

*Synthesizing Research on Pastoral Governance  
of Common-Pool Resources*

1 to 4 February, 2021

Workshop Report



Synthesizing Research on Pastoral Governance  
of Common-Pool Resources  
1 to 4 February, 2021  
Workshop Report



**Suggested citation:** Robinson, L.W., M. Moritz, G. Dressler, J. Groeneveld, C.E. Hunter, R.R. Unks. 2021. Synthesizing Research on Pastoral Governance of Common-Pool Resources, 1 to 4 February, 2021: Workshop Report. Columbus, OH: The Ohio State University.

For further information on this initiative, contact Lance Robinson ([L.Robinson@ruwaza.com](mailto:L.Robinson@ruwaza.com)) or Mark Moritz ([moritz.42@osu.edu](mailto:moritz.42@osu.edu)).

## Acknowledgements and disclaimer

This work was supported by the [National Socio-Environmental Synthesis Center](#) (SESYNC) under funding received from the [National Science Foundation](#) (DBI-1639145), and by the [CGIAR Research Program on Livestock](#) through contributors to the [CGIAR Trust Fund](#).

This document reports on the activities of a workshop and ideas discussed therein. Opinions expressed in the report do not necessarily reflect those of SESYNC, OSU, ILRI, or any of the organizations that provided financial or other support.

## Introduction and background

Communities of mobile livestock keepers—pastoralists—often have systems for the governance and management of land and resources that do not conform to theoretical models that have been developed based on experience in other kinds of ecosystems. Because of the unique characteristics of pastoralist systems, well-intentioned efforts to strengthen communal property rights can have the unintended consequence of undermining the mobility, flexibility and adaptability that are essential features of these systems. Recent scholarship, however, suggests that we may be close to a robust theoretical explanation for the distinctive characteristics of these pastoralist governance systems (e.g., Moritz 2016, Behnke 2018, Robinson 2019). Nevertheless, loose ends persist, and the work is yet to be synthesized into a coherent, cross-cutting understanding. In order to synthesize the latest scientific research to develop a conceptual model of pastoralist land and resource governance, Mark Moritz, a Professor at the Ohio State University, and Lance Robinson, a senior researcher from Equitable Earth Initiative working with the International Livestock Research Institute, proposed a workshop to the Socio-Environmental Synthesis Center (SESYNC). The aim of the workshop was to develop a conceptual model of pastoral land and resource governance and to explore and validate that model using comparison of diverse cases of pastoralist governance systems, past and present, and through computer modeling simulations. This would then feed into an exploration of the practical implications of the synthesis and translation of the findings into specific policy recommendations.

Then, however, the COVID pandemic made it necessary to postpone the in-person workshop. Some of what would have been done in an in-person workshop was moved to a virtual format. The workshop was held in two-hour sessions across four days from the 1st to the 4th of February 2021. This workshop represents only one component of the overall initiative, and an in-person workshop may still be held, perhaps in the second half of 2021.

# Objectives

## *Overarching goals of the initiative*

1. To synthesize scientific research on pastoral governance of common-pool resources in order to develop an integrated theoretical model;
2. To validate that model using a combination of comparative analysis of empirical cases and simulations with agent-based models;
3. To explore the practical implications of the theoretical model; and
4. To translate the findings into specific policy and development recommendations.

## *Workshop objectives:*

- To mobilize diverse participants to begin contributing to, and learning from, this synthesis.
- To identify working groups to carry the process forward.

# Notes on the workshop

## *Day One: Introduction and overview*

The workshop began with opening remarks from Lance Robinson, a researcher working with the International Livestock Research Institute. He observed that past research and experience have shown that pastoral systems often do not conform to the principles and assumptions of mainstream thinking about common pool resources and property rights, and has done a good job of explaining what pastoral systems *are not*. That is to say, they often are *not* systems that conform to conventional categories. Recently, however, more research is starting to articulate what pastoral systems actually *are*. This initiative is aimed at synthesizing this recent thinking and developing an integrated theoretical model.

Participants shared (a) what they hoped to get from the workshop and (b) what they thought they might contribute. Many of the participant comments regarding the first question related to

wanting to learn from diverse researcher and practitioner perspectives from around the world and being part of bringing that diverse knowledge together to build a collective understanding that would be greater than the sum of its parts. As to the second question about what people would contribute, it was clear that embodied in the workshop participants was a diverse set of skills and knowledge that people wanted to share and combine with that of the others.

Mark Moritz of the Ohio State University described initial thoughts on how we might synthesize this knowledge and make sense of the variation among pastoral systems. He discussed that there are multiple dimensions of variation that we are interested in, and that some aspects of these dimensions may lead to different kinds of governance models emerging (Fig. 1).

