetum ciliare*), an invasive C4 perennial bunchgrass in the southwestern United States

2:00pm: Daniel Lauritzen

Determining optimal livestock grazing timing for bulbous bluegrass in southeast Idaho

2:20pm: Melissa Meyers

Plant-soil feedbacks of Lehmann lovegrass (*Eragrostis lehmanniana*) and its effect on competition with native black grama (*Bouteloua eriopoda*)

2:40pm: Megan Clayton

Whitebrush (*Aloisia gratissima*) control during growing and dormant seasons in South Texas.

### **Contributed Oral Session: Modeling**

**Room: Cascade 1**

1:00pm: Sean Di Stéfano

Tackling rangeland complexity: APEX modeling on the western Great Plains

1:20pm: Joseph Smith

Saving sagebrush ecosystems from exotic annual grasses: can we win by managing disturbance?

1:40pm: David Board

Disentangling drivers of annual grass invasion in the sagebrush biome: biophysical susceptibility vs. fire-induced conversion

2:00pm: Sam Knuth

Assessing fire-induced bunchgrass mortality in sagebrush rangelands: An agent-based modeling approach

2:20pm: Micheal Clyne

Forecasting sagebrush recovery potential in the Great Basin using structured population models

2:40pm: Jessica Windh

Temporal heterogeneity of rangeland grasses in a simulated grazing system and the potential benefits of integrating with cropping systems: A bioeconomic analysis

### **Contributed Oral Session: Riparian**

**Room: Southern Pacific E**

1:00pm: Sawyer Reagan

Relationships among stream morphology, riparian plant community types, and grazing management in southwest Montana

1:20pm: Tulley Mackey

Rangeland restoration: Mimicking beaver to improve aquatic and riparian habitat in the high desert

1:40pm: James Bolyard

Low-tech process-based restoration of prairie streams in western South Dakota: Preliminary results

2:00pm: Matt Trentman

Predicting landscape-scale susceptibility of streams to potential livestock degradation using Google Earth Engine

2:20pm: Benjamin Sullivan

Meadows as soil carbon hotspots in rangelands.

2:40pm: Nick Pitizzette

Quantifying rangeland ground conditions using remote sensing in riparian areas

### **Contributed Oral Session: Livestock Technology**

**Room: Cascade 5**

1:00pm: Claire Foyil

Identification of bitter sensitivity in ram lambs using phenylthiocarbamide topically applied to feed

1:20pm: Aaron Kersh

Sheep foraging behavior and diet selection in the context of Geyer's larkspur (*Delphinium geyeri*): insights from fDNA barcoding

1:40pm: Temitope Oloede

Pedometer-based metrics of animal behavior in relation to summer heat stress

2:00pm: Amadeus Barto

Evaluation of a commercial rumen bolus to monitor cattle behavior and well-being on rangelands.

2:20pm: Martín Do Carmo Corujo

Ingestive and digestive behavior of pure and crossbred beef cows grazing native subtropical grassland differing in herbage mass

2:40pm: Esben Kjaer

Bring us a shrubbery! DNA barcoding reveals dietary preferences across rangeland management practices

**3pm: Coffee Break in the Trade Show**

**Monday, January 29<sup>th</sup>**

**3:20pm- 5:00pm**

**Symposia: Metrics, Management, and Monitoring: Linking grazing management, soil health, and producer wellbeing**

**Organizer: Ada Smith, Jeff Goodwin**

**Room: Cascade 1**

Session Overview: Pasture and rangelands are complex social-ecological systems that require research teams to study the people and land as a unified system. The 3M (Metrics, Management, and Monitoring) project is a multidisciplinary research effort examining the linkages between grazing land management, soil health, producer wellbeing, and overarching ecosystem function. Our session includes an overview of the 3M project, presentations by module leads of preliminary findings from Years 1 and 2 of data collection, and a discussion of project themes and the “how” of data integration in a collaborative, multidisciplinary research project.

Agenda:

3:20pm-3:30pm: Derek Scasta, Nicki Nimlos, Jeff Goodwin,  
*Project Overview: Metrics, Management, and Monitoring*

3:30pm-3:40pm: Jenna Likins  
*A framework for defining a continuum of grazing management strategies*

3:40pm-3:50pm: Paige Stanley, Erica Patterson, Megan Machmuller, and Francesca Cotrufo  
*Soil Health Indicators and Modeling*

3:50pm-4:00pm: Alex Kuhl, Cole Kelley, Quinton Merrill, Glenn O’Neil, Andrey Guber, Jeremiah Asher  
*Linking Water Flux Dynamics to the Grazingland Ecosystem*

4:00pm-4:10pm: Morgan Mathisonslee  
*Applied Landscape Monitoring and Education*

4:10pm-4:20pm: Zekuan Dong  
*Producer Profitability and Financial Wellbeing*

4:20pm-4:30pm: Ada Smith  
*Producer Wellbeing and Resilience*

4:30pm-5:00pm *Facilitated Discussion*

**Symposia: Young Producer's Symposium: For the Next Five Years**

**Organizer: Blake Duncan**

**Room: Chalet Terrace**

Session Overview: The Young Producers Conclave presents a symposium to talk about the current and future issues the producers and professionals of Rangeland Ecology will be facing. The symposium will bring together

younger people in their respective fields to share experiences and techniques they are employing in their work. A panel discussion at the beginning of the symposium will gather peers from ecology, ranching, farming, and other disciplines and give younger producers an opportunity to share their perspectives.

#### Agenda

3:20 p.m.: Introductions: Moderator

3:30 p.m.: Panel: Young Professionals and Producers Discussion

Young producers Panel:

- Hay Producer- Myles Ghetto- Churchill County, NV
- Producer- Braxton Crofts- Lander, Wyoming
- Cattle Producer- Elizabeth Reikowski (ereikowski95@gmail.com)- Paicines, CA

Young professionals Panel:

- Professional- Economics: Blane Merkley (Blane.Merkley@usda.gov)- F.S.A. Clark, and White Pine County
- Professional- Private Enterprise : Lewis Mendive (lewis@rci-nv.com)- R.C.I. Range Conservationist
- Professional- Agency coordination: Mattie Ward (mattie.johns.555@gmail.com)- N.R.C.S. Soil Conservationist

4:30 p.m.: Technical Presentation: Dr. Chuck Butterfield

*Monitoring Practices for Ranchers on the Range*

4:55 p.m.: *Concluding Statement*

### **Symposia: Come to the Show! IYRP North America Film Festival Winners**

**Organizer: Courtney Buchanan, Anne Gondor**

**Room: Cascade 3**

Session Overview: Description: Come relax and enjoy viewing some films that tell stories of rangelands and the people that live and work on these lands. This symposium will feature the winning films and other selected entries from the International Year of Rangelands and Pastoralists (IYRP) North America Support Group's first Film Festival competition. Short films of 3-10 minutes are currently being solicited from amateur and professional filmmakers (students, producers, rangeland professionals and others) that tell stories of rangelands and the people that live and work on these lands. Films will be highlighted that connect personal experiences to broader issues such as sustaining biodiversity, providing ecosystem services, producing livestock sustainably, and creating systems resilient to droughts and climate. Filmmakers of selected films will be invited to attend a 20-minute question and answer panel at the end of the session to share more information and answer audience questions.

#### Agenda

3:20- 3:25pm: Courtney Buchanan

*Introduce the film festival, thank film festival team, judges, and film-makers.*

3:25 – 3:35pm: Lauren Svejcar

*Discuss IYRP, inform attendees about other IYRP sessions at SRM*

3:40 – 4:40pm: Film Viewing

Show winning film in each category (professional and amateur) as well as other selected films from the submissions. Most films we have received so far are about 10 minutes in length so we plan to show 6 films.

4:40 – Question and answer panel with film makers: Filmmakers not planning to attend SRM will be invited to speak at the Q and A panel virtually.

*Note: We will have a list of films/ filmmakers for chosen films after film selections have been judged.*

*Submissions are due November 17th so we will notify SRM as soon as possible with the list of films we plan to show and contact information for film makers once films have been selected.*

## **Symposia: Climate Adaptation Strategies for Conservation of Ranching and Rangelands of the Great Plains and Southwest**

**Organizer: Andres Cibils, Mr. Skye Aney, Dr. Jean Steiner**

**Room: Southern Pacific C**

Session Overview: Current and predicted climate change trends in the Great Plains and Southwest call for novel approaches to managing rangeland and ranching. Researchers, extension specialists, and educators working on two large USDA NIFA-funded Coordinated Agriculture Projects, The Prairie Project and the Sustainable Southwest Beef CAP will address a set of broadly-shared stakeholder questions about conservation of rangelands in the face of climate change. Speakers from each team will provide paired perspectives on challenges and climate adaptation solutions associated with stakeholder concerns about woody plant encroachment, fire, and grazing in the Great Plains and the Southwest.

### Agenda

2:55 – 3:25: Laura Goodman, Oklahoma State University and Sheri Spiegel, USDA ARS Jornada Experimental Range

*What grazing management practices can help ranchers successfully adapt to climate change while also supporting healthy rangeland ecosystems?*

3:25 – 3:55: Ben Wu, Texas A&M University and Joel Brown, USDA Southwest Climate Hub

*How can public understanding of rangelands and their importance increase?*

3:55 – 4:25: Morgan Treadwell, Texas A&M University and Andres Cibils, USDA Southern Plains Climate Hub

*How can the accessibility of relevant science and tools be improved?*

### Panel Discussion and Wrap Up

4:25 – 5:00: Speaker Panel: Jean Steiner, Kansas State University, moderator.

*Take home messages and proposed solutions*

## **Symposia: Balancing the Art and Science of Grazing Management**

**Organizer: Kason Haby, Julie Elliot**

**Room: Southern Pacific B**

Session Overview: A panel discussion featuring researchers, agency/extension personnel and ranchers highlighting applicable on the ground research for your ranching operation. This session combines the art and science of range and grazing management to provide information that you can take back to the ranch and use.

#### Agenda

3:20 PM: Kason Haby, Chair, Grazing Land Coalition Committee  
*Welcome and Introductions*

3:25 PM: Doug Tolleson, Associate Professor, Texas A&M University, Stephen Deiss, Consultant, O'Conner Ranch  
*Forage Quality Monitoring to Inform Grazing and Nutritional Management Decisions*

4:00 PM: Regenerative Grazing

*120,000 Acres a Day for the Next 2161 Days: Nancy Labbe, Co-Director, Regenerative Grazing Lands Strategy, North America Agriculture Program, The Nature Conservancy*

*The Art: Billy Griffin, Rancher/Owner, Griffin Cattle Sales*

4:35 PM: All Speakers  
*Panel Discussion*

5:00 PM: Conclude

#### **Symposia: Contemporary Economic Issues on Western Rangeland**

**Organizer: Dr. Michael H. Taylor**

**Room: Southern Pacific E**

Session Overview: This session includes presentations on several contemporary economic issues on western rangelands. Presentation topics include the economics of pinyon-juniper restoration, wild horse and burro management, wildland fire fuel breaks, flexible livestock production, and the regional economic impacts of reductions in public land grazing.

#### Agenda

John Ritten  
*US Beef Cattle Inventory and Operation Size Historic and Spatial Trends to Inform Social Sustainability and Community Security*

Man-Keun Kim  
*Investigation of Potential Structural Change in Western States AUM Allotments*

Thomas R. Harris  
*Application of Supply-Determined Social Accounting Matrix Model to Estimate the Economic Impacts of Reductions in Range Cattle Production in Elko County, Nevada*

Aaron Johnston

*An economic evaluation of the net benefits of fire fuel breaks in the Great Basin*

Egan C. Cornachione

*Evaluating Costs and Benefits of Rangeland Restoration: A Case Study of Pinyon Juniper Removal in Central Nevada*

Timothy Fitzgerald

*Wild Horses and Burros in Economic Perspective*

## **Workshop: Renewable Energy on Rangelands – Pros and Cons. with Good Grazing Makes Cent\$**

**Organizer: Mary Jo Foley-Birrenkott, Jack Alexander, Erika Fitzpatrick, Dave Voth**

**Room: Sierra 2**

Session Overview: Energy development has long been a factor in rangeland management. With new technology and emphasis in the Inflation Reduction Act, development of renewable energy (wind and solar) as rapidly increased. This panel will explore renewable energy from all angles that a rancher needs to know in this interactive discussion- From the ecological perspective in terms of resource and ecological health, the economic perspective and its potential impact on an operation's bottom line, the law perspective regarding contractual agreements, the management perspective and grazing implications, and an overarching view of the impact this could have on the future of ranching. Participants will also have a chance to ask questions directly of experts, ranchers who have participated in a renewable projects, renewable critics, and renewable industry experts. Come with questions and ready for real talk.

### Agenda

#### ***Intros: 20 minutes***

Luke Papez – LS Power, Wind

Chantry Dunlap- LS Power, Solar

Brian Harris and Lindy Kester – Long Road Energy, Solar

Derick Hembd – Sixconv – PJ biochar

Bret Crosby – Early adopter

Jack Alexander – Rangeland expert

Anson Howard – Attorney

#### Open to audience questions:

##### *Prepared questions:*

What are the realistic terms in length of these contracts?

What are the bonding requirements?

What does reclamation look like post project life?

How does a project of this size effect the land surrounding?

##### *Access, infrastructure, land management decisions*

Can you graze around the infrastructure?

Do you get paid even if the development is a failure?

Is it renting the land? Leasing? Sale?

Does this/can this interfere with other conservation programs?

Does this open a ranch up to litigation?



## **Workshop: Virtual Fence Working Group**

**Organizer: Sarah Noelle, Logan Vandermark**

**Room: Alpine 1**

Session Overview: Join the session for need-to-know updates on virtual fence, including US Department of Agriculture programs, Bureau of Land Management and US Forest Service implementation and Virtual Fence User Guide Factsheets and Videos available on Rangelands Gateway, and insights from producers already using virtual fence. Please join us to learn and share, and think about what is needed to support successful adoption of virtual fence.

This session was organized by the Virtual Fence Working Group (VFWG) is an informal consortium among people and organizations working with virtual fence (VF) technologies to test, refine, and share information on this novel technology.

