

**SRM 2020 Denver: Symposium/Workshops/Ignite Sessions**

**Monday AM (10:00 am to Noon)**

Session 1	Governors 14	<b>Transforming ranching through precision livestock management in extensive rangelands (Symposium)</b>
Session 2	Silver	<b>Creating Success in Rangeland Management, Tapping into our Emotional Intelligence (Workshop)</b>
Session 3	Plaza A-C	<b>Strategies for sustainability transformations in western rangelands (Symposium)</b>
Session 4	Windows	<b>Social-Ecological Resilience in The Northern Great Plains: Connections and Feedbacks of The Dominant Drivers (Ignite)</b>
Session 5	Plaza F	<b>Conservation Economics: Lessons from Western Rangelands (Ignite)</b>
Session 6	Governors 15	<b>Managing Rangelands for Pollinators: Best Management Practices, Current Research, and Research Needs (Ignite)</b>

Management of livestock in extensive rangelands has long been a labor-intensive endeavor for ranchers and pastoralists worldwide, often made even more challenging in rangelands characterized by dramatic temporal and spatial variability in forage resources. Recent technological advances have begun to empower livestock managers by providing more rapid, near-real-time monitoring of livestock locations and condition, by providing means to track and predict changes in forage resources across broad landscapes, and by enhancing the means to manipulate livestock distribution remotely. In this session, we bring together speakers to discuss the current state and future direction of precision livestock management in rangelands, and how these technologies can transform the way rangelands are managed.

Talk #1: Dr. Mark Trotter from CQ University in Rockhampton, Queensland: “Transformation of livestock management in Australia through sensor technologies, and implications for grazing management in spatially extensive rangelands worldwide.”

Talk #2: Dr. Derek Bailey, New Mexico State University, New Mexico, USA: “Development of real-time livestock management strategies using GPS tracking and sensor technologies”

Talk #3: Dr. Tony Waterhouse, Emeritus Professor, Scotland Rural College and Head of Hill and Mount and Beef Research Centres: “Real-time monitoring technologies for free-ranging sheep and cattle management”

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As rangeland managers, we are asked to manage increasingly complex ecological and social situations and account for the needs of a diverse cross-section of people, plants, and animals. It can be overwhelming and applying the science in a way that creates workable solutions can be challenging. However, humans are incredible creatures and are equipped with everything necessary to succeed. Making our work more effective is often not about more science, but the human application, i.e. stronger leadership. Great leadership is grounded in mastering our own inner resources, increasing our emotional intelligence, and communicating effectively. It requires challenging our beliefs and transforming our perspectives in order to engage a broader view and move from polarizing positions to collaboration.

Transformation and translation. Transforming our engagement in the world is a self-lead endeavour. It begins with recognizing that we translate every interaction and conversation by filtering data through our experiences, insights, cultures, and beliefs. To transform we must gain greater personal awareness, identify our motivations, and learn where we get caught in the emotions. People look outside of themselves for the source of their challenges and miss opportunities that are available when we look within first. To shift our interactions it is critical to examine biases and the ways we unconsciously judge. Equally important are the ways we choose behaviours to increase leadership effectiveness. When we recognize we have the power to choose our response, we increase meaningful conversations and arrive at productive outcomes.

The workshop is broken into three components, with an additional post-conference follow-up offered to participants.

**Component One - Self Discovery and Self-Management:**

Participants learn the foundations of emotional intelligence and are provided exercises for individual reflection and small group discussions. They will examine their inner operating systems, explore their own emotional states, reactions, behaviours, and awareness. Participants will be asked to self-evaluate and identify scenarios in which they recognize the interplay of emotions, biases, and choice. The foundation of this component is based on the Bar-On Psychometric Emotional Intelligence Model developed by Reuven Bar-On.

The outcomes of this component are:

- To become familiar with emotional intelligence and its applications,

- To ignite curiosity about the components of emotional intelligence you rely on frequently and areas that you use less frequently (based on the EQi-2.0 inventory model),
- To build group trust and create an equal playing field for component two,
- To learn and engage.

#### Component Two - Bringing Emotional Intelligence into Practice:

In the second portion of the workshop, participants will have a series of topics, rooted in the values and management of rangelands, to explore in groups. They will reflect on their approach and behaviours in challenging conversations and practice key elements of emotional intelligence to brainstorm ideas and solutions. This model is foundational upon mutual respect, equality, and listening, and is designed to engage all views.

The outcomes of this component are:

- To examine our own behaviour, reactions and responses in challenging conversations,
- To practice using coaching tools within the conversation model
- To approach difficult rangeland management topics in a new way
- To gain an understanding of how these tools can be applied and developed,
- To play and have fun!