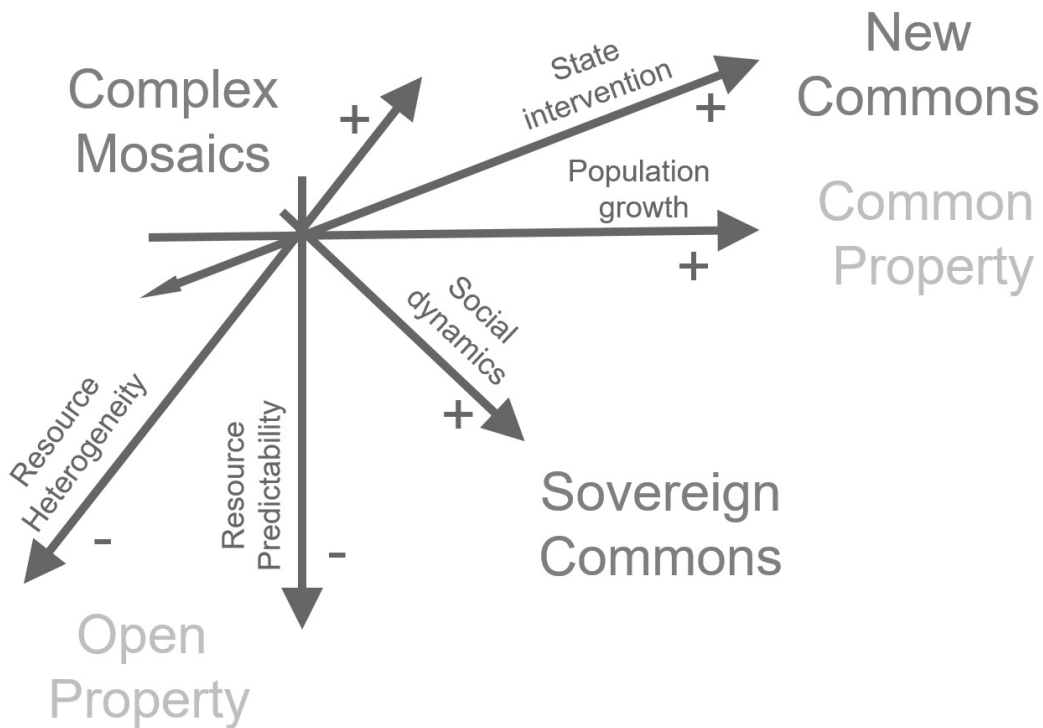


Fig. 1: Initial thoughts on how we might think about explaining the variation of pastoral systems

Participants then divided into breakout groups to share thoughts on key defining characteristics of pastoral systems that they know. Some of the characteristics, key questions, and ways that pastoral systems are evolving included the following:

- Norms (including the ethos of open access)
- Nature and degree of sedentarization
- Degree of centralization
- Degree of state control
- Degree of variability across communities within the system
- Degree of organization and capacity of local resource management organizations and institutions
- Relative strength of boundaries
- Evolution toward more exclusive forms of tenure, including privatization
- Formal definition and recognition of tenure rights vs. whether these are actually respected (*de jure* vs. *de facto*)
- Boundaries, recognition of property rights, etc. clear for some groups but not others
- Multi-level governance
- Strength of exclusive property rights over other key resources (e.g., water)
- Livelihood specialization
- Population density
- Different types and degrees of bioclimatic variability: interannual, intraannual, spatial, etc.
- Multiple tenure types within the same system
- Multiple authorities and multiple legal provisions with influence over management and use of the same resource
- Choice of methods of access: force, negotiation, appeal for formal rights and rules, exit/flee
- Temporal dimension of rules and access: by season, breakdown of rules in extreme situations, etc.

Following the breakout group exercise, there was a plenary discussion. Among the key points that emerged were the following:

- The great degree of variation makes generalizing difficult: seasonal variation, variation across the landscape, variation between and within groups, etc. Trying to come up with

a neat description of a system, in a way, contradicts the quintessential flexibility of pastoral systems that allows for these diverse kinds of variation.

- There is a tension between describing the general vs. the particularistic.
- Systems are changing. As this happens, rules of different kinds of systems can coexist or overlap, such as institutions for private property, for common property, and for purely open systems all coexisting in the same place.
- Creating categories is a challenge. Dynamics are constantly reshaping systems.
- This suggests that we need to consider how we are approaching these issues. We might not focus on tenure--which tends to imply a static perspective--but on relationships and mobility. For policy and practice, this may imply not asking how we can secure tenure but rather how we can secure mobility and flexibility.
- How to translate this nuance and complexity to communicate key insights to policymakers and practitioners is another key challenge.
- Nevertheless, there is a need to generalize and theorize in appropriate ways, and draw lessons that are broadly applicable.

It was explained that two key strategies for the synthesis would be the development and then analysis of a database of empirical cases and agent-based modeling. These would be the focus of Days Two and Three of the workshop, respectively.

## *Day Two: Comparative Analysis of Empirical Cases*

Day Two of the workshop focused on comparative analysis of empirical cases. Prior to the workshop, a team had developed a questionnaire to gather information on pastoral land and resource governance system cases, and invited contributions. Twelve initial cases were received and some very preliminary analysis was carried out. After finalization of the questionnaire and the structure of the case database, additional cases would be sought. Ryan Unks and Lance Robinson presented some possibilities for how the case database might be analyzed. Then participants went into breakout groups to discuss the database and questionnaire further.

In general, critical discussion elicited a range of important insights about conceptual and methodological dimensions of comparative study of complex pastoralist socio-ecological

systems in different contexts. Many participants reacted strongly to an *a priori* typological framing of governance systems, with concerns imposing a typology might lead to reification of particular ways of conceptualizing socio-ecological dynamics across study systems. This highlighted the inherent difficulty of the comparative study, where even several conceptual models may not adequately represent the high variability of processes underlying mobility and access rights across pastoralist systems, but also led to key insights about alternative ways we can move forward with comparative work. Most seemed to agree that a more general shift to attention to the processes underlying mobility and access would be an improvement.

Several participants emphasized that a central focus on institutions could be helpful for understanding the underlying processes that shape mobility and that constitute property, and that the case study database was an opportunity to learn lessons about the persistent tensions between institutions that maintain security and institutions that enable flexibility under variable conditions. One group recommended exploring the relational processes underlying institutions of governance at different social scales (e.g. individual/clan/group/etc.) as well as the social relations that produce property and tenure (laws/rules/negotiation). In general, there seemed to be consensus that a more exploratory approach would be well suited to investigate the questions we choose to focus on in our collaboration more open-endedly. Additionally, it seemed that there was consensus that an ability to examine finer patterns of variability and historical trajectories among a subset of cases could be advantageous, and several participants volunteered to provide additional historical ethnographic understandings of the trajectories of change within a subset of case studies.

In breakout groups discussing the types of questions participants would like to address with the case study database, the most common theme was the value of considering the evolution of governance systems. There was widespread interest in understanding how political, ecological, and economic factors are interacting with governance and affecting pastoralists' mobility. Some also proposed that this comparison would be useful for informing policy, by comparing different historical policies across systems that might have led to outcomes such as circumscription, as well as fragmentation and enclosure within systems. Some other themes suggested for possible exploration and comparison included the following:

- factors that have enabled or limited the local institutional basis of access and ability to respond to variability;



- the origins of institutions, highlighting in particular “top-down” measures such as state-imposed institutions, wildlife conservation and game reserve interventions, all of which could have implications for resettlement, subdivision, forced controls on stocking rates, and other important changes;
- the influence of changes in climate on the trajectories of systems;
- the evolution of livelihoods, and social and economic questions related to well-being in particular; the relationship between changing relations, institutions, and governance related to gender and intergenerational dynamics;
- abundance in addition to scarcity might lead to greater insights about the basis of different tenure systems at different spatiotemporal scales;
- the ability of cases to “learn” from each other concepts of innovation, resilience, and adaptation;
- the impacts of elements of “surprise” due to unforeseen events that affect access rules, such as pandemics;
- fencing and wildlife conservation;
- changing breeds of livestock;
- evolution of ecosystems;
- the “costs” of maintaining institutions; and
- alliances between influential community members and external actors.