### Agenda

3:20 pm: Welcome & Introductions

Sarah Noelle, University of Arizona; Logan Vandermark, South Dakota State University; Tegan May & William Burnidge, The Nature Conservancy

3:30 pm: Tom Hilken, National Grazing Specialist, USDA-NRCS

*NRCS Update on VF Technology*

3:40 pm: Iric Burden & Joey Dahms, US Forest Service, Kaibab National Forest, Arizona; Kristy Wallner, Rangeland Management Specialist, BLM, Colorado; Dwayne Rice, US Forest Service, R2 Rocky Mountain Region, Colorado

*Virtual Fencing: Public Land Management Perspective*

3:55 pm: Ryan Reuter, Alayna Gerhardt, & Federica La Manna, OK State University

*Cattle Stress and Behavior in Adapting to VF*

4:05 pm: Andrew Antaya, University of Arizona; Michael Stauder, Oregon State University

*The Virtual Fence User Guide: Set up for Success*

4:25 pm: BREAK

4:30 pm: Andrew Cox, NMSU Chihuahuan Desert Rangeland Research Center; Cole & Daniel Mushrush, Mushrush Red Angus, Kansas; Mike Camblin, Camblin Livestock, Colorado; Dave Ollila, Flying "O" Sheep, South Dakota

*Producer Perspectives Panel Discussion*

5:15 pm: Logan Vandermark, South Dakota State University

*Wrap-Up and Lessons Learned*

5:20 pm: Sarah Noelle, University of Arizona

*Closing remarks & Adjourn*

**Ignite: Nurturing Knowledge from the Range: What we can learn from Rancher-Driven Research**

**Organizer: Clayton B. Marlow, Kayla Gnerer**

**Room: Cascade 4**

Session Overview: For the past 30+ years Western Sustainable Agriculture Research and Education (Western SARE) has supported rancher-driven research on many aspects of Range Management and livestock production throughout the western US and Pacific Islands. In this session participating producers will share outcomes of their own research into improving their operation's resiliency to climate change and market fluctuation through the use of regenerative practices. Their experiences will be augmented by the shared learning of Range Science researchers and collaborating livestock producers about how regenerative practices can also contribute to the management of wildfire risk.

#### Agenda

3:20-3:25pm: Clayton Marlow

*Speaker Introduction: Western SARE Support of Regenerative Grazing Management*

3:25-3:30pm: Kelly Hopping

*Targeted Sheep Grazing to Control Invasive Species and Reduce Wildfire Risk*

3:30-3:35pm: Kerry Byrne

*Seeds Underhoof: Can the Soil Seed Bank Facilitate Restoration of Sheep-Grazed, Cheatgrass Invaded Rangelands*

3:35-3:40pm: Chuck McAfee

*Evaluating Forage Production and Ranching in Response to Regenerative Rotational Grazing, Southwest Colorado*

3:40-3:45pm: Jason Karl

*Supporting Outcome-based Management on Private and Public Rangelands: Training Ag Professionals on Monitoring Techniques*

3:45-3:50pm: Audience Questions

#### **Ignite: Restoration Effectiveness Monitoring: Opportunities for Standardization**

**Organizer: Emily Kachergis, Nika Lepak, Aleta Nafus, Sarah McCord, David Pilliod, Mike Duniway**

**Room: Cascade 5**

Session Overview: Amidst change on the range, many restoration efforts are underway to improve rangeland ecosystem health. Restoration effectiveness monitoring enables us to evaluate and learn from restoration outcomes. Standardized monitoring programs (ex: BLM Assessment, Inventory and Monitoring and NRCS National Resource Inventory) can maximize learning by facilitating insights across boundaries and years. These programs include valuable standardized approaches for understanding restoration effectiveness. However, additional approaches will be needed to answer specific questions and empower more restoration practitioners to contribute. The goal of this ignite session is to increase awareness of available tools and explore emerging tools for standardized restoration effectiveness monitoring.

#### Agenda

## **Kickoff**

3:20-3:25: Sarah McCord (ARS), David Pilliod (USGS)

*The case for standardized restoration effectiveness monitoring*

3:25-3:30: Hailey Wilmer (USDA-ARS), Emily Kachergis (BLM)

*Building a culture of restoration effectiveness monitoring, learning and adaptation*

## **Restoration Practitioners; Perspectives**

3:30-3:35: Carrie-Ann Houdeshell (NRCS)

*Assessing conservation practices on private and public lands (NRCS CEAP GL)*

3:35-3:40: Jake Ferguson (BLM), Doug Havlina (BLM)

*Standardizing fuels and post-fire treatment effectiveness monitoring with BLM AIM – progress and next steps*

3:40-3:45: Mike Duniway (USGS), Randi Lupardus (BLM), Janna Simonsen (BLM)

*Evaluating reclamation effectiveness using quantitative benchmarks and standards*

3:45-3:50: Anna Matthews (American Bird Conservancy)

*Grassland Effectiveness Monitoring (GEM): a Tiered Protocol to Determine Conservation Benefit of Implemented Management Practices on Private Lands*

3:50-4:00pm: Question & Answers

## **Promising Restoration Effectiveness Tools**

4:00-4:05: Kristina Young (USDA-ARS)

*Understanding restoration outcomes across large areas using available satellite-derived map products*

4:05-4:10: Doug Shinneman (USGS)

*Assessing impacts of extensive fuel break networks in the sagebrush biome: Emerging strategies to measure their effectiveness using remote sensing and field data*

4:10-4:15: Aleta Nafus (BLM) and Andrew Johnson (BLM)

*Identifying Standard Plant Density Indicators and Methods for Restoration Effectiveness*

4:15-4:20: Nika Lepak (BLM)

*Qualitative assessment of restoration effectiveness using Describing Indicators of Rangeland Health*

4:20-4:25: Laura Hamrick (CU), Jessica Phillips (BLM)

*Empowering community-based restoration effectiveness field monitoring using LandPKS*

## **Closing**

4:25-4:30: David Pilliod (USGS), Emily Kachergis (BLM), Sarah McCord (USDA-ARS), Aleta Nafus (BLM), Mike Duniway (USGS)

*A path forward for restoration effectiveness monitoring and adaptive management in rangelands*

*Questions & Answers – 4:30-5:00*

**Contributed Oral Session: Avian Wildlife**

**Room: Southern Pacific D**

3:20pm: Tracey Johnson  
Hayfields to habitat: restoring sagebrush breeding habitat for songbirds

3:40pm: Katherine Travis  
Navigating the fragmented thornscrub: using fine-scale movement data to assess functional responses to disturbance in a declining galliform

4:00pm: Lauren Berry  
Grassland bird occupancy responses to two new spatial early warning signals of state transitions: testing spatial variance and spatial covariance

4:20pm: Justin Clarke  
Enhancing avian territory quality with heterogeneity-based grazing regimes

4:40pm: Caleb Roberts  
Successes, challenges, and scientific advances gleaned from ecoregion-scale grassland restoration in the Loess Canyons, Nebraska.

### **Contributed Oral Session: Data Use**

**Room: Southern Pacific A & G**

3:20pm: Mike Schellenberg  
First year rancher response to Central Prairies Living Lab project

3:40pm: Victoria Donovan  
The Prairie Project: A grass-roots effort to address literacy gaps in grasslands and their management in the Great Plains

4:00pm: Jameson Brennan  
Integrating precision technology, machine learning, and animal nutrition models to inform grazing rotations in South Dakota

4:20pm: Logan Megard  
The need for speed: Using Amazon Web Services to map larger areas, more often in less time

4:40pm: Tolib Mukimov  
The use of efficient production technologies in desert-pasture animal husbandry

### **5:00-6:30pm: Poster Session #1**

Room: Trade Show

## **Monday Evening Social Events**

### **5pm-7pm: Young Professional's Social**

Room: Chalet Terrace

*Description: Please come join the Young Professionals Conclave for an evening of networking, games and food.*

**6pm-8pm: Rangelands Trivia Night**

Room: Game On Restaurant located on the main Casino Floor

*Description: All are welcome to join in on an evening of trivia focused on rangelands! A small menu of appetizers options will be available to order from (pay on your own) as well as a full bar for any alcohol and non-alcoholic drinks (pay on your own).*

**6:30pm-8:30pm: Rangelands Music and Poetry Gathering**

Room: Cascade 1

*Description: Join old friends and make new ones at the SRM music and poetry gathering. We'll share songs, poems, and stories from working rangelands around the world. All instruments and styles are welcome!*

**Tuesday, January 30<sup>th</sup>**

**7:00AM-6:00PM: Registration**

Foyer on 2<sup>nd</sup> Floor

**TOURS**

**8:30am-1:30pm: Technical Tour 2: Frey Ranches: Rambling River Ranch**

**9am-4pm: Social Tour 3: Donner, Truckee and North Lake Tahoe Tour**

**8:00am-10:00am**

**7am-8am: 2024 Planning Committee**

Room: Redwood 1

**8am-5pm: Trade Show**

**8am-10am: Plenary**

Room: Grand Ballroom 1

**8:00am-Noon: Plant ID Contest**

Sierra 4 & 5

**10am-6:00pm: Student Plant ID Coaches Room**

Room: Sierra 3

**8am-5pm: Agency Recruitment #1 NRCS**

Room: Redwood 3

**8am-5pm: Agency Recruitment #2 USFS**

Room: Redwood 2

**8am-5pm: Agency Recruitment #3 BLM**

Room: Redwood 5

**8am-6pm: Leadership Task Force Room**

Room: Central Pacific

**8am-11pm: HSYF Paper Presentations**

Room: Redwood 6

**10am: Coffee Break in the Trade Show**

**10:20am-12:00pm**

**Rangeland Technical Transfer Alliance**

Room: Redwood 8

*(All day: 10:20am-5pm)*

Overview: Members are invited from the Sagebrush Technical Transfer Partnership, Great Plains Grasslands Extension Partnership, and Invasive Annual Grass Tech Transfer Partnership to attend the Rangeland Technical Transfer Summit. The Summit is intended to connect technical transfer efforts in the sagebrush and Great Plains biomes for general awareness of related efforts, idea sharing, and collaboration.

**Symposia: The Human Dimensions of Rangeland Management: A Review and Knowledge Gaps**

**Organizer: Urs Kreuter**

**Room: Southern Pacific A & G**

Session Overview: The herbaceous layer of rangelands is the basis for many ecosystem services that support human livelihoods and wellbeing. Over utilization and mismanagement of rangelands have globally led to degradation of the herbaceous layer and associated ecosystem services. While this has prompted substantial inquiry about rangeland ecology, research to identify factors affecting landowner adoption of ecologically sound rangeland management practices has been more limited. The purpose of this symposium is to present research conducted during the last quarter century about key aspects of the human dimensions of rangeland utilization in the USA, and to identify knowledge gaps for future research.

Agenda

10:20-10:40: Urs Kreuter and Lynn Huntsinger

*A brief overview of human dimensions research in rangeland management during the last quarter century*

10:40-11:00: Dianne Stroman and Chali Simpson

*Woody plant expansion in the Southern Great Plains: Landowner perspectives about current and desired woody plant prevalence*

11:00-11:20: David Toledo, Kiandra Rajala, and Mike Sorice

*Landowner perceptions of invasive grasses in the northern Great Plains of the US*

11:20-11:40: Mike Sorice, Kiandra Rajala, Bryan L. Brown, Vanessa A Masterson, Samuel D Fuhlendorf

*Relationship with the land as a foundation for ecosystem stewardship*

11:40-12:00: Carissa Wonka

*Legal and regulatory barriers and opportunities for using prescribed fire*

12:00-13:00: LUNCH BREAK: Session Resume at 1pm

### **Symposia: Women Making a Change in Range Part I**

**Organizer: Lesley R. Morris; SRM Diversity and Inclusion Committee: Devyn Orr, Julie Larson, Devii Rao**

**Room: Southern Pacific E**

Session Overview: The Women Change Range Symposium is an all-day session in three parts with the intention highlighting the important ways that women, as a diverse group in the past and present, perceive and interact with land, break barriers, promote sustainability, and create change on our rangelands. It provides time to come together to listen one another's stories and learn from other's experiences. The symposium aims to create connections and build a collective momentum to be a force for change for women in range.

#### Agenda

10:20: Lesley Morris

*With the Mrs: Wives as collaborators in early range science*

10:40: María E. Fernández-Giménez

*"Women pastoralists as tradition-keepers and change-agents: Lessons from Spain, Morocco and Mongolia"*

11:00: Nitya Ghotge

*Change begins with women: IYRP and the IYRP gender working group an introduction*

11:20: María Turiño, Ainhoa López and Paula Jarque

*Ganaderas en Red (GER): A network of herdswomen in Spain*

11:40: Kris Stewart

*The history and future trajectory of northern Nevada's oldest single family run ranching operation: Stewart's Ninety-Six Ranch"*

Noon-1pm: Lunch Break; *Part II begins at 1pm*

### **Symposia: "Change on the Range" 6th Bud Williams Memorial Stockmanship Symposium Combining New Paradigms with Old Methods**

**Organizer: Dave Voth, Chris Schachtschneider, Kent Reeves**

**Room: Sierra 2**

Session Overview: Since 2015 there have been five Stockmanship Symposia at SRM Annual Meetings (2015, 2016, 2018, 2020, 2022). The value of Stockmanship as a critical tool for range management has been demonstrated at previous symposia. This Sixth Symposium for the 2024 SRM AM builds on past symposia and looks at change on the range from stockmanship, and the increased diversity within stockmanship practices and practitioners.

This symposium brings together cattle, sheep and goat producers, researchers, and educators for three interactive panel discussions using Stockmanship. These are listed below. We build on the success and participant input from previous Stockmanship Symposia: with panelists discussing changes in the diversity of practitioners regarding age, gender, practices, and sexuality. The diversity of methods with dog use (herding and guardian); horses; ATVs; characteristics of low stress moves; interpreting behavior and signs of livestock health. Practitioners will discuss what experiences they have teaching Stockmanship to diverse audiences; and working within changing communities across rural and urbanizing landscapes.

