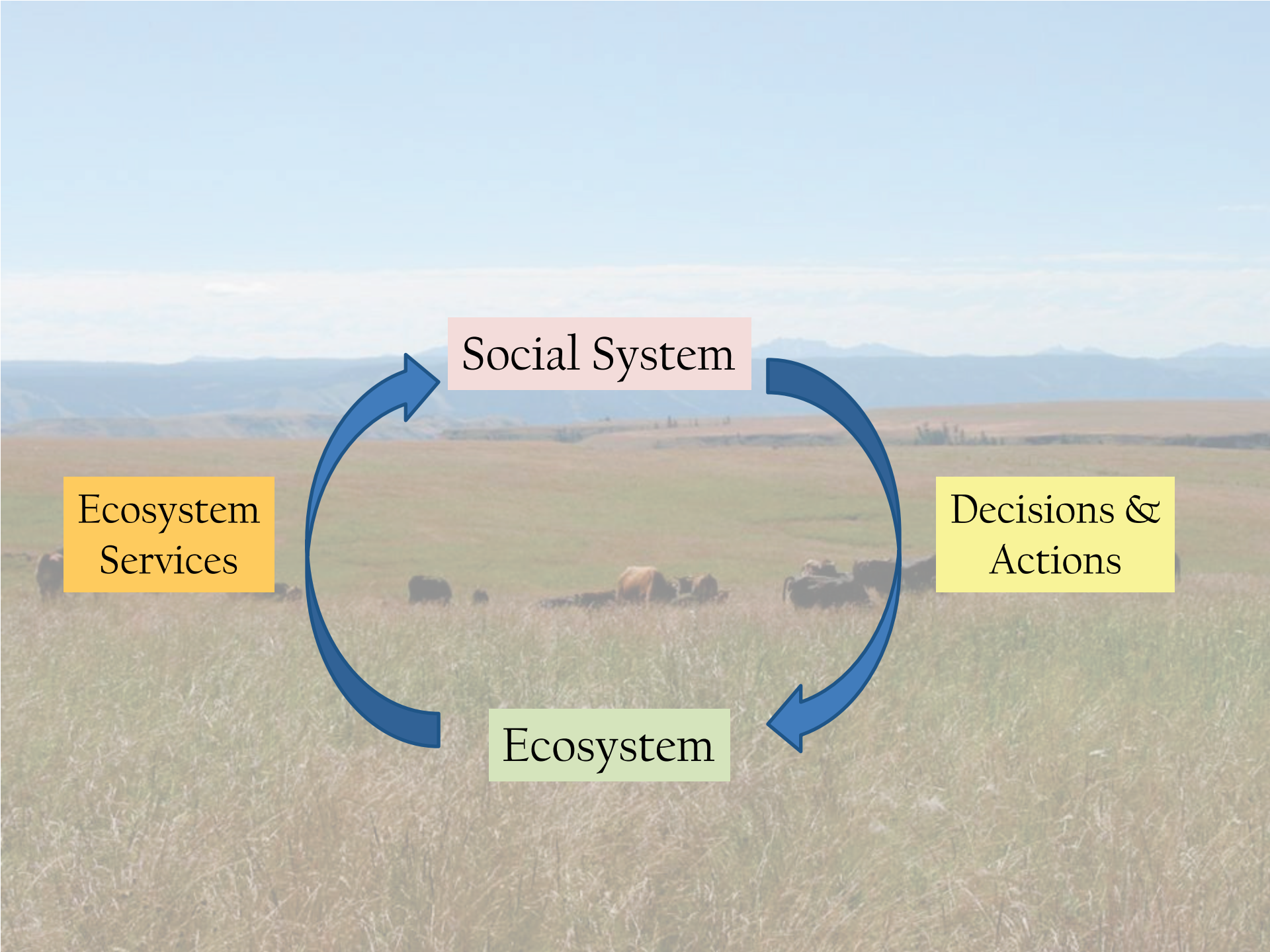


Talking Across Fences: Social Learning Through Adaptive Management



María Fernández-Giménez
Forest & Rangeland Stewardship
Colorado State University

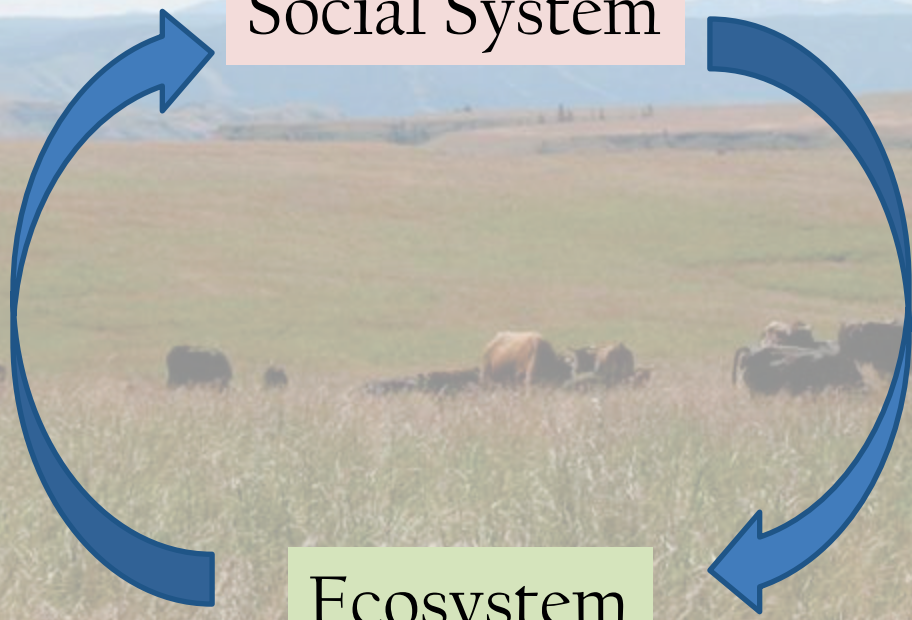


Social System

Ecosystem Services

Decisions & Actions