With regard to the questionnaire, there were concerns that it needs to allow for capturing details about the flexibility and variability of boundaries at different spatial scales, and for connecting these details to understandings of spatiotemporal variability. Several requested clarification of definitions of “communities”, “authorities”, and “the state” in the survey – as these themselves often have multiple levels and can be quite heterogeneous. On a related note, several also raised concerns that the questionnaire did not accurately capture variability of elements such as mobility, access, exclusion, different types of property in different contexts. Factors such as fencing, farming, and privatization can also vary greatly within systems. Additionally, some indicated that a point-centered focus on resource control is more relevant to some systems. Some suggested that rather than large inter-connected pastoralist systems that to them it seemed more appropriate to center attention on more local, particular cases. These points all

highlighted questions about the difficulty of generalizing across cases, the nestedness of different cases, and the need to clarify the scale of comparison to facilitate appropriate comparison across cases.

### *Day Three: Agent-based modeling*

The specific goals for the agent-based modeling subproject in the workshop were:

- 1) To introduce the concept of agent-based models to all participants.
- 2) To introduce an agent-based simulation model on pastoralists that is based on a model developed by Gunnar Dressler and published in Dressler et al. (2019).
- 3) To discuss with the workshop participants which particular research questions or hypotheses should be explored with the model, what kind of experiments and simulations should be performed, how the simulation should be analyzed, and what processes should be added or changed.

Mark Moritz gave a presentation on agent-based models and the iterative, recursive, and abductive (IRA) approach that describes the work flow of modeling and experimenting. Gunnar Dressler introduced a pastoral land governance agent-based model that is based on the RAGE model (Dressler et al. 2019). In that model rainfall, vegetation, livestock, and pastoralists are linked. Then in seven breakout groups with each group having one person who was familiar with the model and facilitated the discussion, the participants worked on the above-mentioned questions.

The participants had several ideas to expand the model: For the environmental part of the model it has been suggested to include trends representing climate change and to implement extreme weather events. It also has been suggested to add water sources such as wells. It has been suggested to add markets, subsidies, insurances, access rules and government interventions to represent policy and management decisions more explicitly in the model. Agent characteristics (such as household size, labor availability) and interactions (e.g. conflicts, negotiations) have been suggested. For the livestock it had been suggested to consider herd composition and alternative feeding resources. For the vegetation module, different vegetation types and alternative land uses have been suggested. For the landscape heterogeneity, spatial resolution and extent need to be variable in the model. One process that has potentially a high priority is the introduction of direct interactions between households, because they seem to be

important for the emergence of common-pool resource governance regimes. Additional blocks of research questions were identified as follows:

- 1) emergence of governance regimes;
- 2) pastoralists' values, decisions and livelihood strategies;
- 3) interactions, negotiations and conflicts;
- 4) effects of climate change and extreme events on system resilience; and
- 5) policies and institutions.

It was decided that in the near future, model additions and adaptations that have been identified to be important by the workshop participants would be prioritized by the working group. A plan will be discussed on how the work will be organized to implement some of the suggested changes and to perform and analyze simulation experiments and compile a manuscript.

### *Day Four: Wrap-up and way forward*

Day Four of the workshop involved reflection on the previous three days and sharing of ideas on how to move toward synthesis. The challenges of characterizing complex pastoral systems was apparent, but the participants were vocal that the effort is worthwhile. In a discussion of how to move forward, important issues to give attention to included the following.

- Recognizing the diversity, variability, and dynamic nature of pastoral systems and not constraining our thinking with property regime categories.
- Attempting to understand the complexity and variation within pastoral systems rather than trying to label the system according to predetermined categories.
- Paying attention to the various different kinds of resources that pastoralists access, each of which may be governed by different rules and norms, and understanding these in terms of different methods of accessing those resources (e.g., appeal to formal property rights, reciprocal sharing, negotiation, use of force) rather than solely in terms of tenure.
- For the database of empirical cases, perhaps moving ahead with the structure of the questionnaire more or less as it is now, but adding an extra layer of data for each case in which the policy history and change over time is described in more detail.
- Having the practitioners in the group provide some direction to the researchers in terms of key, practical questions.

It was decided to form four working groups on people interested in continuing engagement with the initiative, as follows:

- 1) Comparative case analysis
- 2) Agent-based modeling
- 3) Policy and practice
- 4) Theoretical model.

## Next steps and concluding thoughts

The goal of the initiative is to synthesize research on pastoral governance of common-pool resources, in other words, to describe and explain the diversity, dynamics, and sustainability of pastoralists' property regimes. We are using an iterative, recursive, and abductive approach in which we go back and forth between concepts from theoretical models, comparative analysis of empirical case studies, historical analysis of empirical cases, simulations with agent-based modeling, and questions and concerns from policy-makers and practitioners.

The starting point for the workshop was the idea that conventional models of the commons do not match well most pastoral systems and that three papers (Moritz 2016, Behnke 2018, Robinson 2019) offered alternative models of pastoral governance of common-pool resources. What became clear during the workshop, however, is that rather than use these three types of property regimes – open property regimes, complex mosaics, and sovereign commons – as boxes into which any pastoral system could be categorized, or coming up with other types, the aim should be to develop a new theoretical model that explains the variation within and across pastoral systems.

There were a number of themes that emerged from the workshop discussions:

- One of the main differences between pastoral systems and the conventional models is that the former are characterized by considerable spatiotemporal variability in resource distribution.
- That is why pastoralists move their livestock to where the resources are. In other words, mobility is one of the main solutions to solve the problem of gaining access to resources to feed livestock.
- However, pastoralists face constraints in gaining access to resources, i.e., they do not always have access to common-pool resources. They may share space with other

pastoralists, agriculturalists, or other users, with each different degrees and methods of access.