#### Component Three – Choosing a Path Forward:

The final aspect of the workshop will debrief the experience and help participants identify key actions to employ in their life and work. They will receive resources related to the emotional intelligence learning, coaching and conversation tools, and leadership development.

The outcomes of this component are:

- To identify key actions to apply the learnings
- To identify specific interests in personal and leadership development
- To get curious and creative.

#### Beyond the Workshop:

The final component of the workshop will include a follow-up group conversation online, post meeting. This will allow participants to reengage and share their experience with the materials since the workshop. This will require participants supply email addresses during the workshop.

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Ranching and rangelands are undergoing rapid and intertwined changes. Changes include 1) ecological transitions due to climate and invasive species; 2) land use transitions associated with urbanization and shifting priorities for public lands; 3) demographic transitions reflected in the increasing average age and decreasing number of ranchers; 3) market transitions associated with changing consumer attitudes and globalized markets, and 4) technological transitions with advances in wireless and sensor technologies and access to “big data”. In this symposium, we ask: how can we direct inevitable change in desirable ways? Through these changes, how can we sustain the flow of rangeland products to consumers and improve environmental conditions in order to maintain or increase the well-being of those who live, work, and recreate on rangelands? The symposium will feature three invited speakers, each of whom will synthesize existing and emerging strategies for enhancing ranching and rangeland resilience, including:

1. Strategic connections between rural producers and urban consumers: the future of marketing for rangeland products—Dr. Sara Place, National Cattleman’s Beef Association.
2. Precision technology and other adaptation strategies in ranching systems—Dr. Andres Cibils, New Mexico State University.
3. Collaborative planning for diverse land uses in changing rangelands—Dr. Lynn Huntsinger, University of California, Berkeley.

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Complex interactions among climate and disturbance regimes, economic restructuring, and shifting land-use priorities are changing the social-ecological landscape of rangelands of the American West. In addition, many working rangelands are transitioning from traditional agricultural-based systems to multifunctional landscapes with a diverse mix of land uses. This session features participants in an ongoing multidisciplinary and participatory resilience adaptation and transformation assessment (RATA) in Montana. Our goal is to collectively seek a better understanding of the drivers of the area in order to provide a scientific basis that can be used to understand the trajectory of the area and strengthen the social-ecological system. The initial work on the resilience assessment has identified the relationship between changing climate and disturbance regimes, land-management practices and biodiversity, and economic policy and land use as dominant drivers of the system. Currently, climate, land-use, and market forces are changing, and often experiencing increased variability, leading to shifts in the region. Projected intensification of climate trends, coupled with ongoing and legacy effects of altered disturbance regimes (e.g. fire and grazing), are expected to have profound implications for future vegetation dynamics, structure, and function. Furthermore, emphasis and focus on biodiversity conservation has led to a diverse and evolving body of knowledge for individual species and communities. However, the tradeoffs from management across diverse targets is complex, and in conjunction with broader landscape factors, require cross-boundary coordination to implement. Finally, diverse and interacting market and policy forces are driving new, and sometimes conflicting, land use outcomes, with direct and indirect feedbacks to vegetation productivity, and biodiversity. This session aims to present highlights of the ongoing research in these three areas to foster discussion on the interaction and feedbacks between drivers acting, and studied, at different geographic and temporal scales. Furthermore, attendees are encouraged to relate strategies for identifying and studying social and ecological drivers in combination, as well as conveying the complex interactions in social-ecological systems.

Session Organization and Intro – David Wood (Moderator)

Rangeland Conservation Science & Practice in the NGP I: Competing Trajectories, Katie Epstein and Julia Haggerty, [kathleenepstein@montana.edu](mailto:kathleenepstein@montana.edu), [julia.haggerty@montana.edu](mailto:julia.haggerty@montana.edu), Montana State University

The changing climate of the Northern Great Plains, Paul Stoy, [pcstoy@wisc.edu](mailto:pcstoy@wisc.edu), University of Wisconsin-Madison

Vegetative change in Northern Great Plains rangelands: vegetative greening and woody plant encroachment, Bryce Currey, brycecurrey93@gmail.com, Montana State University

The long view: Paleo-perspectives on rangeland disturbance in the Northern Great Plains, John Wendt, johnafwendt@gmail.com, Montana State University

Prescribed fire and the biogeochemical dynamics of ecosystem development in the Musselshell-Missouri River Breaks of Central Montana, Justin Gay, justin.gay802@gmail.com, Montana State University

Microbes of the Grasslands, Hannah Goemann, hannah.goemann@montana.edu, Montana State University

Biodiversity responses to management in Montana rangelands, Lance McNew, lance.mcnew@montana.edu, Montana State University

Grassbanking as a novel approach to engage ranching and reach large-scale conservation outcomes, Brian Martin, bmartin@tnc.org, The Nature Conservancy

Systems thinking for social-ecological issues in the Great Plains, Ted Toombs, ttoombs@edf.org, Colorado State University, Environmental Defense Fund

Rangeland Conservation Science & Practice in the NGP II: Towards an Integrative Praxis, Julia Haggerty and Katie Epstein, julia.haggerty@montana.edu, kathleenepstein@montana.edu, Montana State University

Discussion Session –David Wood and John Wendt with all speakers

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**Overview**

"In the Sonoran and Chihuahuan bioregions and most of the arid West, ranching is now the only livelihood that is based on human adaptation to wild biotic communities ... Much more is at stake here than the future of a few ranch families. Wildlands teach those for whom they are home an outlook and insights to which others are blind."