Ecosystem



Markets,
Policies

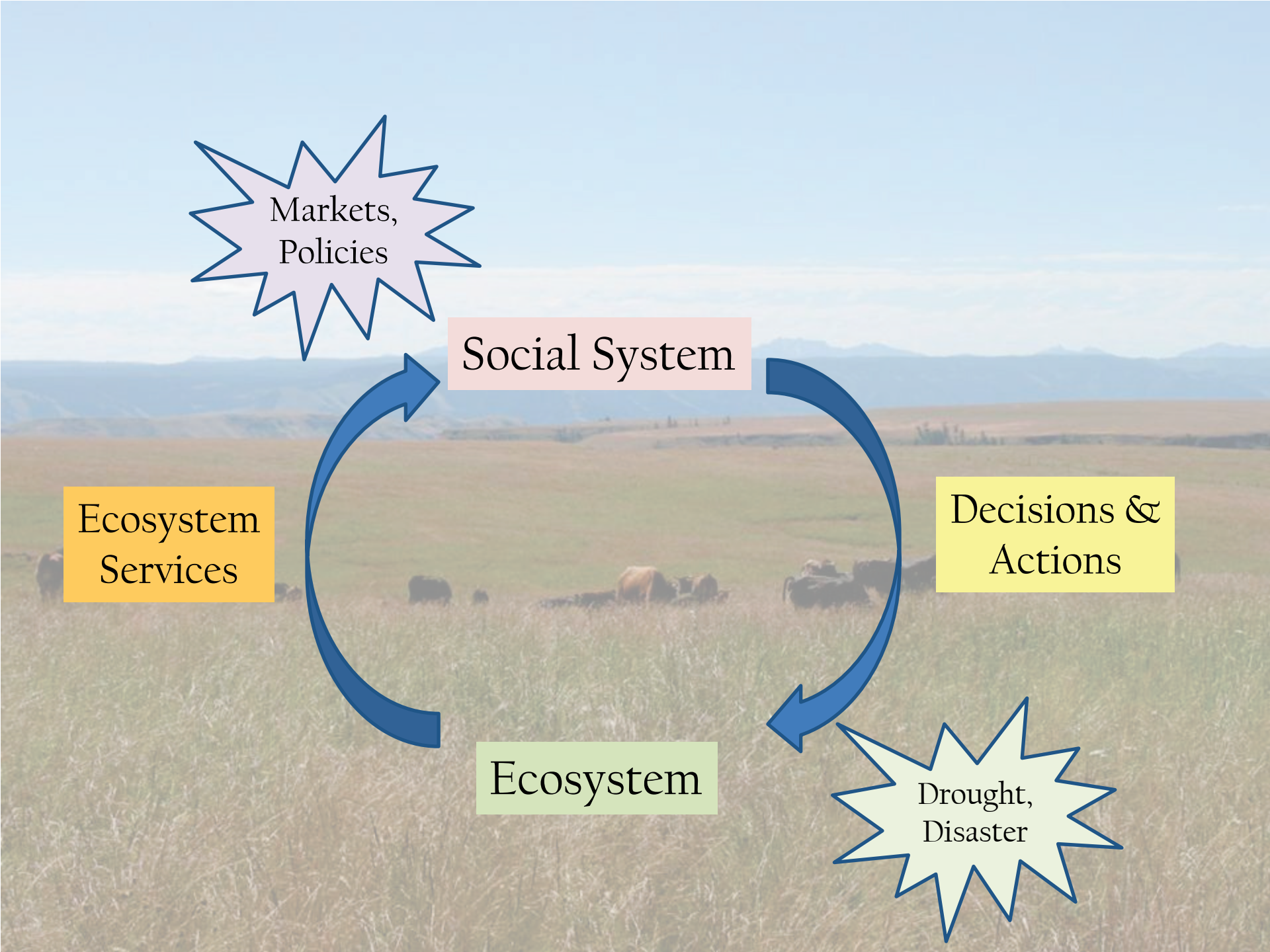
Social System

Ecosystem
Services

Decisions &
Actions

Ecosystem

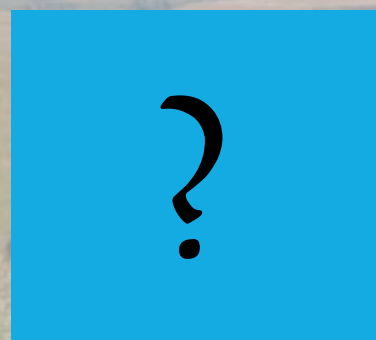
Drought,
Disaster





Social System

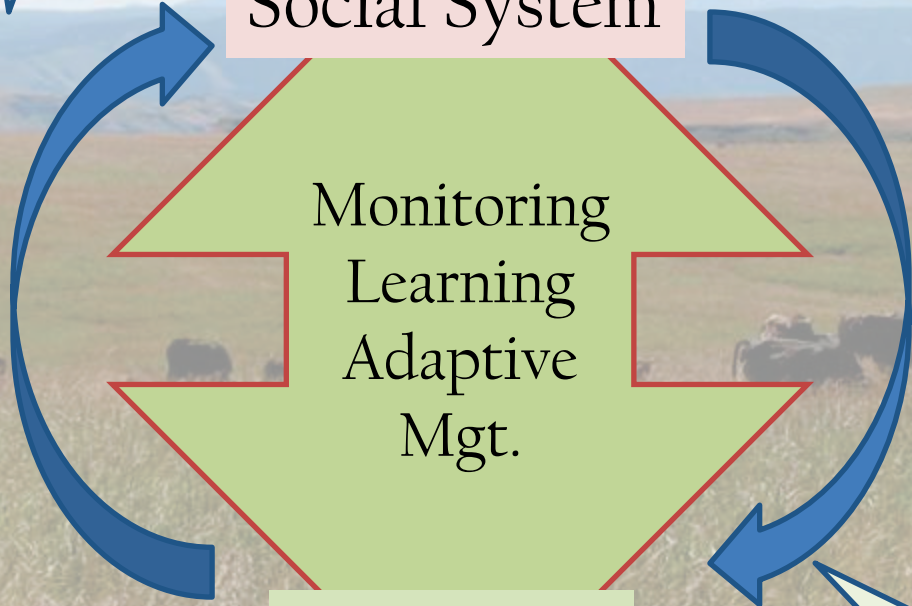
Ecosystem
Services