- Moreover, pastoralists are part of larger legal and political structures that shape the ways that they gain access to resources.
- In other words, there is considerable variation in how pastoralists solve the problem of gaining access to resources for their livestock, which may range from open access, to reciprocal access, to negotiations, to the use of force.

Rather than using the conventional model of the commons of *defending common-pool resources* with social and spatial boundaries, we can conceptualize pastoral tenure systems as *gaining access to common-pool resources through various means*. In other words, pastoral tenure systems are about solving the problem of gaining access to resources. A problem-based approach to pastoral tenure systems may also be useful in terms of thinking about policy solutions. Thinking about how to help pastoralists gain access to resources may result in better solutions than thinking about how pastoralists can defend land.

These ideas will be explored through the four working groups that were formed, with a follow-up meeting to bring everyone together again later in the year.

## References

- Behnke, R. 2018. "Open access and the sovereign commons: A political ecology of pastoral land tenure", *Land Use Policy*, 76: 708–718. DOI: 10.1016/J.LANDUSEPOL.2018.02.054.
- Dressler, G., Groeneveld, J., Buchmann, C.M., Guo, C., Hase, N., Thober, J., Frank, K. & Müller, B. (2019) Implications of behavioral change for the resilience of pastoral systems – Lessons from an agent-based model. *Ecological Complexity*. DOI: 10.1016/j.ecocom.2018.06.002
- Moritz, M. 2016. "Open property regimes", *International Journal of the Commons*, 10(2): 688–708. DOI: 10.18352/ijc.719.
- Robinson, L.W. 2019. "Open Property and Complex Mosaics: Variants in Tenure Regimes Across Pastoralist Social-Ecological Systems", *International Journal of the Commons* 13(1). DOI: 10.18352/ijc.903.

## Appendix: Workshop agenda

### *Day One Agenda*

#### **Introduction Monday 1<sup>st</sup> February, 8:00 - 10:00 AM EST**

<b>Time</b>	<b>Activity</b>
20 min.	Welcome/opening <ul style="list-style-type: none"><li>• Welcome/opening remarks</li><li>• The Socio-Environmental Synthesis Center</li><li>• Overview of the activities of the week</li><li>• Participant introductions</li></ul>
10 min.	Introductory presentation <ul style="list-style-type: none"><li>• Mainstream thinking</li><li>• Challenges of applying mainstream thinking to pastoral commons</li><li>• Policy implications of inaccurate models of pastoral governance</li></ul>
10 min.	Breakout groups: What do you want to get out of the workshop? Why did you want to participate?
20 min.	Presentation on alternative governance models and initial thoughts on synthesis.
15 min.	Interactive exercise: Identifying pastoralist systems by governance model.
15 min.	Discussion: Making sense of pastoral land and resource tenure
15 min.	Discussion: The possibility of forming working groups.
10 min.	Closing remarks <ul style="list-style-type: none"><li>• Including preview of the coming days</li></ul>

## Day Two Agenda

### Database of Empirical Cases, Tuesday 2<sup>nd</sup> February, 8:00 - 10:00 AM EST

Time	Activity
10 min.	Introduction/Recap
15 min.	Objectives for the database and overview of the case questionnaire
15 min.	Presentation of initial analysis of the cases received thus far
25 min.	Breakout groups: Exploration of possibilities for comparative analysis <ul style="list-style-type: none"><li>• Hypotheses/questions</li><li>• How to code, analyze, and compare cases</li><li>• Missing data and/or missing cases</li></ul>
25 min.	Reporting back and discussion
15 min.	Discussion: How to develop the database further
10 min.	Way forward <ul style="list-style-type: none"><li>• Making it public? Making it ongoing?</li><li>• Connection to existing resources (e.g., LANDMARK, etc.)</li><li>• A working group to further develop and analyze the database?</li></ul>
5 min.	End <ul style="list-style-type: none"><li>• Tomorrow's activities</li></ul>



## Day Three Agenda

### Agent-Based Modeling, Wednesday 3rd February, 8:00 - 10:00 AM EST

Time	Activity
5 min.	Welcome (and introductions in chat)
10 min.	Objectives for ABM part of the workshop <ul style="list-style-type: none"><li>• Explain the logic of agent-based modeling</li><li>• Role of ABM in study of pastoral systems</li></ul>
30 min.	Present agent-based model <ul style="list-style-type: none"><li>• Present the model</li><li>• Run through an experiment (demonstration)</li><li>• Brief Q&amp;A</li></ul>
30 min.	Breakout groups <ul style="list-style-type: none"><li>• Research questions for the model</li><li>• Possible experiments with the model</li><li>• Modifications of the model</li></ul>
30 min.	Report backing and discussion
10 min.	Next steps <ul style="list-style-type: none"><li>• Working group(s)</li><li>• Paper(s)</li><li>• Lead(s)</li><li>• What to do between now and next meeting</li></ul>
5 min.	End <ul style="list-style-type: none"><li>• Tomorrow's activities</li></ul>

## Day Four Agenda

### Wrap-up and Way Forward, Thursday 4th February, 9:00 - 10:00 AM EST

Time	Activity
20 min.	Discussion: <ul style="list-style-type: none"><li>● Review objectives</li><li>● Integrating the empirical case database and the agent-based modeling</li><li>● Relevance to policy and practice</li></ul>
20 min.	Formation of working groups <ul style="list-style-type: none"><li>● Deliverables</li><li>● Code of conduct/collaboration plan</li></ul>
10 min.	Feedback/evaluation of the workshop
10 min.	Next steps <ul style="list-style-type: none"><li>● More virtual interactions</li><li>● In-person workshop (COVID permitting, later in 2021)</li></ul>

## Appendix: Workshop participants

### **Ginger Allington**

**Researcher (professor, lecturer, scientist)**

**George Washington University**

I am an Assistant Professor in the Department of Geography at George Washington University, in Washington, DC. I teach classes on landscape ecology, biogeography, and social-ecological systems. My research program is focused on understanding the drivers and consequences of land degradation in arid rangelands. I use a combination of social, biophysical, and remote sensing data sources to build models that we can use to understand the dynamics of rangeland systems. Most of my work has been based in the Mongolian Plateau and the southwestern US. I received my PhD in Ecology in 2012, from St. Louis University. From 2014-2016 I was a postdoc at the University of Michigan, working with Dan Brown, and then I moved to a postdoc at SESYNC until the end of 2017. I started at GWU in Jan of 2018.