## Agenda

*Introduction is 40 minutes and all panels are scheduled to be 45 minutes with 15 minutes of Q&A)*

10:20-11am: *Introduction to Stockmanship (Low-Stress-Livestock-Handling) – Introduction of the Bud Williams Principles for practicing Stockmanship.*

11am-Noon: Brittany ‘Cole’ Bush and Dan Macon

*Small Ruminants; Moderators - Discussion with invited participants to discuss changes practicing Stockmanship with small ruminants (sheep and goats) with invited participants. Open forum.*

## *Invited Participants*

Derek W. Bailey, Ph.D. – Professor of Range Science; New Mexico State University – Las Cruces, New Mexico

Matt Barnes – Rangeland Scientist and Wildlife Conservationist; Shining Horizons Land Management, LLC and Northern Rockies Conservation Cooperative

Dylan Boeken (Shepherdess Land and Livestock/Boekhouse Hearth & Husbandry)- Project Manager, Lead Shepherd, Founder/Owner of Boekhouse

Retta Bruegger – Regional Extension Specialist – Western Region Range Management; CSU Extension – Grand Junction, Colorado

Brittany “Cole” Bush – Shepherdess, Rancher, Advocate, Entrepreneur, and Educator; Shepherdess Land & Livestock Company – Ojai, California <https://shepherdesslandl.co/> <http://brittanycolebush.co/>

Aaron Gilliam (Formerly Sweetgrass Grazing/Grounded L&L)- Shepherd, sheep grazing outfit owner, cattle and grazing manager

Whit Hibbard, Ph.D. – Educator & Rancher, Publisher of Stockmanship Journal; Sieben Livestock Company – Adel, Montana

Dan Macon – Educator & Rancher; County Director Livestock and Natural Resources Advisor UCCE, Placer & Nevada Counties – Auburn, California

Ryan Morgan (Morgan Livestock)- Cattleman and Savory Ecological Outcome Verifier

Byron Palmer (Gounded Land and Livestock)- CEO/Founder

Kent Reeves – Range & Wildlife Conservationist, Arriero, and Western Photographer; The Soil Carbon Coalition (Rancher to Rancher Network) – Lone, California



Chris Schachtschneider - Lightning S Livestock Solutions

Martha Skelley (Paicines Ranch)- Farm & Livestock Manager

Emmie Sperandeo- Western culture storyteller/social media influencer who has traveled around the West working with various operations; horse training, rider

Paigelynn Trotter- Shepherd, project manager, grazing & livestock manager

David M. Voth – Ranch Manager & Range Conservationist; Nevada Gold Mines – Elko, Nevada

## **Symposia: Change on the Federal Range**

**Organizer: Dr. Susan Charnley, Gilbert Jackson**

**Room: Southern Pacific C**

Session Overview: Some 40 percent of western rangelands occur on federal lands, most of them managed by the U.S. Forest Service and Bureau of Land Management. Recognizing the need to adapt to climate change impacts on rangeland resources, wildfire, invasive plants, and other social-ecological stressors, these agencies are working to increase flexibility in their rangeland management programs to support adaptive grazing management by grazing permittees. This symposium provides an overview of policy changes currently being considered by both agencies towards this end, as well as research examining different strategies for increasing the adaptive capacity of grazing management on federal rangelands.

### Agenda

10:20: Chuck Oliver and Gilbert Jackson

*CHANG-ing the way we steward RANGE-lands – the U.S. Forest Service Rangeland Management Program Futuring Process*

10:40: Dr. Susan Charnley

*Strategies for Adapting to Climate Change on U.S. Forest Service Grazing Allotments*

11:00: Dr. Briana Swette

*Using Behavioral Science to Understand the Potential of Targeted Grazing as an Adaptive Land Management Tool on U.S. Forest Service Lands*

11:20: Marlo Draper

*How BLM is Working to Update Policies Responding to Changing Resource Conditions and Innovative Land Management Strategies Ensuring Healthy Landscapes*

11:40: Dr. Katie Wollstein

*Institutional Work in the Pursuit of Adaptive Rangeland Management on BLM Lands*

## **Workshop: Seeding more broadly: exploring information-sharing to increase the use of diverse native plant species in restoration**

**Organizer: Tara Bishop, Akasha Faist, Kristina Young**

**Room: Alpine 1**

Session Overview: Increasing plant diversity and ecosystem resilience through restoration is essential to maintaining the services that rangelands provide. However, seeding efforts often use just a few native plant species, reducing the potential for biodiverse outcomes. While there are many reasons for this, one solvable reason is the lack of easily accessible information about the many plant species available. At this workshop, we will 1. Explore new interactive native plant tools 2. Identify applications for these tools 3. Workshop & discuss additional information needs and missing resources related to native rangeland plant restoration. Participants will walk away with ideas and strategies to fill information needs that may help increase restoration success.

### Agenda

10:20-10:30am: Tara Bishop, Akasha Faist  
*Welcome*

10:30am-10:40am: Danielle Neumann, Danielle Bilyeu  
*Colorado Seed Tool*

10:40am-10:50am: Kristina Young  
*Arizona and Utah Seed Tool*

10:50am-11:00am: Kevin Gunnell  
*Information needs, management perspectives*

11:00am-11:15am: Panel Q & A

11:15am-12:00pm: Breakout discussions

## **Workshop: Educating the Next Generation**

**Organizer: Theresa Becchetti, Patti Novak-Echenique**

**Room: Alpine 2**

Session Overview: Join us to learn how people are sparking interest in range management for the next generation of Range Managers and how you can get involved to bring opportunities to your area. We will have examples of Range Camps, K-12 curriculum, and FFA competitions currently happening. With the International Year of Rangelands and Pastoralist (IYRP) around the corner, we would love to find creative ways all of us can increase rangeland exposure at the K-12 level by either expanding the reach of current material, create pieces that are missing, or through creation of a Rangeland Ecology book SRM members create. Come prepared to learn, brainstorm and have fun!

### Agenda

10:20-10:25: Patti Novak-Echenique, Theresa Becchetti  
*Introduction*

10:25-10:40: Gretchen Hyde, Director; Idaho Rangeland Resources Commission

*IROAM: Delivering Rangeland Education to Students*

10:40-10:55: Christina Restaino, Assistant Professor, University of Nevada- Reno Extension

*Living with Fire Wildfire Science, A High School Curriculum*

10:55-11:10: Angie Arredondo, M.S., Manager of Education, Outreach, and Curation; Rob and Bessie Welder Wildlife Foundation

*Rangelands: A Conservation Education Guide*

11:10-11:25: Theresa Becchetti, Farm Advisor, University of California Cooperative Extension

*40 years of Range Camp, a Look at California's Range Camp*

11:25-11:40: Ethan Mower, Park Supervisor; Nevada Division of State Parks

*63 years of Nevada Youth Range Camp: success and improvement.*

11:40-12:00: Tamzen Stringham, Professor, University of Nevada-Reno; Patti Novak-Echenique, Rangeland Management Specialist, BLM-NV

*Educational Opportunities at State FFA Conventions*

### **Contributed Oral Session: Feral Horses**

**Room: Cascade 3**

10:20am: Matt Reeves

Spatially explicit capacity assessments support rangeland NEPA

10:40am: Courtney Buchanan

Seasonal and geographic differences in diets of feral horses among BLM herd management areas

11:00am: Megan Milligan

Free-roaming horses exceeding appropriate management levels affect multiple vital rates in greater sage-grouse

11:20am: Steven Peterson

Resource selection patterns by free-roaming horses within the Great Basin

11:40am: Kalen Taylor

Mustang Camp: Promoting healthy rangelands through youth education

### **Contributed Oral Session: Imaging 1 (session 1 of 2)**

**Room: Cascade 4**

10:20am: Erika Peirce

What is truth? Comparing different rangeland biomass estimation methods to inform remote sensing products

10:40am: Dave Atkins

Comparison of remote sensing platforms for non-destructive estimation of herbaceous biomass.

11:00am: David Rowley

Shifting mosaics indicate grassland fragmentation and disconnection throughout the Texas Gulf landscape

11:20am: Trenton Benedict

Differentiating cheatgrass and medusahead phenological characteristics in western United States rangelands

11:40am: Brittany Castle

A comparison of manual and point of view camera observations of sheep grazing behavior and diet selection

### **Contributed Oral Session: Program Communications 2 (session 2 of 2)**

**Room: Cascade 5**

10:20am: Sarah Carter

Synthesizing science for decision makers to help bridge the gap between rangeland science and management on public lands

10:40am: Sam Jordan

Developing BLM national landscape conservation system science plans: Planning for land managers, scientists, and stakeholders

**11:00am: OPEN**

11:20am: Hondo Brisbin

Development of a riparian State and Transition Model to enhance predictability of low gradient stream dynamics in the Great Basin region based upon management and disturbance regimes

11:40am: Mathew Rigge

Rangeland condition monitoring assessment and projection (RCMAP): Tracking fractional rangeland component cover over a 38-year time-series using Landsat

### **Contributed Oral Session: Restoration 1 (session 1 of 2)**

**Room: Cascade 1**

10:20am: Lauren Svejcar

Establishing a precision restoration approach using novel technologies across a heterogeneous landscape

10:40am: Sara Barga

Selecting seed for restoration: exploring relationships between source climate and population-level variation in germination

11:00am: Dan Harmon

Hedge betting seed mixes: Reducing the risk of failure

11:20am: Francis Kilkenny

Seeding evaluation and experimental design strategies (SEEDS) partnership to increase learning from post-fire restoration in sagebrush shrublands: Concept and first steps

11:40am: Gregor Siegmund

Synthesizing knowledge about the environmental drivers of plant regeneration to support restoration seeding

### **Noon-1pm: LUNCH BREAK**

Lunch Concessions Available for Purchase in the Trade Show

Room Sierra 1 is set with round tables to enjoy your lunch and chat with fellow attendees or take in the trade show and visit with our exhibitors!

### **Noon-1:30pm: SRM Business Meeting Lunch**

Room: Chalet Terrace (5<sup>th</sup> Floor)

*Overview: Come hear from SRM Staff and Officers on SRM's activities over the past year. The annual budget will be discussed, a Year in Review video will be presented, a look ahead to the 2025 Annual Meeting, and official President's Address from current SRM President Barry Perryman.*

## **Tuesday, January 30<sup>th</sup>**

### **1:00pm – 3:00pm**

#### **1:00-5pm: CPRM EXAM**

Room: Redwood 7

#### **Symposia: The Human Dimensions of Rangeland Management: A Review and Knowledge Gaps**

**Organizer: Urs Kreuter**

**Room: Southern Pacific A &G**

*Symposia resumes from 10:20am-Noon session*

Session Overview: The herbaceous layer of rangelands is the basis for many ecosystem services that support human livelihoods and wellbeing. Over utilization and mismanagement of rangelands have globally led to degradation of the herbaceous layer and associated ecosystem services. While this has prompted substantial inquiry about rangeland ecology, research to identify factors affecting landowner adoption of ecologically sound rangeland management practices has been more limited. The purpose of this symposium is to present research conducted during the last quarter century about key aspects of the human dimensions of rangeland utilization in the USA, and to identify knowledge gaps for future research.

#### Agenda

1:00-1:20: Tong Wang and Urs Kreuter

*Ranch characteristics, management outcomes, and rancher perspectives: A comparison of different grazing management practices*

1:20-1:40: Jenna Likins, Urs Kreuter, and Jason Sawyer

*Composite indices of grazing intensity and adaptive management to define alternative grazing management systems more clearly*

1:40-2:00: David Matarrita-Cascante (David.Matarrita@ag.tamu.edu), Jacob Lucero, Cinthy Veintimilla, Morgan Treadwell, William Fox, and Douglas Tolleson.

*Leveraging social science research to advance contemporary rangeland management: Understanding the “new faces” of range managers.*

2:00-2:20: Hailey Wilmer, Alison M. Meadow, Amanda Bentley Brymer, Stephanie Russo, Daniel B. Ferguson, Ibrahim Garba, Christina Greene, Gigi Owen, Dannele E. Peck

*Ethical principles for research partnership and transdisciplinary natural resource management science*

2:20-2:40: Dirac Twidwell, David Toledo, Carissa Wonkka

*Knowledge gaps and future research*

2:40-3:00: *Discussion*

## **Symposia: Women Making a Change in Range Part II**

**Organizer: Lesley R. Morris, Dr. Beth Newingham**

**Room: Southern Pacific E**

*Session resumes from Part I (10:20am-Noon)*

Session Overview: The Women Change Range Symposium is an all-day session in three parts with the intention highlighting the important ways that women, as a diverse group in the past and present, perceive and interact with land, break barriers, promote sustainability, and create change on our rangelands. It provides time to come together to listen one another's stories and learn from other's experiences. The symposium aims to create connections and build a collective momentum to be a force for change for women in range.

### Agenda

1:00: Brianna Merrill

The shared and the unique: Experiences of an Indigenous woman in range

1:20: Cheryl Shippentower

The First Foods Management Approach: Women's Foods and Range Management

1:40: Jennifer Hickman

Post wildfire recovery as it relates to Indian country and Tribes

2:00: Jamie Dahl

Change on the range: Perspectives from women in the Society for Range Management (SRM)

2:20: Krista Ehlert

Women's safety on the range: Considerations for change

2:40: Jessica Eck

Navigating interviews: Generalized and women specific guidance

*Women Changing Range: Part III*

*Workshop: Agents of change: stories of the past, present, and future from women on the range [Diversity & Inclusion Forum]; taking place from 3:20pm-5pm in same room.*

## **Symposia: "Change on the Range" 6th Bud Williams Memorial Stockmanship Symposium Combining New Paradigms with Old Methods**

**Organizer: Dave Voth, Chris Schachtschneider, Kent Reeves**

**Room: Sierra 2**

*Symposia resumes from 10:20am-Noon session*

Session Overview: Since 2015 there have been five Stockmanship Symposia at SRM Annual Meetings (2015, 2016, 2018, 2020, 2022). The value of Stockmanship as a critical tool for range management has been demonstrated at previous symposia. This Sixth Symposium for the 2024 SRM AM builds on past symposia and looks at change on the range from stockmanship, and the increased diversity within stockmanship practices and practitioners.

This symposium brings together cattle, sheep and goat producers, researchers, and educators for three interactive panel discussions using Stockmanship. These are listed below. We build on the success and participant input from previous Stockmanship Symposia: with panelists discussing changes in the diversity of practitioners regarding age, gender, practices, and sexuality. The diversity of methods with dog use (herding and guardian); horses; ATVs; characteristics of low stress moves; interpreting behavior and signs of livestock health. Practitioners will discuss what experiences they have teaching Stockmanship to diverse audiences; and working within changing communities across rural and urbanizing landscapes.