Decisions &
Actions

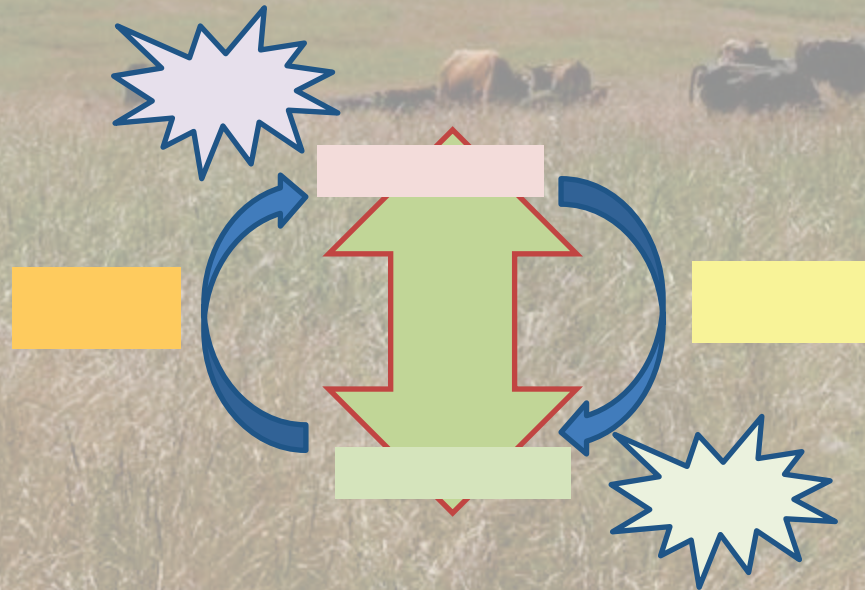
Ecosystem





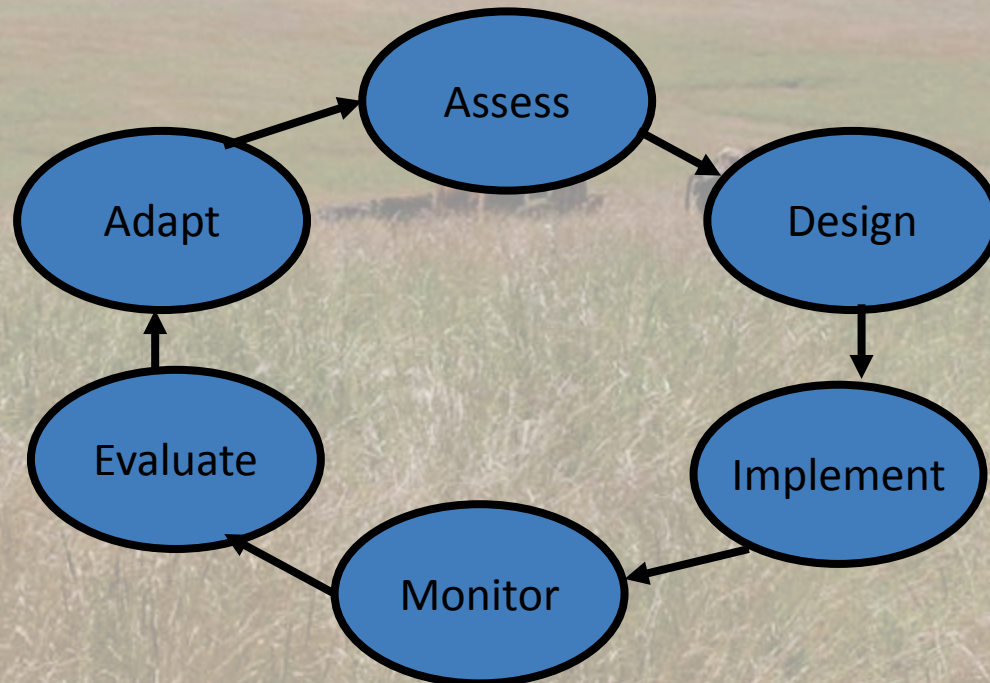
Adaptation

- Change in behavior of an individual, group or system in response to new or modified surroundings
- Adjustment to changes in environment



Addaptive Management