<https://gingerallington.weebly.com/>

@gigi\_rose

### **Randall Boone**

**Researcher (professor, lecturer, scientist)**

**Colorado State University**

Randall B. Boone is a Professor in the Department of Ecosystem Science and Sustainability, Senior Research Scientist within the Natural Resource Ecology Laboratory and affiliate faculty member of the Department of Anthropology, Colorado State University. Randall is a wildlife ecologist, but his experience is diverse, including research in ecological modeling, spatial analyses, landscape ecology, biogeographical relationships, species/habitat relationships, coupled systems modeling, and wildlife and livestock mobility, reported in more than 70 publications and 18 book chapters. Randall's current research analyzes how ecosystems and social systems link, how landscape fragmentation can alter the numbers of livestock and wildlife that can be supported on an area, global rangeland modeling, methods of using computer simulation in education and the inclusion of underrepresented groups, agent-based approaches to household modeling, and as a means of including competition in niche dimension models assessing effects of climate change. He teaches courses in ecosystem science and agent-based modeling of ecological and social systems.

[https://www.researchgate.net/profile/Randall\\_Boone2](https://www.researchgate.net/profile/Randall_Boone2)

[www.randallboone.org](http://www.randallboone.org)

### **Gunnar Dressler**

**Researcher (professor, lecturer, scientist)**

**Helmholtz Centre for Environmental Research, UFZ**

I am a postdoctoral researcher at the Department of Ecological Modelling of the Helmholtz Centre for Environmental Research - UFZ in Germany. Within my work, I am generally interested in understanding the dynamics of socio-environmental resource use systems under

global change, especially the impact of policy instruments on local land-use strategies, the emergence of polarization and poverty traps. I am mostly working with simulation models, in particular agent-based models, to investigate these topics. My current research projects focus on mechanisms of tipping point formation in Namibian rangelands and land use competition in smallholder farming systems in Ethiopia. Beyond that, I aim at a better representation of human decision-making in agent-based models, improving the usefulness of socio-environmental models for policy support and advancing the use of dynamic models and Serious Games to support inter- and transdisciplinary communication.

[https://www.researchgate.net/profile/Gunnar\\_Dressler](https://www.researchgate.net/profile/Gunnar_Dressler)

<https://www.ufz.de/index.php?en=36650>

@brightblackclrs

## **María E. Fernández-Giménez**

**Researcher (professor, lecturer, scientist)**

**Colorado State University**

Dr. María E. Fernández-Giménez leads the Rangeland Social-Ecological Systems (RSES) team in the Department of Forest & Rangeland Stewardship at CSU. RSES works closely with ranching and pastoralist communities in the western US and around the world to understand how we can better support sustainable rangeland management. As social-ecological researchers, we study how ranchers/pastoralists make decisions as individuals and as communities, how these decisions and actions affect non-human parts of ecosystems like soil, water, plants, and animals, and how these impacts in turn affect people's well-being and livelihoods. Current research and outreach in US focuses on rancher planning and decision-making, rancher responses to social-ecological change, collaborative adaptive rangeland management, and the experiences of ranchers from minoritized identities. Internationally, Dr. Fernández-Giménez' research focuses on rangeland governance and community-based management; continuity, resilience and transformation in pastoral societies; pastoral development and policy; traditional ecological knowledge; women and gender in pastoral systems; climate change adaptation; and participatory, transdisciplinary research that engages resource users, managers and policy-makers as partners in the research process.

Geographically, her research centers on Mongolia, Spain, the western US and Morocco.

[https://www.researchgate.net/profile/Maria\\_Fernandez-Gimenez](https://www.researchgate.net/profile/Maria_Fernandez-Gimenez)

<https://warnercnr.colostate.edu/person/?user=S5W95MWzZGJ4y9JqES9TYg%3D%3D>

## **Serena Ferrari**

**Consultant**

**FAO - Pastoralist Knowledge Hub**

I am an economist, with a multidisciplinary background in development and international cooperation. I completed a PhD at the Free University of Brussels (ULB) with a dissertation on the dairy value chains of Senegal. I also have experience in working in the field with NGOs. I am keen on understanding and combating social and economic inequalities, as well as promoting fair opportunity access to all.

[Serena.Ferrari@fao.org](mailto:Serena.Ferrari@fao.org)

## **Aymen Frija**

**ICARDA: International Center of Agricultural Research in the dry areas.**

**Researcher, Country Manager**

Aymen Frija is an agricultural economist with ICARDA's Social, Economic and Policy Research Team. He is also the coordinator of ICARDA's activities in Tunisia and Algeria. His current research interests focus on farm modeling, farm efficiency and productivity analysis, agricultural water management instruments, institutional performance analysis, and the economics of conservation agriculture. Earlier in his career, Dr. Frija was a postdoctoral researcher at Ghent University in Belgium, specializing in agricultural water policy analysis in developing countries. He was also assistant professor and researcher at the College of Agriculture of Mograne, Carthage University in Tunisia. His publications records can be found at [Google Scholar](#), [SCOPUS](#), [OCRID](#), [Research Gate](#)

## **John Galaty**

**Researcher (professor, lecturer, scientist)**

**Department of Anthropology, McGill University**

John Galaty is a professor of anthropology at McGill University, where he has taught for forty years. He has served as chair of anthropology, associate dean and interim dean in the Faculty of Arts, associate dean of the Faculty of Graduate Studies and Research, and president of the McGill Association of University Teachers. He participated in the formation of the IUAES Commission on Nomadic Peoples as Secretary, and served as President of the Canadian Association of African Studies. His research has focused on property transitions, pastoral systems, land conflicts, and community conservation among pastoralists of East Africa, with special focus on Maasai communities in Kenya. He has received research funding from the National Science Foundation, the Social Sciences and Humanities Research Council of Canada, the Fonds de Recherche du Québec–Société et Culture, and the International Development Research Centre. He is currently co-director of a partnership project, pursued with NGO and university partners in Africa, Europe and Canada, examining community-based conservation initiatives in Kenya and Tanzania, called “The Institutional Canopy of Conservation” or I-CAN.