### Agenda

1pm-2pm: Dylan Boek and Melissa Taylor

*Cattle, Wildlife, and Wild Horses; Moderators - Panel discussion with stockmanship practitioners working primarily with cattle, wildlife, and wild horses. Whit Hibbard, Matt Barnes, Chris Schachtschneider Invited participants. Open Forum.*

2pm-3pm: Jenya Schneider and Kent Reeves

*What is Changing & What Do We Need To Change; Panel discussion with invited participants discussing what is changing and what we need to change; and the role Stockmanship plays for change. Invited participants from current and past Stockmanship Symposia. Open Forum. 2:00-3:00 pm*

### *Invited Participants*

Derek W. Bailey, Ph.D. – Professor of Range Science; New Mexico State University – Las Cruces, New Mexico

Matt Barnes – Rangeland Scientist and Wildlife Conservationist; Shining Horizons Land Management, LLC and Northern Rockies Conservation Cooperative

Dylan Boeken (Shepherdess Land and Livestock/Boekhouse Hearth & Husbandry)- Project Manager, Lead Shepherd, Founder/Owner of Boekhouse

Retta Bruegger – Regional Extension Specialist – Western Region Range Management; CSU Extension – Grand Junction, Colorado

Brittany “Cole” Bush – Shepherdess, Rancher, Advocate, Entrepreneur, and Educator; Shepherdess Land & Livestock Company – Ojai, California <https://shepherdesslandl.co/> <http://brittanycolebush.co/>

Aaron Gilliam (Formerly Sweetgrass Grazing/Grounded L&L)- Shepherd, sheep grazing outfit owner, cattle and grazing manager

Whit Hibbard, Ph.D. – Educator & Rancher, Publisher of Stockmanship Journal; Sieben Livestock Company – Adel, Montana

Dan Macon – Educator & Rancher; County Director Livestock and Natural Resources Advisor UCCE, Placer & Nevada Counties – Auburn, California

Ryan Morgan (Morgan Livestock)- Cattleman and Savory Ecological Outcome Verifier

Byron Palmer (Gounded Land and Livestock)- CEO/Founder

Kent Reeves – Range & Wildlife Conservationist, Arriero, and Western Photographer; The Soil Carbon Coalition (Rancher to Rancher Network) – Ione, California

Chris Schachtschneider - Lightning S Livestock Solutions

Martha Skelley (Paicines Ranch)- Farm & Livestock Manager

Emmie Sperandeo- Western culture storyteller/social media influencer who has traveled around the West working with various operations; horse training, rider

Paigelynn Trotter- Shepherd, project manager, grazing & livestock manager

David M. Voth – Ranch Manager & Range Conservationist; Nevada Gold Mines – Elko, Nevada

## **Symposia: Seeding the Future: Harnessing Native Seeds for Sustainable Rangeland Restoration**

**Organizer: Alison Agneray, Jess Kindred, Sophie Heston, Amy Wruck, Sara Kulpa**

**Room: Southern Pacific C**

Session Overview: This symposium will showcase the success of the Nevada Native Seed Partnership (NNSP), a coalition working together with the vision of keeping Nevada rangelands diverse and functioning by using the right seed in the right place at the right time. We will bring together a series of engaging talks from experts, researchers, practitioners, and stakeholders in land management and restoration ecology. Speakers will cover case studies, real-world projects, and the ecological benefits of using native seeds. By bringing together diverse perspectives and expertise, this symposium will enable attendees to contribute effectively to the sustainable management of these critical landscapes.

### Agenda

1pm-1:20pm: Sarah Kulpa

*The Nevada Native Seed Partnership: Steps taken to create the first state-specific seed strategy to address native seed shortages in Nevada*



1:20-1:40pm: Kevin Badik

*Increasing our understanding of native seed demands and seed infrastructure in Nevada*

1:40-2pm: Shannon Swim

*A new seed cleaning and storage center at UNR*

1-2:20pm: Brittany Allen

*Considerations and Challenges of Native Seed Mix Design for Habitat Restoration in Nevada*

2:20-2:40pm: Russ Wilhelm and Stephen Kielius

*Foundation Seed Program*

2:40-3pm: Dan McClure and Amy Wruck

*Creating & Managing Your Seed Supply Chain: Collection to Nursery to Foundation Increase to Landscape-Scale Projects*

## **Symposia: Agrivoltaics on the Range: An Interdisciplinary Team Investigates how Solar Energy Production and Ranching Go Hand-in-Hand**

**Organizer: Anna Clare Monlezun**

**Room: Southern Pacific D**

Session Overview: Photovoltaics is the most efficient and cost-effective form of renewable “clean” energy, and solar development will continue to accelerate as the world strives to meet climate goals. The need for open, sun-abundant landscapes puts the solar industry in competition for land with agriculture and threatens intact native rangeland, stimulating valid concerns about negative impacts to ecosystem services. Agrivoltaics, the co-location of photovoltaic and agricultural production systems, offers a win-win scenario. Our team is engaged in collaborative science to investigate the soil, water, plant, livestock, and microclimate dynamics in a utility scale agrivoltaic grazing system. We seek to uncover a cattle-compatible design that is “good for the land, good for the animal, and good for solar.”

### Agenda

1pm-1:10pm: Anna Clare Monlezun, PhD, Graze LLC

*Background on collaborative science and project partnerships.*

1:10-1:20pm: Jordan Macknick, Lead Energy-Water-Land Analyst, National Renewable Energy Laboratory

*The state of agrivoltaics research and deployment in the United States.*

1:20-1:35pm: Nick de Vries, Chief Technology Officer, Silicon Ranch

*A solar engineer’s perspective and project origin story.*

1:35-1:50pm: Will Harris, Rancher, White Oak Pastures

*A rancher’s experience with solar sheep grazing and research partnerships.*

1:50-2pm: Taylor Bacon, PhD student with Keith Paustian, Colorado State University

*Ecosystem services and carbon dynamics on agrivoltaic grazing systems.*

2-2:10pm: Rebecca Mitchell, PhD & Rob Clement, PhD, Quanterra Systems  
*Using Eddy Covariance to measure carbon, water, and energy flows in agrivoltaic grazing systems*

2:10-2:20pm: Break

2:20-3pm: *All Speaker Panel Q&A Discussion*

## **Workshop: Stakeholder Engagement for the International Year of Rangelands and Pastoralists (IYRP) 2026: Action Planning for SRM Sections and Partners**

**Organizer: D. Layne Coppock, Lauren Svejcar**

**Room: Alpine 1**

Session Overview: This is the third consecutive SRM workshop devoted to the IYRP 2026. The goal of the IYRP is to promote sustainable rangeland systems worldwide (<https://iyrp.info/>). At the SRM— Boise workshop, participants discussed common challenges and intervention needs for the USA, Mexico, and Canada. For Sparks, our objective is to clarify several examples or models of action planning for use by SRM sections—as well as GO or NGO partners—that are impactful yet feasible to implement by 2026. In-person and virtual formats will integrate discussions among participants from across North America.

There will not be formal talks. Moderators will give opening and closing remarks. Representatives of various stakeholder groups may also speak about their priority interests and concerns regarding the future of rangeland systems.

## **Contributed Oral Session: Sage Grouse 1 (session 1 of 2)**

**Room: Cascade 1**

1:00pm: Codi Backen

Greater Sage-grouse nest success is more strongly associated with climatic variability than vegetation productivity

1:20pm: Shawn O'Neil

A retrospective analysis of greater sage-grouse population and survival response to precipitation and drought across 5 western states, 1985–2022

1:40pm: Carl Lundblad

A review and synthesis of the effects of climate on sage-grouse, indicator species of sagebrush ecosystem health

2:00pm: Sarah Webster

Surface mining impacts to sagebrush vegetation communities and greater sage-grouse populations

2:20pm: Jeff Beck

Population trends in non-core Greater Sage-Grouse relative to wind-energy development in Wyoming

2:40pm: Steven Mathews

Effects of manipulating common raven (*Corvus corax*) breeding success on raven and greater sage-grouse (*Centrocercus urophasianus*) populations in Nevada and California, USA.

### **Contributed Oral Session: Carbon**

#### **Room: Cascade 4**

1:00pm: Mike Anderson

Assessing carbon over working lands and sources of bulk density information

1:20pm: David Eduardo Prado-Tarango

Soil carbon initiative: Monitoring soil carbon on sheep and livestock ranches in the Western US.

1:40pm: Megan Nasto

Measuring soil organic carbon as a means for promoting collaborative land stewardship by cattle ranchers and state and Federal agencies in the southern great plain grasslands of eastern New Mexico

2:00pm: Brian Morra

Carbon stocks and total belowground carbon flux reflect weather and grazing use in semiarid montane meadows

2:20pm: Cody Reed

Assessing carbon losses and gains in montane meadows: A comparison of methods

2:40pm: Anne Blackwood

Comparing soil organic carbon between four grazing treatments

### **Contributed Oral Session: Grazing**

#### **Room: Cascade 1**

1:00pm: Curtis Drake

Assessing effects of dormant season grazing on biodiversity using line-point intercept and modified-Whitaker plot methods

1:20pm: Amanda Norton

Cow foraging behavior in adaptive multi-paddock grazing on a sagebrush steppe ranch in 2023

1:40pm: Ira Parsons

Cue frequency and animal behavioral response to changing virtual paddock boundaries in extensive grazing systems

2:00pm: Benjamin Menapace

Impact of riparian grazing on incised prairie streams

2:20pm: Kalyn Taylor

Contrasting soil health and productivity responses to long-term grazing in two semiarid rangelands

2:40pm: Lennel Camuy-Velez

Soil microbiome predator-prey relationships altered by temporal grazing intensity

## **Contributed Oral Session: Herbicide**

**Room: Cascade 5**

1:00pm: Lisa Rew

Response of cheatgrass and native plant community to herbicide management over four years in high-elevation sagebrush steppe

1:20pm: Ranae Sullivan

Impacts of imazapic on vegetation and soil seed banks in an annual grass-invaded Mojave Desert ecosystem during a drought

1:40pm: Erik Lehnhoff

Herbicide induced vegetation dynamics across a mesquite encroachment gradient

2:00pm: Sheila Taillon

Combining the effects of herbicides and fertilizers for enhanced control of leafy spurge (*Euphorbia esula*)

2:20pm: Nic McMillan

Growing season fires and herbicide may not be the silver bullet to *Lespedeza cuneata* management

2:40pm: Kayla Johnson

Using an integrated management approach to control an invasive legume in the tallgrass prairie

## **Contributed Oral Session: Imaging 2 (session 2 of 2)**

**Room: Alpine 3**

1:00pm: Biquan Zhao

Forage biomass estimation for smooth brome grass using drone-based remote sensing to evaluate effects of treatments with nitrogen fertilization and cattle nutrient supplement

1:20pm: Tracy Shane

Drones vs. Humans: multi-temporal comparisons between sUAS photogrammetry/spatial analysis methods and field-based vegetation measurements collected by humans

1:40pm: Micah Funk

Combining high-resolution drone imagery and satellite remote sensing to assess rangeland pastures

2:00pm: Ryan Blackburn

Phones and drones: Rapid assessment of plant functional types and vegetation structure in the Mongolian steppe

2:20pm: Jason Karl

Lens-caused relief displacement and the potential for bias in estimates of vegetation cover from downward-looking photographs

2:40pm: Amira Burns

CameraTrapDetector: Harnessing the power of deep learning to classify camera trap images

**3pm: Coffee Break in the Trade Show**

**4pm: Bidding ENDS at the Endowment Silent Auction**

**Tuesday, January 30<sup>th</sup>**

**3:20pm – 5:00pm**

### **Symposia: The National Climate Assessment and Western Rangelands: What Can We Expect?**

**Organizer: Corrine Noel Knapp, Emily Donaldson**

**Room: Southern Pacific A & G**

Session Overview: The 2023 National Climate Assessment is the current authoritative assessment of climate change science and impacts for the United States. Authors from both regional (Southwest, Southern Great Plains, Northern Great Plains) and topical (Food & Agriculture) chapters will summarize key messages from the report and then plan for participant interaction to hear your reflections on our findings, their relevance to rangelands in the western USA, and how you might use the assessment in your own work. Participants will emerge with a better understanding of relevant findings and how they might use them in their own work.

Agenda

3:20-3:25: *Introduction*

3:25-3:45: David L. Hoover

*What Can We Expect in Agriculture, Food Systems, and Rural Communities in Rangelands?*

3:45-4:05: Dr. Corrine N. Knapp

*What Can We Expect In The Northern Great Plains?*

4:05-4:25: Dr. Mark Brunson

*What Can We Expect In The Southwest?*

4:25-4:45: Dr. Jean L. Steiner

*What Can We Expect in the Southern Great Plains Grasslands?*

4:45-5:00pm: *Question & Answer*

### **Symposia: The Outcomes of Outcome Based Grazing, and the path forward**

**Organizer: Kathryn Dyer**

**Room: Cascade 4**

Session Overview: Since demonstration projects for Outcome Based Grazing Authorizations (OBGA) were selected by BLM in 2018, much has been learned about how to effectively write, authorize, and implement an OBGA on BLM administered lands. Projects are located in Nevada, Idaho, Wyoming, Montana, Oregon and Colorado and address how grazing can adaptively interact with resource needs or concerns, like annual

grasses, wildlife habitat requirements, and drought. Now there are outcomes to be seen and shared, as livestock operators and agency staff have effectively managed grazing adaptively, cooperatively monitored short and long term indicators, and are collaboratively tracking achievement of objectives. The BLM's continuing plans for advancing and expanding this initiative will also be discussed.

#### Agenda

*\*\* 5 minutes have been built in after each presentation to take questions, if there are no questions the agenda will move to the next presentation, and allow for additional questions at the end\*\**

3:20pm: Kathryn Dyer  
*The Start and Purpose of OBGA*

3:35pm: Cheryl Newberry and Niels Hansen  
*PH Livestock Company Outcomes over time*

4:00pm: Hunter Seim and Katie Miklejohn  
*Opportunities Available Through Little Snake's Outcome-based Grazing Authorization*

4:25pm: Adrienne Hoskins  
*Cooperative Monitoring: Sharing the workload to inform annual management decisions.*

4:40pm: Kathryn Dyer  
*The Path Forward for OBGA*

#### **Symposia: Pinyon-juniper on the range: changing ecology and management**

**Organizer: Adam Noel, Bob Shriver, John Bradford**

**Room: Southern Pacific D**

Session Overview: Pinyon-juniper woodlands are a component of rangelands in every western US state and have complex interactions with many other rangeland ecosystems. These woodlands provide ecosystem services and host enormous biodiversity, but shifting climate conditions and management regimes have altered PJ woodland distribution with consequences for neighboring biomes. This session will explore the ongoing management and research in pinyon-juniper ecosystems with an emphasis on future PJ woodland dynamics and management in the context of climate change.