- Application of principles of scientific experimentation to the implementation of natural resource management
- “Learning by doing” in a structured, deliberate way



Addaptive Management

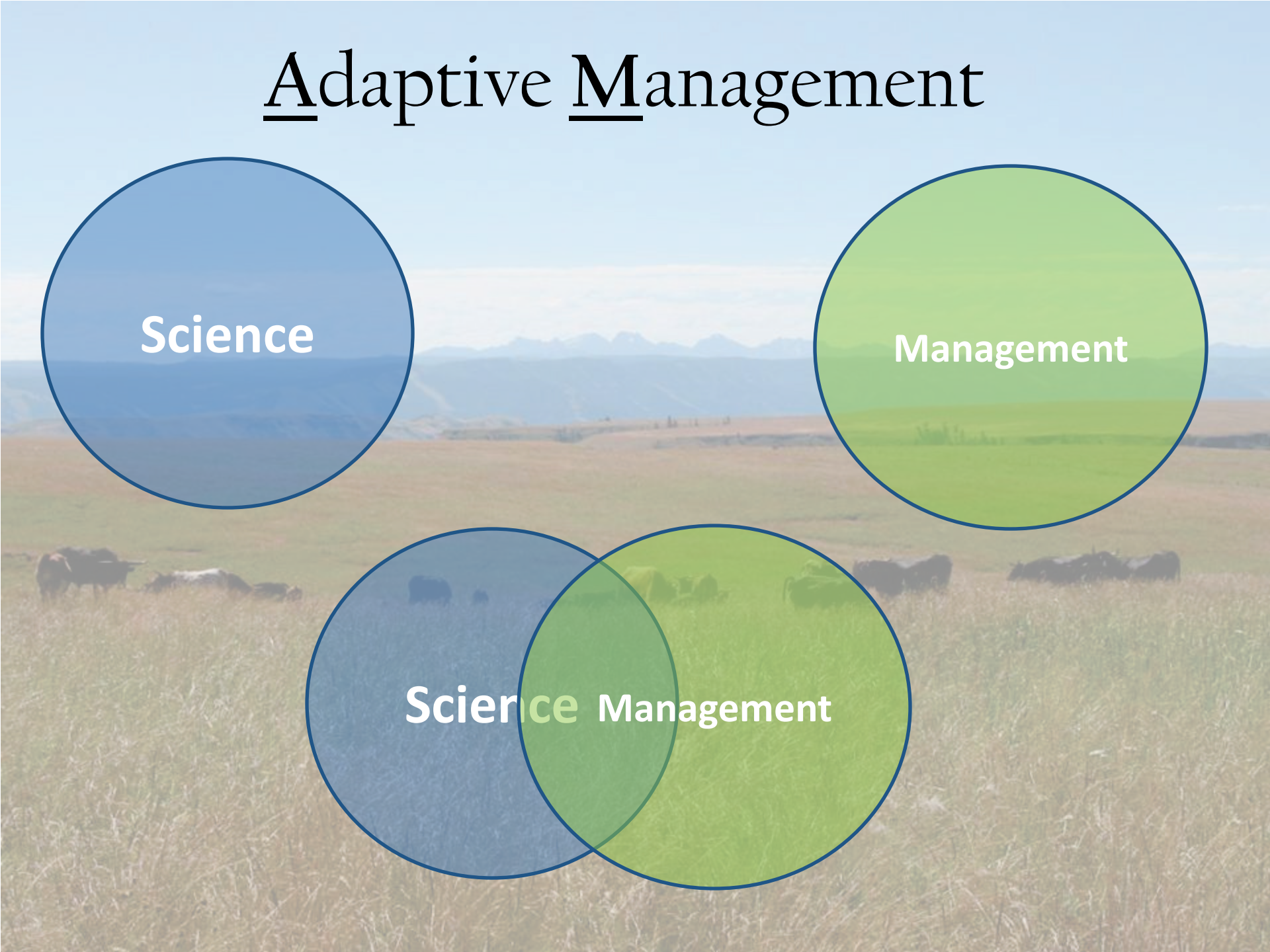
- Explicit model of system dynamics guides management
- Measurable management objectives
- Working hypotheses
- Management designed to test hypotheses about system dynamics and management effectiveness
- Rigorous monitoring and evaluation
- Pre-determined “triggers”
- “Closing the loop” –changing management in response to new knowledge