<https://www.mcgill.ca/anthropology/people/johngalaty>

## **Gregorio Velasco Gil**

**Regional Project Coordinator, Specialist on Pastoralism**

**Food and Agriculture Organization of the United Nations (FAO)**

Coordinator of the Pastoralist Knowledge Hub. Gregorio is an agricultural engineer with 25 years of working experience in livestock production, animal genetic resources, water and food security. He has implemented and coordinated field projects in Spain, Venezuela, Algeria, Egypt and various countries in West Africa. Gregorio has worked with pastoralist communities in West Africa and grew up in a pastoralist family.

[Gregorio.VelascoGil@fao.org](mailto:Gregorio.VelascoGil@fao.org)

## **Jessica Gilbert**

**Researcher (student)**

**Texas A&M University**

I am a PhD candidate in the Dept. of Ecology and Conservation Biology and Applied Biodiversity Sciences Program at Texas A&M University. My dissertation research examines the dynamics of pastoralism and conservation in a protected area in Peru, where I have worked with community organizations and protected area staff since 2009. I use interdisciplinary tools to examine the factors affecting management decisions, governance arrangements, and policy, and how they produce or hinder sustainable outcomes in this complex social-ecological system.

[https://www.researchgate.net/profile/Jessica\\_Gilbert5](https://www.researchgate.net/profile/Jessica_Gilbert5)

## **Alexis Gonin**

**Researcher (professor, lecturer, scientist)**

**Université Paris Nanterre**

I worked on pastoral land tenure in Burkina Faso. My last study was on the difference between liberty and right of access to resources. Recently, I've reoriented my work toward human/non-human relationship in land tenure issues

[www.researchgate.net/profile/Alexis\\_Gonin](http://www.researchgate.net/profile/Alexis_Gonin)

<https://www.parisnanterre.fr/m-alexis-gonin--716449.kjsp>

@AlexisGonin

## **Jürgen Groeneveld**

**Researcher (professor, lecturer, scientist)**

**Helmholtz Centre for Environmental Research, UFZ**

I have studied Physics (Ph.D. 2003, University of Marburg, Germany) and work as an ecological Modeller for the last 20 years mostly at the Helmholtz Center for Environmental Research - UFZ - in Leipzig, Germany. Usually, I develop grid-based and individual-based simulation models to better understand ecological systems such as fire-prone shrub lands or tropical forests. I have also worked intensively on social ecological systems. Currently I am working with a complex model on honey bees (BEEHAVE, <https://beehave-model.net/>).

<https://www.ufz.de/index.php?en=36547>

## **Ian Hamilton**

**Researcher (professor, lecturer, scientist)**

**The Ohio State University**

I am a behavioral ecologist in the Department of Evolution, Ecology and Organismal Biology and the Department of Mathematics at the Ohio State University. My work focuses on complex adaptive systems in human and non-human animals, with an emphasis on cooperation, conflict, resource defense and movement.

[https://www.researchgate.net/profile/Ian\\_Hamilton6](https://www.researchgate.net/profile/Ian_Hamilton6)

<https://u.osu.edu/hamilton.598/>

## **Chelsea E. Hunter**

**Researcher (student)**

**The Ohio State University**

Chelsea (she/her) is a PhD student in Anthropology at Ohio State. Prior to joining OSU, Chelsea earned her B.A. from Portland State University in 2013. While at PSU, she conducted research on fair trade cocoa farming and social, ecological, and environmental sustainability in Ghana, West Africa. Hunter went on to earn an MA in Applied Anthropology from San Diego State University in 2017. While there, she worked on an interdisciplinary research project on coral reef resilience in Moorea, French Polynesia. Between completing her MA and starting her PhD, Chelsea completed a post-master's scholarship on resilience and adaptive capacity following the 2015 Nepal Earthquakes. Additionally, she consulted on qualitative data analysis for a project between the US Forest Service and PSU, while also consulting for the San Diego County Bicycle Coalition on research design and data analysis. Her dissertation research examines ontologies of conservation scientists and Kanak in New Caledonia and how they interrelate with ridge-to-reef systems.

[https://www.researchgate.net/profile/Chelsea\\_Hunter4](https://www.researchgate.net/profile/Chelsea_Hunter4)

## **Kariuki Kirigia**

**Researcher (student)**

**McGill University**

I am a PhD candidate within the Anthropology Department at McGill University. My doctoral research examines the politics of land tenure change - from communal to individual tenure - and efforts to create a wildlife conservancy among the Maasai of Olderkesi, Narok County, southern Kenya. I am supervised by Prof. John Galaty (McGill University) and Dr. Robert Fletcher (Wageningen University).

## **Erin Kitchell**

**Practitioner and Researcher (student)**

**University of Wisconsin-Madison and Namati**

As a social scientist and development practitioner, Erin Kitchell focuses on pastoral governance, livestock mobility, community-based management, and collective land rights in Senegal, Mali, and Kenya. Erin is the Director of Global Learning and Practice at Namati. She is a PhD candidate in geography at the University of Wisconsin-Madison and has been a research fellow at the Senegalese Agricultural Research Institute (ISRA) and the Pôle Pastoral des Zones Sèches.

[@ekitchell1](https://www.researchgate.net/profile/Erin_Kitchell)

## **Carolyn Lesorogol**

**Researcher (professor, lecturer, scientist)**

**Washington University in St. Louis**

Carolyn Lesorogol researches international social development to understand how dynamic social change processes affect the well-being of families and communities. Using ethnography and mixed methods, she investigates the transition from communal to private land among Samburu pastoralists in Kenya, and its long term effects on land-use, cooperation, social norms and livelihoods. Her recent work combines ethnography, household-level data, and agent-based and simulation computer modeling to examine how household land-use decisions affect ecological and well-being indicators. She is currently studying the formation, operation and impact of community-based wildlife conservancies in Samburu County, Kenya. Lesorogol also designs and implements capacity building community programs including work with a community association in Kenya introducing a highly productive breed of dairy goats to improve household nutrition and income

<https://brownschool.wustl.edu/Faculty-and-Research/Pages/Carolyn-Lesorogol.aspx>

## **Natasha Maru**

**Researcher (student) and Consultant  
Institute of Development Studies, UK**

Natasha Maru is a PhD candidate at the Institute of Development Studies, UK, and a consultant on pastoralist issues with international agriculture and sustainability organisations. She is interested in pastoral perspectives of mobility and resource governance. She seeks to provide grounded insights into pastoral experiences and promote pastoral voices in policy processes.