#### Agenda

3:20 –3:35pm: Doug Shinneman  
*Ecological Effects of Pinyon-Juniper Removal in the Western United States-A Synthesis of Scientific Research, January 2014–March 2021*

3:35pm–3:50pm: Miranda Redmond  
*Drought Resilience in Pinyon-Juniper Woodlands: Effects of overstory tree mortality on water availability and understory vegetation*

3:50pm–4:05pm: Elise Pletcher  
*Anticipating range shifts: forecasting pinyon-juniper woodland expansion in the Great Basin*

4:05pm–4:20pm: Adam Noel

*How do shifting distributions of pinyon-juniper align with western U.S. management objectives?*

4:20pm–4:35pm: Ali Urza

*Addressing shared concerns about pinyon-juniper ecosystems through meaningful collaboration*

4:35pm–4:50pm: Jeremy Maestas

*Where trees meet the sage: Don't make rangelands pay the forest management debt*

### **Symposia: Logistics & Financials- Addressing Challenges in Rangeland Reclamation & Restoration**

**Organizer: Sean Di Stefano, Lauren Svejcar, Clay Wood**

**Room: Southern Pacific F**

Session Overview: This session seeks to provide actionable insights for rangeland managers to promote positive change on the range. Managers are often faced with many logistical and financial limitations to rangeland restoration. We will have presentations from a diversity of speakers about the challenges faced when restoring rangelands in the western US. Each will have 15-minutes for presentation followed by 5-minutes for questions. An interactive 20-minute discussion following the talks will encourage collaboration in exploring strategies to address logistical and financial challenges in reclamation and restoration projects. Emphasizing practical solutions, we strive to create a platform for knowledge exchange and actionable outcomes.

#### Agenda

3:20 - 3:40: Crystal Emsoff

*Emsoff Livestock Company's Journey to Restore and Revitalize Rangeland Post-Loyalton Fire*

3:40 - 4:00: David Lile

*Plan to Project: Implementing Restoration at Relevant Scales*

4:00 – 4:20: Emily Luscombe and Nicholas Rajen

*Cultivating Sustainability: Intertribal Agriculture Council's Collaborative Work on Tribal Lands and Natural Resource Restoration*

4:20 – 4:40: Colleen Faber

*Navigating Reclamation and Restoration in the Oil and Gas Industry of Wyoming*

4:40 – 5:00: Interactive Discussion

### **Symposia: Putting Prescribed/Targeted Grazing to Work on Rangelands and Forests at the Landscape-Level in the Western U.S. and Beyond**

**Organizers: Kristina Wolf; SRM Targeted Grazing Committee**

**Room: Southern Pacific B**

Session Overview: Join us in this symposium to explore management of prescribed grazing in range and forestlands in the Western US. Experts and practitioners from private industry, state agencies, and academic research institutions from across California, Idaho, Minnesota, and Canada will delve into the history, purpose,

and goals of prescribed grazing for fuels management, emphasizing the synergy between this and other fuels reduction methods and implications for managing diverse landscapes. The symposium will be presented in four parts: 1) History of the Range Management Advisory Committee and California State Programs including Prescribed Herbivory, 2) Scientific Foundations and Applications of Prescribed Grazing, 3) In Practice Integration of Prescribed Grazing into Management Projects for Fuel Reduction, and 4) Prescribed Herbivory Beyond California. Sessions will be followed by a moderated panel discussion with the audience to encourage dialogue and exchange of ideas among speakers and attendees, providing a platform for participants to delve deeper into specific topics. Topics of discussion will include application of prescribed grazing for the reduction of fuel hazards, wildfire mitigation, community resilience, and multiple ecosystem benefits, as well as trade-offs, policy and permitting hurdles, constraints, and lessons learned. New and trending topics to be covered will include collaborative planning and land management by state-certified foresters and rangeland professionals to enhance landscape-level management, with applications to private and public lands and entities; new and upcoming tools to assist graziers and agency personnel in creating, implementing, and monitoring Grazing Agreements and Grazing Management Plans; and matching graziers with grazing lands, writing applications for grazing proposals, and navigating permitting. Educational and technical resources will be provided to the audience, including where to find information, useful publications and guides, and training videos and webinars. Participants will gain practical insights into this vegetation management tool and contribute to the collective knowledge driving sustainable land management practices.

#### Agenda:

3:20-3:23pm: Kristina Wolf

*Introduction: Welcome and Goals of the Symposium*

#### Section 1

*History of the Range Management Advisory Committee and California State Programs including Prescribed Herbivory*

3:23-3:29pm: Marc Horney

*RMAC: history, function, process; how prescribed grazing became a topic of interest*

3:29-3:35pm: Cole Bush

*RMAC White Paper 2015 and Update*

3:35-3:41pm: Kristina Wolf

*VMP and VTP, State programs and direction*

#### Section 2

*Scientific Foundations and Applications of Prescribed Grazing*

3:41-3:47pm: Stephanie Larson

*Prescribed grazing: history, purpose and goals*

3:47-3:53pm: Marc Horney

*Fuels Management: history, purpose, and goals*

3:53-3:59pm: Kristina Wolf

*Integrated Fuels Treatments: best practices and outcomes*



### Section 3:

#### *Integration of Prescribed Grazing into Management Projects for Fuel Reduction – In Practice Case Studies*

3:59-4:05pm: Marc Horney  
*RMAC Efforts*

4:05-4:13pm: Stephanie Larson  
*UCCE and Allied Conservation Organizations*

4:13-4:28pm: Bianca Artadi Soares, Cole Bush, Matt Gabica  
*Service Providers: Logistics, considerations, planning, implementation, monitoring, funding, permitting, renewals, relationships*

### Section 4

#### *Prescribed Herbivory Beyond California*

4:28-4:38pm: Lee Sexton, Kelly Anderson, Matt Gabica  
*Undertakings and lessons learned in western states and other regions*

4:38-4:58pm: Kristina Wolf  
Moderated Panel Discussion

4:58-5pm: Wrap-Up and Thank You

#### **Workshop: Agents of change: stories of the past, present, and future from women on the range [Diversity & Inclusion Forum]**

**Organizers: Devyn Orr, Julie Larson, Devii Rao, Lesley R. Morris**

**Room: Southern Pacific E**

*Part I and II of The Women Changing Range Symposium taking place from 10:20am-Noon and 1pm-3pm*

Session Overview: This is part III of The Women Changing Range Symposium. In this workshop, we will hold a moderated panel discussion among a subset of symposium speakers and several SRM leaders, with the intent to listen to one another's stories and learn from other's experiences. During this discussion, moderators will share anonymous stories submitted by SRM members, hold space for attendees to voice their ideas and perspectives, and then hear from panelists. From this discussion, we hope to synthesize both challenges and opportunities for building engagement and inclusion in range management.

#### Agenda

3:20 pm: Moderators: Introduction and Welcome

3:30-4:10 pm: Panelist and audience response to anonymous story and question submissions

4:10-5 pm: Panelist and audience guided Q&A discussion

#### Panelists:

Karen Hickman; Oklahoma State University

Karen Launchbaugh; University of Idaho  
Kris Stewart; Ninety-Six Ranch  
Krista Ehlert; South Dakota State University  
Cheryl Shippentower; Confederated Tribes of the Umatilla Indian Reservation  
Jessica Eck; Natural Resources Conservation Service, Idaho  
Jennifer Hickman; BIA - National Interagency Fire Center

**Workshop: Stakeholder Engagement for the International Year of Rangelands and Pastoralists (IYRP) 2026:  
Action Planning for SRM Sections and Partners**

**Organizer: D. Layne Coppock, Lauren Svejcar**

**Room: Alpine 1**

*Workshop resumes from 1pm-3pm session*

Session Overview: This is the third consecutive SRM workshop devoted to the IYRP 2026. The goal of the IYRP is to promote sustainable rangeland systems worldwide (<https://iyrp.info/>). At the SRM— Boise workshop, participants discussed common challenges and intervention needs for the USA, Mexico, and Canada. For Sparks, our objective is to clarify several examples or models of action planning for use by SRM sections—as well as GO or NGO partners—that are impactful yet feasible to implement by 2026. In-person and virtual formats will integrate discussions among participants from across North America.

There will not be formal talks. Moderators will give opening and closing remarks. Representatives of various stakeholder groups may also speak about their priority interests and concerns regarding the future of rangeland systems.

**Workshop: VGS User Group**

**Organizer: Ashley Hall Charles Perry**

**Room: Alpine 2**

Session Overview: The workshop will feature live demos of VGS application suite updates, including a first look at the upcoming VGS for Android operating systems. VGS for Windows now offers improved qualitative sampling with added mathematical calculations (min, max, mode, median), equation creation, and like Survey 123, sketch and photo capture are now integrated within the survey. VGS Online also has various new features added since the SRM 2023 demonstration. We invite current and prospective users to join, ask questions, explore VGS's latest functions, and learn valuable tips for optimizing data collection efforts.

**Contributed Oral Session: Virtual Fence**

**Room: Cascade 3**

3:20pm: Krista Ehlert

What's in a name? Virtual fencing terminology for the enhancement of research, extension, and industry applications

3:40pm: Kaitlyn Dozler

The Influence of virtual fence cues on heart rate responses of cattle

4:00pm: Alexandra Harland

Efficacy of virtual fencing as a tool to rotationally graze beef cattle in Western Canada.

4:20pm: Melinda Ellison

Use of virtual fence in an upland western sagebrush steppe grazing allotment.

4:40pm: Logan Vandermark

The significance of extension programming in promoting the adoption of virtual fencing

### **Contributed Oral Session: Fire Management 1 (session 1 of 2)**

**Room: Cascade 1**

3:20pm: John Wendt

Trends and drivers of consumer dominance in ancient and modern North America

3:40pm: Keith Harmony

Mixed-grass vegetation response to an extreme wildfire event

4:00pm: Dakota Moberg

Changes in landscape structure after wildfire in South Texas

4:20pm: Alison Paulson

Post-fire regeneration and severity patterns across the 2021 Tamarack fire in the eastern Sierra Nevada (USA)

4:40pm: E.J. Bates

Grazing intensity impacts on herbaceous composition in burned sagebrush steppe

### **Contributed Oral Session: Pollinators and Soil Biome**

**Room: Southern Pacific C**

3:20pm: Devyn Orr

Crested wheatgrass seeding restructures plant-pollinator networks

3:40pm: Kevin Sedivec

Wildflower mineral status and nutritional value: Creating diverse rangelands benefit livestock and pollinators

4:00pm: Robert Arkle

Forbs, pollinators, wildfire, and restoration in the Northern Great Basin

**4:20pm: OPEN**

4:40pm: Lea Condon

Biological soil crusts are most common on warmer, drier sites as defined by the resistance and resilience framework.

### **5:00-6:30pm: Poster Session #2**

**Room: Trade Show**

## **Tuesday Evening Social Events**

### **4:30pm-6:30pm: Bridging the Gap**

Room: Sierra 1

*Description: The Young Professionals Conclave, in conjunction with Student Conclave, is excited to host the sixth annual Bridging the Gap mentorship event at the SRM 2024 annual meeting.*

*The objective of this mentorship event is to build more connections between the student/young professional membership of SRM and established professionals. Mentees and mentors will participate in a semi-structured activity to facilitate discussion and networking, with the intent of helping mentees navigate career opportunities in rangeland science and management.*

*Students and young professionals looking for a job, internship, grad position or career advice will not want to miss this event!*

*We have modified our program based on participant feedback, and have new resources available to strengthen networking opportunities between mentees and mentors. Join us for drinks, appetizers, raffle prizes and conversation at the 2024 annual meeting!*

### **5:30pm-7:30pm: Department of Natural Resource Management, SDSU**

Room: Southern Pacific B

### **5:30pm-7:30pm: International Mountain Section/Montana State University Social**

Room: Southern Pacific D

### **6:00-8:00pm: USDA ARS Family Meeting**

Room: Cascade 5

### **6:00-8:00pm: USDA USFS Family Meeting**

Room: Cascade 3

### **6:00-8:00pm: USDA NRCS Family Meeting**

Room: Cascade 1

### **6:00-8:00pm: DOI BLM Family Meeting**

Room: Cascade 4

### **6:00-8:00pm: Utah State University, Wildland Resources – Alumni**

Room: Southern Pacific A&G

### **6:00-8:00pm: University of Arizona Alumni Social**

Room: Southern Pacific C

### **6:00-8:00pm: University of Wyoming Social**

Room: Southern Pacific E

### **6:00-8:00pm: Cal Poly Humboldt University Alumni Social**

Room: Southern Pacific F

**6:00-8:00pm: UNR Social**

Room: Sierra 2

**6:00-8:00pm: Forest & Rangeland Stewardship, CSU**

Room: Sierra 3

**6:00pm-8:00pm: Idaho Section Social**

Room: Redwood 7

**8-11pm: Dance and Live Music!**

Room: Grand Ballroom 1

Overview: Join us for a fun night of dancing and great music provided by Chad Bushnell! Visit Chad's page to learn more about this great artist: <https://www.chadbushnell.com/>

**Wednesday , January 31<sup>st</sup>**

**Tours:**

**8:30am-1:30pm: Technical Tour 3: Wild Horse and Burro Management**

**3:30pm-5pm: Social Tour 4: Reno City Highlights**

**7:00am-1:00PM: Registration**

Foyer on the 2<sup>nd</sup> Floor

**7am-8am: 2024 Planning Committee Room**

Room: Redwood 1

**8am-5pm: Agency Recruitment #1 NRCS**

Room: Redwood 3

**8am-5pm: Agency Recruitment #2 USFS**

Room: Redwood 2

**8am-5pm: Agency Recruitment #3 BLM**

Room: Redwood 5

**8am-6pm: Leadership Task Force Room**

Room: Central Pacific

**7am-11pm: HSYF Home Room**

Room: Redwood 6

**Wednesday Morning Social Event**

**8-10am: Coffee and Bloody Mary Bar in the Trade Show**

Overview: Join us for our last morning in the Trade Show by grabbing a cup of coffee and/or a Bloody Mary (cash bar) and mingling with all of our fantastic exhibitors!

