

“I hope the major lesson that comes out of it is that collaborative, multi-stakeholder processes actually work. That you can have your cake and eat it too.”-Collaborative Adaptive Rangeland Management Experiment Stakeholder, Spring 2016

Rangeland scientists often talk about how important managers are to rangeland conservation and stewardship while lamenting a growing gap between science and management. On the shortgrass steppe of Eastern Colorado, management objectives include the desire for profitable livestock (beef) operations, diversity in vegetation composition and structure, and grassland bird conservation. Although these objectives are diverse and they are often championed by different stakeholder groups, the [Collaborative Adaptive Rangeland Management \(CARM\)](#) experiment is exploring ways to bring them together. CARM is an innovative research approach which offers new opportunities to link grassland bird, vegetation and beef production management objectives and diverse stakeholders with research through collaborative adaptive management.

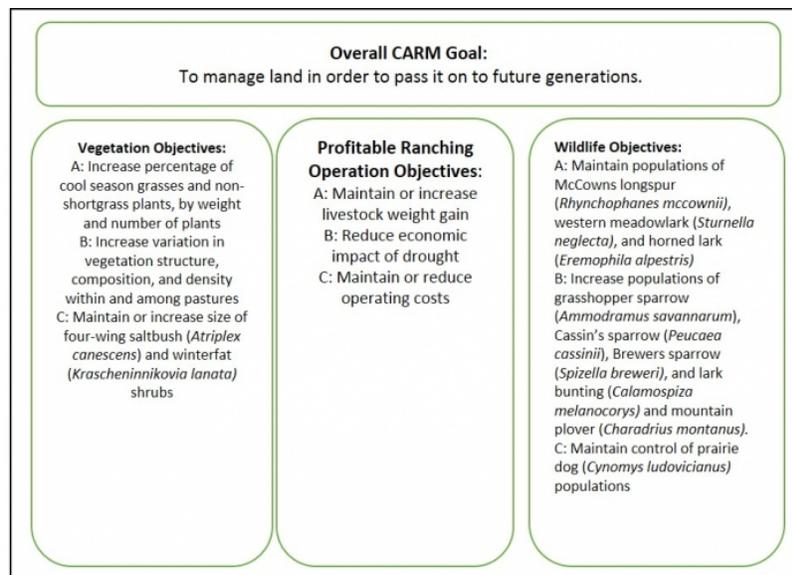


Figure 1: Goals and objectives for the CARM project were established by the stakeholder group in 2012 before a year of baseline data were collected. Experimental treatments began in 2014.

Collaborative Adaptive Rangeland Management: CARM is a 10-year rangeland management project involving a herd of yearling steers and 10 320 acre shortgrass steppe rangeland pastures managed adaptively, and comparison herd and set of paired pastures managed under a system that is traditional on public lands in eastern Colorado. The project takes place at the Central Plains Experimental Range, a USDA-Agricultural Research Service facility and a Long-Term Agro-ecological Research (LTAR) network site in Nunn, CO. The project was designed under a framework for natural resource research called collaborative adaptive management (CAM). The idea behind CAM is to combine collaboration with adaptive management, or science-based management that adapts to (rather than controls) complexity in social-ecological systems. CAM attempts to bridge gaps between rangeland managers and researchers by actively involving stakeholders in research that uses monitoring data and learning to improve rangeland management practices. In the CARM project, stakeholders from conservation, public agency and ranching backgrounds work with rangeland researchers to set goals and objectives (related to beef production, vegetation structure and composition, and wildlife habitat, see Fig. 1) and make decisions about grazing and vegetation treatments using biological, ecological and animal monitoring data. The research team includes collaborators with expertise in rangeland, animal, wildlife and social sciences: Justin Derner, David Augustine and Lauren Porensky from the USDA-Agriculture Research Service, Maria Fernandez-Gimenez and Michelle Olsgard Stewart from Colorado State university and David Briske from Texas A&M University.

CCC continued support and my study on a study: I have been fortunate to follow in the footsteps of another Center for Collaborative Conservation fellow, Emily Kachergis, who in 2012, as an ARS post-doc, used her fellowship to launch the collaborative process in CARM. For my fellowship, in 2016 as a graduate student on this project, I developed a “study on a study” using interviews and a focus group to better understand the decision-making processes of the stakeholders in the CARM project. Our intent was to understand these processes which would provide lessons informing future collaborative approaches.

In the Spring of 2016 I conducted interviews with 11 stakeholders. Interviews focused on stakeholder's motivations to participate in the CARM project, their personal and professional backgrounds and experience in rangeland management, and key uncertainties in the CARM project. We also talked about how lessons from the CARM project might impact their own



careers or rangeland management decision-making outside of the experimental setting. I transcribed and coded these interviews for patterns and themes, and took the results to the research team. Together, the research team developed a focus group protocol that used participatory methods to discuss key uncertainties, lessons, and limitations of the project. We conducted this focus group in April 2016. Over the summer, I synthesized the results of the interviews and focus group, and worked with the research team and a set of dedicated stakeholders to develop a manuscript that has been submitted to the journal *Rangeland Ecology and Management*.

Lessons learned for future collaborative adaptive management: One of the driving hypotheses behind the CARM project was that involving stakeholders in the research process would eventually help the group develop a collective understanding (or shared mental model) of rangeland management in this ecosystem. The idea is that if you take a diverse group of stakeholders and researchers with an interest in rangeland management and engage them in a collaborative adaptive management process, they will learn together and get better at what they are trying to do. Our findings did show differences in how stakeholders think rangeland ecosystems function and should be managed. But, we also found that the CARM process did not reconcile initial differences among stakeholders in the short term (in the first 3 years of the project). The main point here is that CARM stakeholders contributed rich and deep bodies of knowledge and experience to the CARM project which enhanced learning outcomes, but their working knowledge of rangeland ecosystems was not replaced by new, co-produced knowledge resulting from the CARM project. As a result of this analysis, we make recommendations for future CAM projects: 1) identify and legitimize managers' different rangeland management experiences and knowledge, and

2) involve long-term research commitment to social, as well as experimental, processes that promote trust building among groups over time.

The CARM project is really just getting started, and the group continues to address new challenges and research questions. The coming year, 2017, will be the fourth of 10 grazing seasons planned in this phase of the experiment. Much remains to be learned about the biophysical and social (collaborative, knowledge co-production) processes that function in this rangeland ecosystem.