[https://www.researchgate.net/profile/Natasha\\_Maru](https://www.researchgate.net/profile/Natasha_Maru)

[https://twitter.com/natasha\\_maru](https://twitter.com/natasha_maru)

## **Stephen S.Moiko**

**Practitioner, Consultant, and Researcher (professor, lecturer, scientist)  
NabaRa Consult**

I am a Kenyan national social scientist (anthropologist). Trained at the University of Nairobi, Kenya and at McGill University, Canada. My research interests broadly revolve around issues in the sustainable governance of land, livelihoods and resources in rangelands. I am intrigued by pastoral systems and the management of pastoral commons. I am the lead researcher and founder of NabaRa Consult

[https://www.researchgate.net/profile/Stephen\\_Moiko](https://www.researchgate.net/profile/Stephen_Moiko)

## **Mark Moritz**

**Researcher (professor, lecturer, scientist)  
The Ohio State University**

I am an anthropologist who studies complex social-ecological systems integrating multiple theoretical and methodological approaches. In my years at Ohio State University, I have pursued a range of different interdisciplinary research projects that examine a range of research problems, including sustainable use of common-pool resources, ecology of infectious diseases, regime shifts in floodplain fisheries, demographic dynamics in pastoral systems, territoriality among prehistoric pastoralists, and the transition from pastoralism to ranching.

[https://www.researchgate.net/profile/Mark\\_Moritz](https://www.researchgate.net/profile/Mark_Moritz)



<https://mlab.osu.edu>

@Matthijs\_Moritz

## **Barbara B. Nakangu**

**Practitioner**

**International Union for Conservation of Nature (IUCN)**

Dr Barbara B. Nakangu, is a Ugandan, Political Ecologist, working with IUCN as a Senior Programme Manager in the Global Programme on Governance and Rights, based on Washington D.C. She is responsible for coordinating the integration of equity, rights and effective natural resources governance in IUCN and partners programmes.

<https://www.iucn.org/theme/governance-and-rights/our-work/iucn-natural-resource-governance-framework>

@bnakangu

## **Elisa Oteros-Rozas**

**Researcher (professor, lecturer, scientist)**

**Chair on Agroecology and Food Systems, University of Vic**

My background is as an Ecologist but I now study social-ecological systems and their challenges through the interdisciplinarity of Sustainability Sciences, combining Ecology, Sociology, Anthropology and Economy. My main research topics are: 1) biophysical, socio-cultural and economic valuation of ecosystem services in multifunctional landscapes; 2) the political ecology of conservation of wildlife and protected areas, including land use and value conflicts; 3) the interaction of scientific and local knowledge across social-ecological networks, particularly around farming; 4) social- ecological resilience and adaptation to Global Change; 5) the science-policy interface for sustainability. Pastoralism, agroecology and agrifood systems, and rural transformations, including the role of new emergent peasantries in pastoralism, have particularly attracted my attention since I did my PhD with transhumants. Lately, I am also working with women pastoralists, incorporating gender and feminist perspectives.

[https://www.researchgate.net/profile/Elisa\\_Oteros-Rozas](https://www.researchgate.net/profile/Elisa_Oteros-Rozas)

@ElisaOtRa

## **Daniel Peart**

**Researcher (student)**

**The Ohio State University**

I am a doctoral candidate at The Ohio State University. I have worked with the ASOM team for three years, building an agent-based model of Pastoralism, researching the emergence of territoriality in Oman. My dissertation research focuses on forager mobility in Pleistocene South Africa.

## **Justin Raycraft**

**Researcher (student)**

**McGill University**

Ph.D. candidate in the Department of Anthropology at McGill University working with John Galaty on pastoralism and human dimensions of wildlife conservation in northern Tanzania.

## **Lance W. Robinson**

### **Consultant**

#### **International Livestock Research Institute / Equitable Earth Initiative**

Lance Robinson is an international development professional and researcher with more than two decades of experience in Africa, Asia and Latin America. He has experience in the design and implementation of projects involving community-based natural resource management (CBNRM), multi-stakeholder engagement, and policy processes. He leads processes for the design and development of policy, legislation, and environmental and land use planning frameworks. Dr. Robinson also specializes in natural resource governance and resilience building in pastoralist and agropastoralist communities. As a researcher, he has designed and led projects on landscape approaches, landscape governance, institutions, natural resource management, resilience and rural livelihoods. Dr. Robinson has broad experience applying and providing training in the use of participatory approaches, and has been in the forefront of methodologies such as Participatory Rangeland Management and Community Scorecards. He has a successful track record in capacity building, the leadership and management of teams, proposal development, and meeting donor reporting requirements.

[http://www.researchgate.net/profile/Lance\\_Robinson](http://www.researchgate.net/profile/Lance_Robinson)

<http://www.equitable-earth.org/>

@LanceWRobinson

## **Trinity Senda**

### **Researcher (student)**

#### **University of Nairobi**

Trinity S Senda Ndlovu is a Zimbabwean born researcher currently doing a PhD in Management of Agroecosystems and the Environment at the University of Nairobi, Kenya. She has been affiliated with the International Livestock Research Institute as a DAAD graduate fellow from March 2017 to April 2020. Her current research is on assessing the socio-ecological implications of communal land rights formalization in pastoral areas, with particular focus on the Borana in Ethiopia. She holds a Master's degree in Sustainable Agriculture from the University of the Free State, South Africa and a BSc in Natural Resources Management and Agriculture-Livestock and Wildlife management from the Midlands State University, Zimbabwe. Prior to commencing her PhD studies in 2017, Senda worked for 11 years as a livestock research officer in the Ministry of Agriculture, Department of Research and Specialist Services based at Matopos Research Institute in Zimbabwe. Her research interests are on rangeland management, goat production and marketing, ecosystem services, land tenure and governance and ecological simulation modelling. Senda has (co) authored and published a number of articles, reports and manuals in line with her research interests. She hopes to contribute to ending hunger and poverty, enhance ecosystem management, livelihoods and food security in crop livestock and pastoral systems of Sub-Saharan Africa and beyond through her research.