**9:00am-10:00am**

**Ignite: Landscape Data Commons: Enabling a data access to data insight pipeline to support rangeland management and research**

**Organizers: W. Austin Rutherford, Kristina Young, Sarah McCord, Nick Webb, Jason Williams**

**Room: Alpine 1**

Session Overview: The Landscape Data Commons (LDC) is a platform that leverages rangeland monitoring datasets to enable data access to data insights. The LDC aggregates and harmonizes data across agencies and monitoring programs (e.g., Bureau of Land Management Assessment, Inventory and Monitoring, Natural Resources Conservation Service National Resources Inventory, National Wind Erosion Research Network, etc.), connects those data to models, and supports land management, modeling, and research. This session will introduce the LDC, highlight research and management examples with the LDC, and provide details for contributing to and using the LDC.

**Agenda**

9:00 AM- 9:05 AM: Kristina Young

*Welcome*

9:05 AM-9:10 AM: Sarah McCord

*The Landscape Data Commons: a system for standardizing, accessing, and applying large environmental datasets for rangeland research and management*

9:10 AM-9:15 AM: Brandon Edwards

*Connecting standardized rangeland monitoring data to physically based models to support land management and research: an example using the AERO wind erosion model.*

9:15 AM-9:20 AM: Joe Brehm

*Using terradactyl to calculate indicators of ecological conditions in R*

9:20 AM-9:25 AM: Mahmoud Saeedimoghaddam (Kia)

*An Artificial Neural Network Emulator of the Rangeland Hydrology and Erosion Model*

9:25 AM-9:30 AM: W. Austin Rutherford

*Using Landscape Data Commons to assess the distribution and ecohydrological function of rangeland plant communities in the western US*

9:30 AM-9:35 AM: Anna Knight

*Developing data-driven State-and-Transition-Models at landscape scales using US federal agency monitoring datasets*

9:35 AM-9:40 AM: Alex Traynor

*A data driven approach to setting benchmarks for a BLM Land Health Assessment, a case study from Vale, OR*

9:40 AM-9:45 AM: Carrie-Ann Houdeshell

*Leveraging the Landscape Data Commons for the assessment needs of the Conservation Effects Assessment Project (CEAP) on Grazing Lands.*

9:45-10am: Discussion/Q&A

**10:00am-12:00pm**

### **Producer's Forum (10am-3pm)**

**Organizer: Dave Voth**

**Room: Sierra 2**

Agenda

#### Ranching for Profit Workshop: Finding the Profit Drivers and Deadwood in the Ranching Business

*Dallas Mount, Owner of Ranch Management Consultants, and Ranching for Profit Instructor, will deliver a dynamic workshop helping you see the ranch through a new lens:*

- Apply business principles to your ranch
- How to identify the economic leverage points to increase profit
- Apply financial principles to your business
- Learn commonalities of profitable ranches
- The power of good grazing for a profitable ranch

#### Speaker Bio: Dallas Mount

Owner of Ranch Management Consultants (RMC) home of the Ranching for Profit School and the Executive Link program. Dallas has led RMC since 2019 and worked with hundreds of ranchers across the US, Canada and Australia to position their business for economic profit and ecologic health. After working with University of Wyoming Extension for 18 years, Dallas started teaching the Ranching For Profit School in 2012 and quickly established himself as an elite instructor. Dallas and his wife Dixie, have two adult children and own and manage a grazing operation near Wheatland, WY. RMC is focused on creating profitable businesses, with healthy land and happy families.

### **Ignite: Making short-term ecological forecasting work for rangelands**

**Organizer: Gregor-Fausto Siegmund and Leland Bennion**

**Room: Alpine 2**

Session Overview: Description: Rangelands experience extensive variability in time and space that can pose challenges for management. Short-term ecological forecasting makes predictions about ecological and ecosystem processes on timescales that could allow managers to anticipate and respond to changes. This session will focus on short-term ecological forecasts for rangeland management. The talks will survey forecasts for rangelands and reflect on challenges to making and acting on predictions about the future. To promote dialogue about the socio-ecological context of rangeland futures, we will bring together ecologists, social scientists, and practitioners to explore the scientific, social, and governance context of using forecasts for anticipatory management.

Agenda

10:00: Gregor Siegmund, Leland Bennion

*Session welcome and introduction*

### Forage and grazing

10:05: Merilynn Schantz

*Forecasting rangeland plant production by ecological sites; are they better than forecasts by geographical location?*

10:10: Javier Osorio Leyton and Jay P Angerer

*The Predictive Livestock Early Warning System: Forecasting Forage for Drought and Livestock Management*

10:15: Julie Elliott

*Anticipating Grass Production Abundance and Shortfalls with Grass-Cast*

10:20: Tonya Haigh

*Improving Usefulness of Grassland Productivity Forecasts*

### Fire and fuels

10:25: Joe Smith

*Dynamic rangeland vegetation data can improve wildfire risk forecasting in imperiled sagebrush ecosystems*

10:30: Jeremy Maestas

*Using fuels-based rangeland fire probability maps to reduce large wildfires in the Great Basin*

10:35: Katie Wollstein

*Applying ecological forecasts in rangeland fire planning: Social and administrative considerations*

### Restoration and regeneration

10:40: Michelle Jeffries and David Pilliod

*Forecast tool technology transfer and applications by managers: an example from the Land Treatment Exploration Tool*

10:45: Leland Bennion

*Sagebrush model validation for the drought forecasting module of the Land Treatment Exploration Tool*

10:50: Robert Shriver

*The promise and perils of using remote sensing products for rangeland forecasts*

10:55: Stuart Hardegree

*Availability and options for using North American Multi-Model Ensemble (NMME) forecasts for rangeland management applications*

11:00-End

*Question and answer, and discussion with speakers.*



## **Symposia: Sagebrush Biome Conservation Design Phase 2: Implementing Hope While Managing Change**

**Organizer: Kevin Doherty**

**Room: Southern Pacific A & G**

Session Overview: The Sagebrush Conservation Design (SCD) identifies the best remaining ecologically intact sagebrush areas. The SCD is an adaptive, biome-wide tool to identify and address landscape-level threats by supporting the strategic allocation of conservation effort and resources. These threats include invasive annual grass, wildfire, expanding conifers, and human development, all of which impact a diverse suite of land uses, values, and ecosystem services.

This symposium will present 12 new papers that further the scientific underpinnings of the SCD. The symposium will focus around 3 themes: Ecological Relevance of SEI, Geographies of Action, and Geographies of Winning

### Agenda

#### *Session 1: Ecosystem Context, Relevance of SEI*

10:00: Kevin Doherty, US Fish and Wildlife Service, Lakewood, CO

*Sagebrush Conservation Design Phase 2: Implementing Hope While Managing Change*

10:20: Tina Mozelewski, Conservation Science Partners

*State of the sagebrush: Conservation influences on the future of the biome*

10:40: Martin C. Holdrege, U.S. Geological Survey, Southwest Biological Science Center, Northern Arizona University, Flagstaff, Arizona

*Climate change promotes declines in sagebrush habitat quality*

11:00: David Theobald, Conservation Planning Technologies, Fort Collins, CO

*Declines in US sagebrush ecosystem integrity from 2001-2021 and the role of structural connectivity in understanding CSAs/GOAs robustness*

11:20: Alexander Kumar, US Fish and Wildlife Service, Fort Collins, CO

*Defend and grow the core for birds: How a biome-wide sagebrush conservation strategy benefits imperiled rangelands birds (Kumar et al) & Evaluating the Sagebrush Conservation Design Strategy Against the Performance of a Greater Sage-Grouse*

11:40: Rory O'Connor, USDA-Agricultural Research Service, Burns, OR

*Managing rangeland carbon with carbon security index & An Assessment of Conservation Opportunities within Sagebrush Ecosystems of US National Parks and Wildlife Refuges*

*Session to resume at 1pm*

## **Symposia: Monitoring Soil Carbon on the Range: Where is the Science?**

**Organizer: Chris H. Wilson, Paige Stanley**

**Room: Sierra 3**

Session Overview: Due to increased threats from climate change, there is growing effort to foster soil organic carbon (SOC) sequestration on rangelands across the planet. To incentivize management practices that can enhance SOC, a variety of carbon credit schemes have been developed. However, these approaches presuppose the ability to accurately and efficiently quantify SOC at scale across these heterogeneous ecosystems, a formidable scientific challenge. This session will bring together scientists and practitioners who work with SOC from a variety of perspectives to discuss the current state of the art, and to foster synthesis around the best way forward for research and practice.

This session will feature 5 standard length talks followed by a panel discussion moderated by the session organizers and featuring a mix of pre-prepared and audience questions.

## Agenda

10-10:15 AM: Chris H. Wilson, Agronomy Department, University of Florida  
*The challenge of monitoring carbon on rangelands*

10:15-10:30: Jonathan Sanderman, Woodwell Climate Research Center  
*Multi-scale data integration for robust carbon monitoring on the range*

10:30-10:45: Yao Zhang, Soil Innovation Lab, Colorado State University  
*Modeling the Impact of Grazing on Soil Carbon Dynamics Using MEMS 2.0*

10:45-11am: Yang Lin, Department of Soil, Water and Ecosystem Sciences, University of Florida  
*Apparent saturation of mineral-associated organic carbon in Mollisols*

11-11:05: Break

11:05-11:20: Jane Lucas, Cary Institute of Ecosystem Studies  
*What role does microbial life play in rangeland SOC management?*

11:20-11:35: David Schurman, Perennial Climate Inc.  
*Putting Science into Practice: An End-to-End Process and Toolset for Scouting, Sampling, and Mapping Carbon Sequestration on U.S. Rangelands*

11:35am-Noon: Panel Discussion and Q&A

## **Symposia: Implementing Climate Adaptations on Southwestern Rangelands: Involving Diverse Stake Holders in Decision-Making**

**Organizer: Joel Brown, Mr. Skye Aney**

**Room: Southern Pacific C**

Session Overview: The Southwest US is a difficult place to manage rangelands, even in relatively normal years. However, the past 30 years have been exceptionally variable, including several severe drought episodes. The combination of land ownership (federal, private and state) results in diverse management objectives and can often restrict practice options. Research to support rangeland management decision-making in the Southwest has a >100 y history. The research output has been both prolific and varied-spanning disciplines in ecology, economics, sociology, and management science. The volume and diversity of this research makes it difficult

for individuals (producers, advisors, public) to organize into a coherent decision-making process. The USDA SW Climate Hub has placed a strong emphasis on working with groups to better understand and organize the information to improve adaptation decisions. Climate change projections are consistent in predicting higher temperatures and increasingly erratic rainfall. The changing economics and societal expectations of land management require a reinterpretation of the existing research and integration of new findings to develop more flexible solutions to climate change challenges and delivery to a more diverse group of partners. In their 10 years of existence, the SW Climate Hub has placed an emphasis on working with groups to gain insight into information needs and to help organized existing work into a logical decision process that reaches a diverse audience. This symposium will examine those efforts in terms of resources (time and skills) required, lessons learned, and future opportunities.

#### Agenda

10:00-10:20: Emile Elias, USDA SW Climate Hub

*Changing perspectives and approaches in rangeland resilience under increasing climate variability and change: 10-year retrospective from the USDA Southwest Climate Hub*

10:20-10:40: Skye Aney USDA SW Climate Hub

*Working with land managers via the Southwest Drought Learning Network*

10:40-11:00: Sheri Spiegel

*Integrating adaptation into production: the Southwest Sustainable Beef Cap*

11:00-11:20: Sara Thompson

*Working with agency staff: Climate Conversations*

11:20-11:40: Helena Deswood

*Decision-making on Tribal Lands: the Indigenous Climate Smart Management Initiative*

11:40-12:00: Stephanie Bestelmeyer

*Reaching the next generation: Asombro K-12 education*

#### **Symposia: Sustaining Indigenous Natural Resources; Range throughout Indian Country**

**Organizer: Nick Padilla**

**Room: Southern Pacific D**

Session Overview: Issues in range and natural resources are not unique to any one tribe and the goal of the symposium is provide time for native and non-native participants to engage in conversation and information sharing of natural resource management being done throughout Indian Country. Speakers are to discuss opportunities and successes of projects that help strengthen scientific knowledge, tribal engagement, and applicable practices that managers can look into and apply on home Reservations. This promotes opportunities for Native land managers to network and in a venue not often available at local areas.

#### Agenda

10:00-10:05am: Nick Padilla

*Welcome/Introduction*

10:05-10:35am: Tolani Francisco, DVM MPH

*USDA Forest Service collaborative with Tribal Nations to address horses on Tribal Lands*

10:35-11:05am: Jordan R.M. Kennedy, Ph.D.

*Moving like a buffalo, building like a beaver, singing like a bird: land-based research on tribal lands for cultural and ecological preservation*

11:05-11:35am: Gilbert Jackson, Rangeland Management Program Manager

*U.S. Forest Service Rangeland Management Program Futuring –Enhancing Tribal Engagement in Rangeland Co-stewardship*

10:35-12:00pm: Nick Padilla

*Panel Discussion and Questions*

## **Symposia: Improving Efficiency of Livestock Behavior Analytical Approaches: Incorporating Machine Learning into Analysis of Sensor-based Behavior Data**

**Organizer: EJ Raynor Jamie Brennan**

**Room: Southern Pacific E**

Session Overview: This symposium focuses on delivering solutions to the management and analyses of sensor-derived behavior data. This opportunity will provide an understanding of the use of AI (Artificial Intelligence) to streamline analyses of big data. Example content include “Machine Learning 101” and “Pitfalls of technology and data analysis in grazing behavior research.” Skills addressed in this experience include software and data analysis as well as data collection and management methods for on-animal sensor research. Example Code will be shared on the SRM Livestock Foraging Behavior Committee’s website.