-Jim Corbett, *The Malpai Agenda for Grazing in the Sonoran and Chihuahuan Bioregions*

The irony for many such livelihoods is that they are under more pressure than ever from public perception as economic margins continue to narrow. Neither condition is inevitable, but turning the trend requires that public dialogue and policy be better informed by rangeland livelihoods.

**Session Speakers**

- Session organization and introduction - Cole Mannix (Moderator), WLA Staff
- History of rangeland science- Dr. Nathan Sayre, Professor of Environmental Geography, University of Cal Berkeley
- BLM rangelands allotment monitoring pilot in NV - James Rogers, Winecup Gamble Ranch and WLA Board Member
- Agricultural policy - Jen Livsey, Flying Diamond Ranch and WLA Board Member
- Wildlife and conservation policy – Jessica Crowder, WLA staff
- Sustainable agriculture is the foundation of conservation - Nils Christoffersen, Wallowa Resources Executive Director

Moderated Discussion with Speakers (moderator: Cole Mannix)

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Our Ignite-style Session will cover pollinator research and conservation, a subject area of rapidly increasing interest on America's rangelands. One special feature of our session will be broad geographic coverage, with best management practices for both western range and Great Plains range. We will have multiple talks by early career professionals on grazing and fire regimes and how they impact pollinators and the plants they depend on. And our final talk, by someone on the downslope of his career, will include a list of crucial research needs to help guide the research paths of the younger generation. Following a traditional question and answer session, Dr. Ray Moranz and Dr. Torre Hovick will run an audience participation event in which audience members are randomly selected and asked about range management regimes near their home region. We will then ask other audience members to make predictions about effects of management practices on pollinator habitat (in terms of wildflower diversity and abundance) in that home region, and for our panel of presenters to also discuss their predictions. By doing this, we hope to extend the knowledge of all involved beyond the scope of the information presented during the 5-minute talks (and to further highlight gaps in our understanding).

- "Best Management Practices for Pollinators on Western Rangelands", by Stephanie McKnight, Emma Pelton, Candace Fallon and Ray Moranz (presenter). All authors are from the Xerces Society for Invertebrate Conservation. Ray Moranz also Partner Biologist with USDA NRCS.
- "Native Bees in Pacific Northwest Rangelands: Challenges in Management and Conservation", by Sandra DeBano (Oregon State University).
- "USDA-NRCS Rangeland Resource Inventory: Extent and Distribution of Milkweed Species on Non-Federal Rangelands", by Ken Spaeth (NRCS Central National Technology Support Center).
- "Native Bees are an Important but Overlooked Rangeland Resource in the Great Plains", by Chyna Pei, Torre Hovick, Ryan Limb, Jason Harmon, Ben Geaumont and Adrienne Antonsen (all authors are from North Dakota State University).
- "Sheep are Baahhhddd for Bees", by Jasmine Cutter, Torre Hovick, Benjamin Geaumont, Devan McGranahan, Jason Harmon and Ryan Limb. All authors are from North Dakota State University.
- "Effects of Fire and Grazing on Butterflies in Tame Grasslands", by Jasmine Cutter, Torre Hovick, Benjamin Geaumont, Devan McGranahan, Jason Harmon, and Ryan Limb. All authors are from North Dakota State University.
- "Quantifying Butterfly Responses to Natural Disturbances", by Brooke Karasch, Torre Hovick, Jason Harmon, Ryan Limb and Kevin Sedivec. All authors are from North Dakota State University.



- “Patch-burn Grazing Extends Flowering Plant Phenology”, by Cameron Duquette, Torre Hovick, Jason Harmon, Devan McGranahan, Ryan Limb, and Benjamin Geaumont. All authors are from North Dakota State University.
- “The Evolution of Rangelands and Rangeland Management: Implications for Great Plains Pollinators”, by Shelly Wiggam (Kansas State University).
- “Best Management Practices for Pollinators on Great Plains Rangelands,” by Ray Moranz, Rae Powers, Sarah Hamilton Buxton, and Jennifer Hopwood. All authors are from the Xerces Society for Invertebrate Conservation. The first three are also Partner Biologists with USDA NRCS.