[@trinsenda\\_senda](https://www.researchgate.net/profile/Trinity_Senda2)

## **Ian Scoones**

**PASTRES programme, Institute of Development Studies, University of Sussex, UK**

I originally trained as an ecologist, but now work more broadly on social, political and policy issues in development, mostly in Africa. Since my PhD in Zimbabwe on livestock and household economies in southern Zimbabwe, I have worked extensively on (agro-)pastoral systems. The European Research Council supported PASTRES programme focuses on how pastoralists respond to uncertainties, with on-going work in Amdo Tibet in China, Borana in Ethiopia, Isiolo Kenya, Gujarat in India, Sardinia in Italy and southern Tunisia.

[www.ianscoones.net](http://www.ianscoones.net)

[www.pastres.org](http://www.pastres.org)

@pastres\_erc, @ianscoones

## **Masresha Taye**

**Practitioner and Researcher (student)**

**Institute of Development Studies, University of Sussex and the International Livestock Research Institute (ILRI)**

Currently, PhD researchers and fellow interested in researches and innovations in the dryland systems. Close to ten years' experience in the dryland systems of East and West Africa.

[https://www.researchgate.net/profile/Masresha\\_Taye](https://www.researchgate.net/profile/Masresha_Taye)

@Masresha09

## **Palden Tsering**

**Practitioner and Researcher (student)**

**IDS, Sussex, UK**

Member of the ERC funded PASTRES (Pastoralism, Uncertainty and Resilience: Global Lessons from the Margins) research programme, and currently working on rangeland management in Amdo Tibet, China.

<https://pastres.org/about-us/>

## **Matthew Turner**

**Researcher (professor, lecturer, scientist)**

**University of Wisconsin**

I am a geographer at the University of Wisconsin-Madison who works in rural areas of the Sudano-Sahelian zone of West/Central Africa (Mali, Niger, Burkina Faso, Senegal, Chad). Outside of questions of pastoralism, I have done work on food security, climate change vulnerability, gender and intra-household budgeting, land-use and land-cover change, the sociocultural complexities of land tenure, and the social implications of soil fertility variation. I have expertise in both range ecology and the social science of agropastoralism analyzed through the framework of political ecology. The pastoral systems that I have worked on are largely Fulani transhumance systems with focal areas being Central Mali, eastern Senegal, southwestern Niger/Benin and southeastern Chad (Salamat/Guera). I have done a fair amount

of work on measuring wider patterns of livestock mobility and assessing its institutional requirements. I have also worked on the role of knowledge, labor availability, livestock ownership, and land-use on the daily grazing orbits of more sedentary systems. In addition the dynamics of farmer-herder conflict is another research emphasis in my work.

## **Ryan Unks**

**Researcher (professor, lecturer, scientist)**

**Socio-Environmental Synthesis Center, University of Maryland**

Ryan Unks is an interdisciplinary scientist with training in landscape and plant ecology, rural livelihoods, and environmental governance. His research at SESYNC uses mixed methods to study landscape ecological change and pastoralist livelihoods in central and southern Kenya. His approach focuses on understanding the drivers and implications of vegetation change as situated in complex social contexts. At the heart of this work is a critical engagement with different knowledges and experiences of socio-ecological complexity. Using mixed methods including analysis of satellite images, plant community data, and qualitative and quantitative social data, his work focuses on the mechanisms of vegetation change, implications for livelihoods, and the relationship of these changes to governance processes. He is working in collaboration with the Wilson Lab at the University at Buffalo Department of Geography and the PASTRES (Pastoralism, Uncertainty and Resilience) program at the ESRC STEPS Centre at the Institute of Development Studies. He was previously a postdoctoral researcher at the University of Lyon where he used a qualitative approach to study social and ecological dimensions of livelihoods and subdivision of collectively titled land in three Ilkisingo Maasai group ranches in Kajiado County, Kenya. He also used remote sensing (MODIS, CHIRPS) to understand changing vegetation dynamics in relation to rainfall across the same group ranches. He holds a PhD in Integrative Conservation in Forestry and Natural Resources from the University of Georgia. His PhD research used ethnographic methods, field-based plant ecology methods, and remote sensing (Landsat) to analyze changes in LeUaso group ranches in Laikipia, Kenya. This work examined the relationship between herding livelihoods, changing access to forage, and vegetation changes.

[https://www.researchgate.net/profile/Ryan\\_Unks](https://www.researchgate.net/profile/Ryan_Unks)

## **Anu Verma**

**Practitioner**

**South Asia Pastoral Alliance**

Anu Verma, the focal person for South Asia Pastoral Alliance (SAPA) is a Human Rights Activist, a trainer and an opinion maker. She has been engaged herself with diverse human rights issues throughout her journey of 18 years of experience. She is a post-graduate in Social Work, Sociology and Gender and development from India and UK respectively. Anu's passion is to create leaders and cadre that assert their rights by themselves. In her journey, she involved herself in nurturing people's collectives, cadre building, leadership development, strengthening CBOs and networks, running campaign at a scale. Her thematic engagement has been in Socio-Economic-Cultural-Political Empowerment of Marginalised and Vulnerable Community and groups, especially women, single Women, pastoralists, tribes. Her current engagement

aims at recognition of pastoral community, especially women, for their contribution to sustaining ecosystems.

## **Hijaba Ykhanbai**

**Researcher (professor, lecturer, scientist)**

### **JASIL Environment and Development Association**

I graduated from the Forest Engineering Academy, Sankt-Peterburg, Russia in 1978, and in 2007-2008, I hold from that Academy Doctor of Economic Sciences, Theme: Economic incentives and regulatory instruments for forest and pasture management in Mongolia. I'm working as Director of Environment and Development Association "JASIL", since 2009. Prior to leading this NGO I join Mongolian Ministry of Nature and Environment more than 20 years in 1987-2009, as specialist, vice director, director of Strategic planning and management department, and Director of department, and as advisor to the Minister. Currently I'm as a focal point of the Central Asia Pastoral Alliance, CAPA, which is part of the Asia Rangelands Initiative of the International Land Coalition, ILC.