### Agenda

10:00-10:02: EJ Raynor, AgNext, Colorado State University

*Session Introduction*

10:02-10:20: Jamie Brennan and Hector Menendez, South Dakota State University

*Machine Learning 101*

10:20-10:40: Jim Sprinkle, University of Idaho

*Collecting & Processing Believable Accelerometer Data for Cow Grazing Behavior*

10:40-11:00: Kieren McCosker, University of Queensland

*Individual Tracking of Hundreds of Cattle at a Time: Managing Big Movement Data to Assess the Impact of High Temperatures on Livestock Behavior*

11:00-11:20: Derek Bailey, New Mexico State University

*Unsupervised machine learning of cattle tracking data and approaches to detect illness in livestock*

11:20-11:40: Colin Tobin, North Dakota State University

*Pitfalls of technology and data analysis in grazing behavior research*

11:40-12:00: Shelemia Nyamuryekung'e, Norwegian Institute of Bioeconomy Research (NIBIO)  
*Precision Livestock Management in the Internet of Things (IoT) Era (VIRTUAL)*

**Symposia: “Range Ecology at Disequilibrium” at 30: What have we learned and where are we going?**

**Organizer: Brandon Bestelmeyer and Nathan Sayre**

**Room: Southern Pacific F**

Session Overview: Between 1988 and 1993, a series of landmark publications marked a turn in rangeland ecology and management for both ranching and pastoralist systems. Since then, insights from nonequilibrium (NE) ecology have attained acceptance among scientists, although application to rangelands has been uneven. Elements of the NE paradigm can be found in new management frameworks such as State-and-Transition Models and Resist-Accept-Direct, and climate change is increasing the variability of precipitation, pushing greater areas toward NE dynamics. But older, equilibrium-based assumptions continue to influence policy proposals and management prescriptions in many places. In this symposium, speakers will present on the history and future of NE concepts overseas and in the United States, and a panel will engage the audience in a discussion of the on-the-ground implications of these ideas.

Agenda

10:00-10:10 AM: Brandon Bestelmeyer, USDA-ARS Jornada Experimental Range  
*Rangelands in Equilibrium or Disequilibrium: Why it Still Matters*

10:10-10:30 AM: Layne Coppock, Utah State University  
*Genesis of Non-Equilibrium Theory and Its Evolving Application in Varied Rangeland Situations*

10:30-10:50 AM: Maria Fernández-Giménez, Colorado State; Chantsallkham Jamsranjav, American Center for Mongolian Studies; Ginger Allington, Cornell University  
*Reflections on global application of non-equilibrium concepts in pastoral systems*

10:50-11:10 AM: Jay Angerer, USDA-ARS Livestock and Range Research Laboratory  
*Technological applications based on nonequilibrium concepts.*

11:10-11:20 AM: Nathan Sayre, University of California, Berkeley  
*Summary and introduction of panelists*

11:20-12:00. *Panel discussion/Q&A*

Invited panelists:

Ginger Allington, Cornell University

Roy Behnke, independent pastoral development expert

Sam Fuhlendorf, Oklahoma State University

**Workshop: Putting the R in Rangelands: Applies tools for data analysis in R; Part I**

**Organizer: Georgia Harrison, Claire Tortorelli**

**Room: Alpine 1**

Session Overview: This two-part workshop dives into R statistical software and publicly available data for rangeland applications. Part 1 (10-12) introduces R and the tidyverse framework for cleaning, manipulating, and visualizing data. In Part 2 (1-3), essential tools including the Rangeland Analysis Platform, Climate Engine, Landscape Data Commons, and Ecosystem Dynamics Interpretive Tool and two R Packages *trex* and *terradaetyl* will be explored through an applied case study. All skill levels are welcome to either or both parts of this hands-on workshop, but participants should bring a laptop with the most recent versions of R and R Studio (both free) pre-installed.

## Agenda

*Part 1 (10-12) - Welcome and overview; R 101; data cleaning and vis in the tidyverse; gear up for case study*

10:00-10:30: Georgia Harrison, USDA ARS  
*Welcome to the workshop & Getting started with R*

10:30-11:00: Leah Dreesmann, University of Idaho  
*Data manipulation and cleaning in R within the tidyverse*

11:00 -11:30: Claire Tortorelli, UC Davis/USFS  
*Data visualization in R with ggplot2*

11:30-12:00: Georgia, Leah and Claire  
*tidyverse coding exercise; gear up for case study after lunch*

*Workshop will resume at 1pm*

## **Ignite: Past, present, and future of the Sagebrush Steppe Treatment Evaluation Project (SageSTEP)**

**Organizer:** Beth Newingham, Lisa Ellsworth, Dustin Smith

**Room:** Alpine 3

Session Overview: The Sagebrush Steppe Treatment Evaluation Project (SageSTEP) is a regional experiment evaluating methods for fuel reduction and ecological restoration. Fifteen years ago, we implemented treatments (prescribed fire, mechanical tree removal, and herbicide) at 19 sites either invaded by annual grasses or encroached by pinyon-juniper across the Intermountain West. We have collected annual fuel, vegetation, and climate data to understand changes in response to treatment, climate, and disturbance. We present the history of SageSTEP, recent results, and discuss future research allowing for audience feedback. Our long-term research network illustrates changes that have happened in the past fifteen years in rangeland management.

## Agenda

10:00: Lisa Ellsworth, Beth Newingham, Jim McIver, David Pyke, Jeanne Chambers, Scott Shaff  
*The history of the Sagebrush Treatment Evaluation Project (SageSTEP)*

10:05: Steve Hanser, Jim McIver, Scott Shaff  
*SageSTEP experimental design and data resources*

10:10: Beth Newingham, Lisa Ellsworth, Dave Pyke, Scott Shaff

*Results from ten years of SageSTEP data*

10:15: Dustin Smith

*Lessons learned from SageSTEP from the management perspective*

10:20: Mark Brunson

*Sustaining a flow of science outreach from long-term SageSTEP research*

10:25: Lisa Ellsworth, Beth Newingham, Dustin Smith

*Discussion*

10:35: Claire Williams, Lisa Ellsworth, Beth Newingham, Scott Shaff

*Dual disturbances in the sagebrush: What happens when fuel treatments burn?*

10:40: Brian Howard, Beth Newingham, Lisa Ellsworth, Claire Williams

*Pre-fire fuel treatment effects on post-fire plant community composition*

10:45: Tyler Pelletier, Beth Newingham, Brian Howard, Brian Morra

*Post-wildfire wind erosion after historic fuel treatments*

10:50: C. Jason Williams (Presenter), Fred B. Pierson, Osama Z. Al-Hamdan, S. Kossi Nouwakpo

*Fuel treatment effects on hydrology and erosion processes*

10:55: David Pyke

*Invasive species and climate change*

11:00 AM: Lisa Ellsworth, Beth Newingham, Dustin Smith

*Discussion*

11:10: Karen Short, Jeanne Chambers, Jessi Brown, Michelle Day, Lisa Ellsworth, Matt Reeves, Julia Olszewski, Eva Strand

*Using SageSTEP data to inform fuel treatment scenario planning*

11:15: Matt Reeves

*SageSTEP data for calibration of state and transition simulation models*

11:20: Seren Bagcilar, Ben Rau, Maddy Case, Beth Newingham, Lisa Ellsworth, Rory O'Connor

*Using SageSTEP soil carbon data to better understand carbon dynamics in sagebrush steppe*

11:25: Scott Allen, Abigail Sandquist, Sydney Corcoran, Andrew Felton, William Weinberg, Emily Francis, Beth Newingham

*Water use responses to disturbances and treatments across the SageSTEP network*

11:30: Jonathan Dinkins, Vanessa Schroeder, Jessica Pletcher, Lisa Ellsworth, Beth Newingham, Steve Hanser

*Songbird responses to fuel treatments and implications for threatened species*

11:35: Lisa Ellsworth, Beth Newingham, Dustin Smith

*Discussion*

## **Contributed Oral Session: Fuels and Grazing**

**Room: Cascade 4**

**10:00am: OPEN**

10:20am: Alex Stoneburner

Assessing the effectiveness of targeted grazing for managing cheatgrass (*Bromus tectorum*) in the sagebrush biome

10:40am: Kelly Hopping

Early indications of the potential of sheep targeted grazing as a cheatgrass and wildfire risk management tool

11:00am: Genoa Starrs

Large-scale impacts of cattle grazing on annual burn probability in Napa and Sonoma Counties, California

11:20am: Roxanne Foss

Grassland biomass thresholds critical to fire behavior and land management in California

11:40am: John Hendricks

Impact of burning and mob grazing on range productivity in the northern Great Plains.

## **Contributed Oral Session: Restoration 2 (session 2 of 2)**

**Room: Cascade 1**

10:00am: Shannon Nelson

Soil amendments to improve tall wheatgrass establishment at a mine tailings impoundment

10:20am: Leah Prescott

Historic seed collections as a tool to understand seed mass variation in native plants

10:40am: Stephanie Yelenik

Restoration to stall grass-fire cycles in Hawai'i

11:00am: Shannon Wilson

Pest status, seasonal abundance, and management of the twolined spittlebug, *Prosapia bicincta*, on Hawai'i rangelands

11:20am: Catherine Silliman

Comparing seed emergence and seedling survival of *Krascheninnikovia lanata* (winterfat) across spatial and environmental gradients in the Great Basin and Mojave deserts

11:40am: Shaelyn Rainey

Effects of digestion on germination of native grasses of the Southern Great Plains

## **Contributed Oral Session: Sagebrush Management**

**Room: Cascade 5**



10:00am: Angela Fletcher

Measuring and quantifying the ecosystem service values of conservation investments on western rangelands

10:20am: Daniel Eddington

Utah Watershed Restoration Initiative Partnership

10:40am: Beth Orning

Long-Term costs and effects of biome-wide sagebrush conservation strategies for invasive annual grasses

11:00am: Robert Heckman

Invasion, precipitation seasonality, and precipitation legacies impact plant production in western US rangelands

11:20am: Daav Sannerud

Thinning dense big sagebrush to replenish herbaceous understories: Seedling establishment

11:40am: Joshua Day

Drivers of big sagebrush (*Artemisia tridentata*) survival and mortality in the Colorado Plateau

### **Contributed Oral Session: Wildlife**

**Room: Cascade 3**

10:00am: Marlin Dart

Linking behavioral states with movements to examine resource selection dynamics of pronghorn in the southern shortgrass prairie

10:20am: Laura Snell

Mitigating ranching-wildlife conflict with science and community engagement

10:40am: William Richardson

From juniper jungles to curl-leaf conservation: How PJ removal affects mule deer habitat

11:00am: Taylor Bayne

Wildlife monitoring in real time: Cellular-connected cameras with automated image classification

11:20am: Cody Griffin

Using accelerometers to understand resource selection and energy expenditure in Wild Turkeys: implications for land management

11:40am: Jacob Yetter

Breeding ecology of ring-necked pheasants in a dynamic agroecosystem

**Noon: All items must be picked up from the Endowment Fund Silent Auction**

**Noon-1pm: LUNCH BREAK**

Lunch Concessions Available for Purchase in the Trade Show (last chance to take in the Trade Show!)

Room Sierra 1 is set with round tables to enjoy your lunch and chat with fellow attendees or take in the trade show and visit with our exhibitors!

**Wednesday, January 31<sup>st</sup>**

**1:00pm – 3:00pm**

### **Campfire Conversations: A world café about topics that matter to SRM and rangelands**

**Organizer: Hailey Wilmer**

**Room: Sierra 1**

Overview: The Campfire Sessions are a growing SRM tradition of open dialogue about topics that matter to rangeland systems, inspired by US Forest Service's own Bob Mountain. Participants will connect with attendees from multiple backgrounds in structured round-table conversations facilitated with the World Cafe method by topic experts. This year's topics include:

- Rangeland Futuring with the USFS (Susan Charnley and USFS collaborators)
- Rangeland coexistence (Matt Barnes)
- Mavericks in the making: Creating space for all backgrounds in range (Courtney Duchardt, Cameron Duquette and collaborators)
- Creating a culture of adaptation in restoration (Emily Kachergis and BLM collaborators)
- Grazing after fire: research insights and gaps (Eric Winford and University of Idaho collaborators)
- What kind of information producers trust to make decisions? (Peter Vadas and ARS collaborators)

### **Symposia: Sagebrush Biome Conservation Design Phase 2: Implementing Hope While Managing Change**

**Organizer: Kevin Doherty**

**Room: Southern Pacific A & G**

Session Overview: The Sagebrush Conservation Design (SCD) identifies the best remaining ecologically intact sagebrush areas. The SCD is an adaptive, biome-wide tool to identify and address landscape-level threats by supporting the strategic allocation of conservation effort and resources. These threats include invasive annual grass, wildfire, expanding conifers, and human development, all of which impact a diverse suite of land uses, values, and ecosystem services.

This symposium will present 12 new papers that further the scientific underpinnings of the SCD. The symposium will focus around 3 themes: Ecological Relevance of SEI, Geographies of Action, and Geographies of Winning

Agenda

*Session 2: Geographies of Action and Outcome Evaluation*

1:00: David Naugle, Franke College of Forestry and Conservation, University of Missoula, MT

*Outcomes of Spatial Targeting in Sagebrush Country: A Retrospective Look at the NRCS-led Sage Grouse Initiative*

1:20: David Naugle, Franke College of Forestry and Conservation, University of Missoula, MT  
*Rangeland vegetation response to conifer removal in southeastern Idaho*

1:40: Geoffrey Bedrosian, US Fish and Wildlife Service, Lakewood, CO  
*Cows, not plows: Using cropland conversion risk to scale-up averted loss of core sagebrush rangelands*

2:00: Jason R. Reinhardt, USDA Forest Service, Rocky Mountain Research Station, Moscow, ID  
*Using collaborative input to develop a spatial prioritization for conifer management in support of sagebrush conservation design*

2:20: Chad Boyd, USDA-Agricultural Research Service, Burns, OR  
*A strategic and science-based framework for management of invasive annual grasses in the Sagebrush Biome*

2:40: Matt Cahill, The Nature Conservancy, Bend, Oregon  
*Refusing the Status Quo: Concluding thoughts on what it is going to take to save the sagebrush & Panel Discussion*

**Symposia: Carbon on the Range: Addressing Key Uncertainties in Carbon Pools, Fluxes, and Drivers of Change.**

**Organizer: Matt Germino, Toby Maxwell**

**Room: Cascade 3**

Session Overview: Rangelands contain ~30% of the world's soil carbon, and management for soil carbon is increasing. However, carbon is "invisible" to us, and our understanding and ability to accurately measure carbon fluxes and storage are still in development relative to challenges posed by budget, scale, and efficiency requirements. This symposium will convene scientists who can offer insights on the "what, where, when, how, and why" to measure change in rangeland soil carbon storage. Presentations will cover different rangeland types and problems, including grazing, disturbances, invasion, and climate impacts that relate most to the focus of rangeland managers.

**Agenda**

1-1:20pm: Matt Germino

*Introduction, and considerations for measurement and assessment of carbon storage in dry rangelands such as disturbed sagebrush steppe.*

1:20-1:40pm: Sasha Reed

*The good, the bad, and the ugly (as well as the awesome!): improving our understanding of plant and soil contributions to successful carbon management in rangelands*

1:40-2pm: Toby Maxwell

*Establishing a new standard for assessing impacts of exotic grass-fire cycle and benefits of restoration on soil carbon in semi-arid rangelands*

2-2:20pm: Paige Stanley

*Ruminating on soil carbon: applying current understanding to inform grazing management*

2:20pm-2:40pm: Louis Provencher

*Carbon Sequestration in Degraded Intermountain West Rangelands, United States*

2:40pm-3pm: Derek Pierson

*Enhancing Soil Carbon Management: High-Resolution Estimates Using A Process-Based Model and Machine Learning*

## **Symposia: Rangeland Technology and Equipment Council (RTEC): Novel Equipment and Restoration Methods in the Western United States**

**Organizer: Kevin Gunnell, Corey Gucker, Matthew Madsen**

**Room: Southern Pacific C**

Session Overview: With the myriad of needs, environments, and limitations that land managers encounter, novel equipment and restoration methods are needed to address both local and landscape scale restoration work. This symposium seeks to highlight and share information on the development of new equipment and methods, or modifications to current practices, that can assist restoration practitioners in their efforts. Specific emphasis will be on work within the western United States, but can have implications beyond those areas.

### Agenda

1:00-1:10pm: Bill Davidson

*Landscape and Climate Transfer Distance Metrics Influence the Density of Foundational Sagebrush in Post-fire Restoration Seeding- Preliminary Findings*

1:10-1:20pm: Bill Davidson

*Additive Benefits of Multiple Treatment Interventions to Reestablish Foundational Shrubs are Influenced by Site Characteristics in a Post-Fire Landscape- Preliminary Findings*

1:20-1:30pm: Scott Jensen

*A rugged wildland transplanter for plant-based restoration*

1:30-1:40pm: Danny Summers

*Novel seeding equipment and modifications for landscape scale restoration efforts.*

1:40-2pm: Danielle Bilyeu Johnston

*Rangeland pitting for revegetation and annual weed control*

2:00-2:10pm: Corinne Schroeder

*Using herbicides and scalable seed technology to restore drylands: Progress after six years of adaptive research and development.*

2:10-2:20pm: Matthew Madsen

*Enhancing Penstemon Palmeri Seed Germination and Plant Establishment with a Slow-Release Gibberellic Acid Seed Coating*

2:20-2:40pm: R. Justin Derose  
*Aspen regeneration response to mechanical roller felling*

2:40-3:00pm: *Q&A and Discussion*

## **Symposia: Elevating and Uniting Voices in Rangelands: The International Year of Rangelands and Pastoralists (IYRP) 2026**

**Organizer: Dr. Lauren Svejcar, Ann Waters-Bayer**

**Room: Southern Pacific D**

Session Overview: The goal of the IYRP is to promote sustainable rangeland systems and the livelihoods of people who live in them worldwide (<https://iyrp.info/>) connecting people and efforts from the local to global level to elevate voices that have historically gone unheard. Our objective in this symposium is to present challenges faced by different groups in the North America IYRP region and what outreach, education and policy efforts they have moving forward. We strive to provide a clear picture of how the work of diverse groups at local levels supports others globally. Both in-person and virtual formats will be used.

### Agenda

1:00-1:20: Dr. Diana Doan-Crider, Animo Partnership in Natural Resources  
*How culture and history have influenced rangelands in México, and where do we go from here?*

1:20-1:40: Rogelio Maciel, ProNatura Noreste  
*A Grassland Conservation Framework in Arid Northern Mexico with a Perspective on Social Conditions*

1:40-2:00: Jorge Bildo, Rancho El Ojo  
*Grazing the Malpais: our experience in conservation and diversification.*

2:00-2:20: Emily Luscombe, M.Sc., Intertribal Agricultural Council  
*Building bright futures through traditional knowledge and land use*

2:20-2:40: William Burnidge, The Nature Conservancy  
*A theory of change for regenerative grazing lands – integrated strategies for improving outcomes for people and nature on rangelands.*

2:40-3:00: Dr. Christian Artuso, Canadian Wildlife Service  
*How the grass is growing in Canada*

## **Symposia: Subalpine Forb Community Classification and Ecological Sites of with emphasis on the Tall Forb type**

**Organizer: R. Aaron Zobell, A. Cameron**

**Room: Southern Pacific E**

Session Overview: This symposium will provide a brief history of work and publications completed within the subalpine forb type with emphasis on the Tall Forb type. It will then discuss classification and ordination work recently completed at reference areas within the Bridger-Teton National Forest and published in Range Ecology

and Management (REM, Volume 90, pg. 294-307). Prevalent communities of the Tall Forb type and drivers of will then be introduced. Comparisons of grazed tall forb plant communities to ungrazed plant communities will occur.

## Agenda

1-1:20pm: Chad Camp

*From the Wasatch Plateau to the Present: A review of work and publications within the subalpine forb type with emphasis on Tall Forbs*

1:20-1:40pm: R. Aaron Zobell

Gradient Analysis and Classification of Tall Forb Communities in the Bridger-Teton National Forest, USA (REM, Volume 90, pg. 294-307).

1:40-2pm: S. Goodrich

*Prevalent Plant Community Types within the subalpine forb and drivers of*

2-2:20pm: A. Cameron/Dallen Smith

*Subalpine forb communities, snowbeds, and pocket gophers*

2:20-2:40pm: R. Aaron Zobell

*Tall Forb Plant communities of Green Knoll. How do these plant communities compare to Research Natural Areas within the Tall Forb type and in particular to the Elk Knoll Research Natural Area (RNA)?*

2:40-3pm: Dr. Spaeth/B. Jacobson

*A preliminary review of grazed vs. ungrazed areas within the subalpine forb type on the Bridger-Teton National Forest*

## **Workshop: Putting the R in Rangelands: Applies tools for data analysis in R**

**Organizer: Georgia Harrison, Claire Tortorelli**

**Room: Alpine 1**

*Workshop resumes from 10:20am-Noon session*

Session Overview: This two-part workshop dives into R statistical software and publicly available data for rangeland applications. Part 1 (10-12) introduces R and the tidyverse framework for cleaning, manipulating, and visualizing data. In Part 2 (1-3), essential tools including the Rangeland Analysis Platform, Climate Engine, Landscape Data Commons, and Ecosystem Dynamics Interpretive Tool and two R Packages trex and terradactyl will be explored through an applied case study. All skill levels are welcome to either or both parts of this hands-on workshop, but participants should bring a laptop with the most recent versions of R and R Studio (both free) pre-installed.

## Agenda

*Part 2: Welcome back; explore the landscape of rangeland data; case study on indicators for wind erosion with drought*

1:00-1:15: Sarah McCord, USDA ARS

*Big data opportunities on rangelands: Landscape Data Commons, Ecosystem Dynamics Interpretive Tool (EDIT), Rangeland Analysis Platform, and Climate datasets*

1:15 - 1:30: Joe Brehm, NMSU

*Using terradactyl to calculate indicators of rangeland health and conditions in R.*

1:30 - 1:45: Nelson Stauffer, USDA ARS

*Accessing public data with trex (Terrestrial Rangeland data EXtraction)*

1:45-3:00: Sarah McCord and Eric Jensen, Desert Research Institute

*Case study: How does drought impact wind erosion risk?*

## **Ignite: What's Blowing in the Wind: New Frontiers for Rangeland Wind Erosion Research**

**Organizer: Nicholas Webb, Brandon Edwards, Beth Newingham, Brian Morra**

**Room: Alpine 2**

Session Overview: Rangelands are often typified by sparse vegetation and shallow soils and, as a result, are vulnerable to wind erosion. While rangeland wind erosion can be extensive, knowledge remains limited on exactly where and when rangelands are eroding, and how patterns of wind erosion are affected by land use, management, disturbances, and ecosystem change. This session will serve as the first SRM forum to present and discuss the state-of-the-science and future research needs on rangeland wind erosion, including insights from small-scale experimental studies, coordinated research networks, regional modeling studies, and new tools to support wind erosion management.

1:00 PM-1:05 PM: Nicholas Webb

*Welcome and objectives*

1:05 PM-1:10 PM: Nicholas Webb

*The National Wind Erosion Research Network: Insights from long-term monitoring across US rangelands*

1:10 PM- 1:15 PM: Brian Morra

*Relating post-fire plant community development to wind erosion rates*

1:15 PM-1:20 PM: Beth Newingham

*Wildfire, grazing, and wind erosion in the northern Great Basin*

1:20 PM-1:25 PM: Ronald Treminio

*Wind erosion hotspots and dust transport pathways from the Great Basin*

1:25 PM-1:30 PM: Brandi Wheeler

*Predicting threats to soil organic carbon stocks from wind erosion using BLM AIM data and AERO*

1:30 PM-1:35 PM: Michael Duniway

*Oil/gas development and dust emissions from the Colorado Plateau*

1:35 PM-1:40 PM: Saroj Dhital

*Modeling dust on snow and influence of regional vegetation change across the southwestern US*

1:40 PM-1:45 PM: Bo Zhou

*Modeling wind erosion risk across western rangelands using LandCART and WEMO*

1:45 PM-3:00 PM: Beth Newingham

*Q&A followed by moderated discussion on research needs and new frontiers for rangeland wind erosion research*

**Ignite: Climate adaptation in big sagebrush ecosystems**

**Organizer: John Bradford, Maddy Case, Lief Wiechman**

**Room: Alpine 3**

1:05-1:10: Scott Carpenter

*Tying climate change impacts on big sagebrush vegetation to management decisions: Highlights from a recent science synthesis*

1:10-1:15: Lundblad, Carl G., Shawn T. O'Neil, Brianne E. Brussee, Peter S. Coates, and John C. Tull

*Maximizing Sage-grouse Performance and Persistence in a Semiarid Ecosystem Threatened by Climate Change*

1:15-1:20: Doug Shinneman

*Challenges ahead: Adapting to changing fuel conditions and fire regimes in the sagebrush biome*

1:20-1:25: Kirk Davies

*Does cattle grazing have place in adapting to climate change in the sagebrush ecosystem?*

1:25-1:30: Julie Larson

*Preparing to use more diverse species in restoration (whether or not we know the weather)*

1:30-1:35: Adrian Monroe

*Planning for sagebrush restoration under a changing climate with range-wide soil climate products*

1:35-1:40: Rob Massatti

*Ignoring evolutionary patterns is likely to hinder climate adaptation management strategies*

1:40-1:45: Lina Aoyama

*Seed provenancing for changing climates: nonlocal seeds with variable stress tolerances adapted to warmer and drier climate*

1:45-1:50: Kari Veblen

*"Quality over quantity" as a climate-adaptive restoration strategy*

1:50-1:55: Cam Aldridge

*A Changing Sagebrush Ecosystem: Evaluation of resilient systems in the face of climate change*

1:55-2:00: Kevin Badik

*Modeling mixed with collaboration: Translating probabilistic models to real-world decisions in the sagebrush sea*



2:00-2:05: Rory O'Connor  
*Managing carbon in sagebrush ecosystems*

2:05-2:10: Daniel Schlaepfer  
*Informing sagebrush climate adaptation strategies with projections of ecological drought, resilience, resistance & plant community structure*

2:10-2:15: Nicole DeCrappeo  
*Climate adaptation science and practice in the sagebrush steppe*

2:15-2:20: Marlo Draper & Justin Shirley  
*Climate adaptation in BLM management of sagebrush ecosystems*

2:20-2:25: Peggy Olwell  
*Advancing climate adaptation through the National Native Seed Strategy*

**Contributed Oral Session: Sage Grouse 2 (session 2 of 2)**

**Room: Cascade 1**

1:00pm: Jonathan Dinkins  
Insects, forbs, and cover for greater sage-grouse across an annual grass invasion gradient

1:20pm: Brianne Brussee  
Sage-grouse brood-rearing habitat within the Great Basin region of Nevada and California: Observations and inference from multi-scale modeling of habitat selection and survival

1:40pm: Peter Coates  
Integrating indices of habitat selection, survival, and space use to inform habitat management areas for greater sage-grouse in Nevada and northeastern California

2:00p: Cali Roth  
A decision support tool for a hierarchical population monitoring framework for greater sage-grouse

2:20pm: Morgan Solomon  
Mesic protection and restoration: Applying a new threat-based assessment to prioritize conservation actions for an at risk sagebrush obligate

2:40pm: Wayne Smith  
Using remote sensing to assess habitat of Gunnison sage-grouse

**Contributed Oral Session: Fire Management 2 (session 2 of 2)**

**Room: Cascade 4**

1:00pm: Corey Gucker  
Changing fire regimes in the Great Basin USA

1:20pm: Austin Nash

Do fuel breaks contribute to the spread of annual grasses in the sagebrush ecosystem?

1:40pm: Devan McGranahan

Resilience of grazed, semi-arid rangeland to wildfire: Soil, vegetation, and pollinator responses

2:00pm: Michelle Day

Optimizing fuel treatments to reduce wildfire risk to sagebrush ecosystems in the Great Basin of the western US

2:20pm: Peter Olsoy

Remote sensing of wildfire fuels along potential control locations with unoccupied aerial systems

2:40pm: Jessica Brown

Evaluating risks and guiding fuels management in a Forest Service high priority landscape

**3pm: Coffee break located outside entrance of Grand Ballroom 1**

**3:30pm-6:00pm**

**SRM Honor and Student Awards**

**Room: Grand Ballroom 1**

Overview: Join us as we recognize all of our outstanding student competitors and Honor awardees!

**6pm-8pm: SRM Wild Women of Range**

Location: Game On

**7pm-9pm: Nevada Section Social**

Room: Sierra 1

**Thursday, February 1<sup>st</sup>**

**7:30am-11am: SRM Board of Directors Meeting**

Room: Central Pacific