Adaptive Management

Science

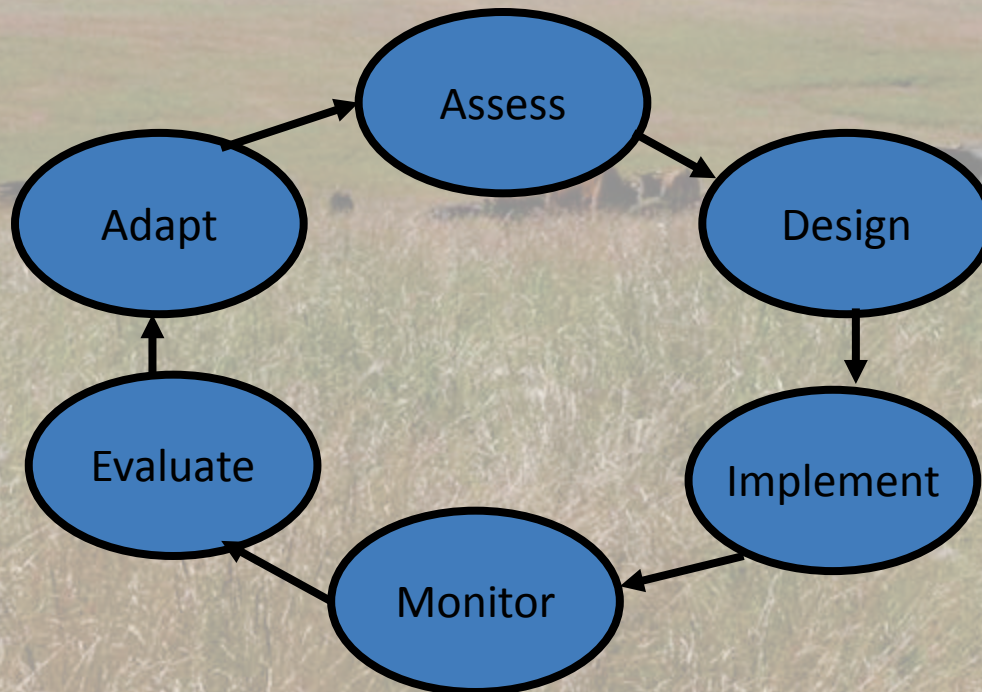
Management

Science Management

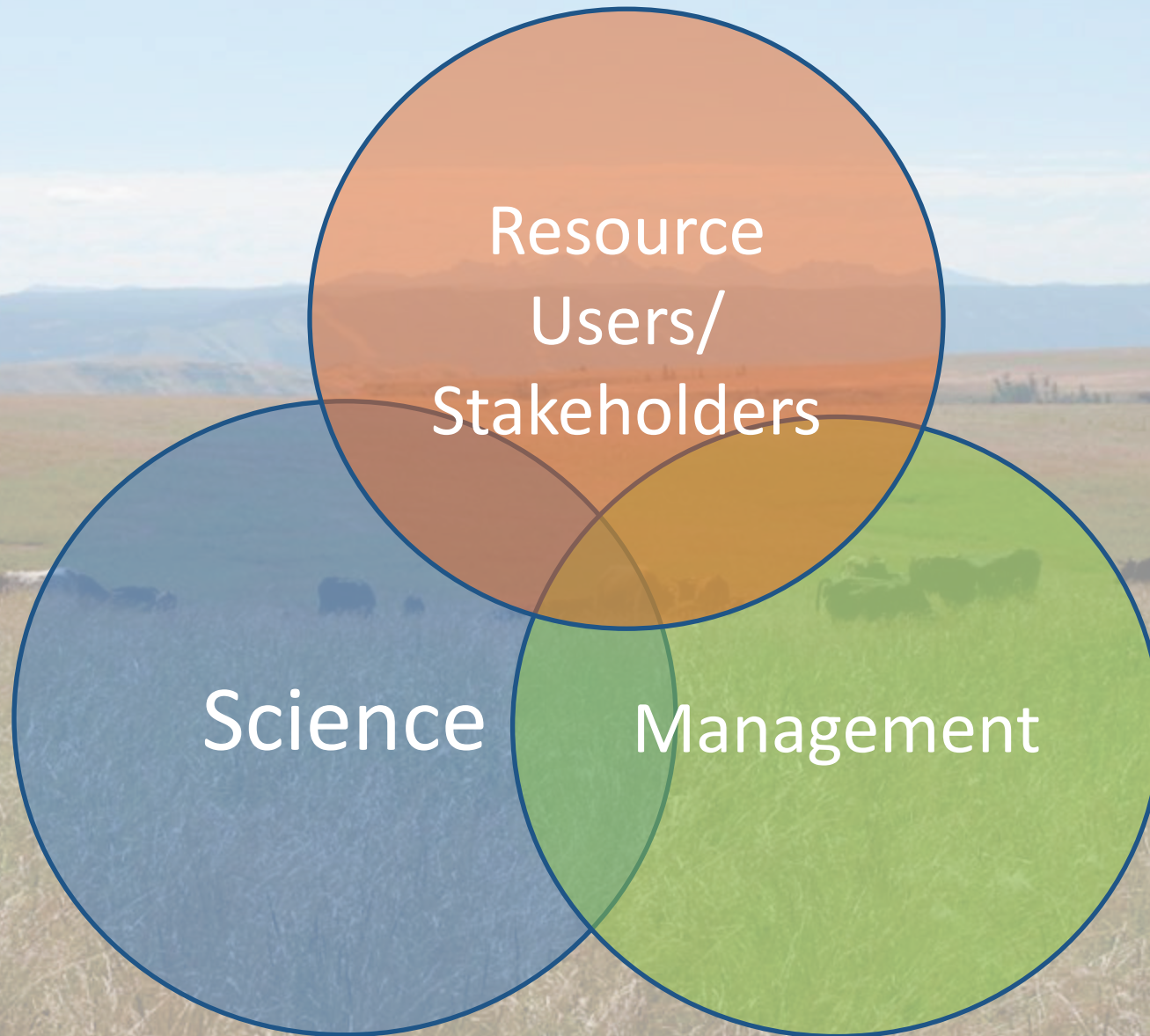


Adaptive Management

- Accelerates learning
- Reduces uncertainty
- By treating management as an experiment

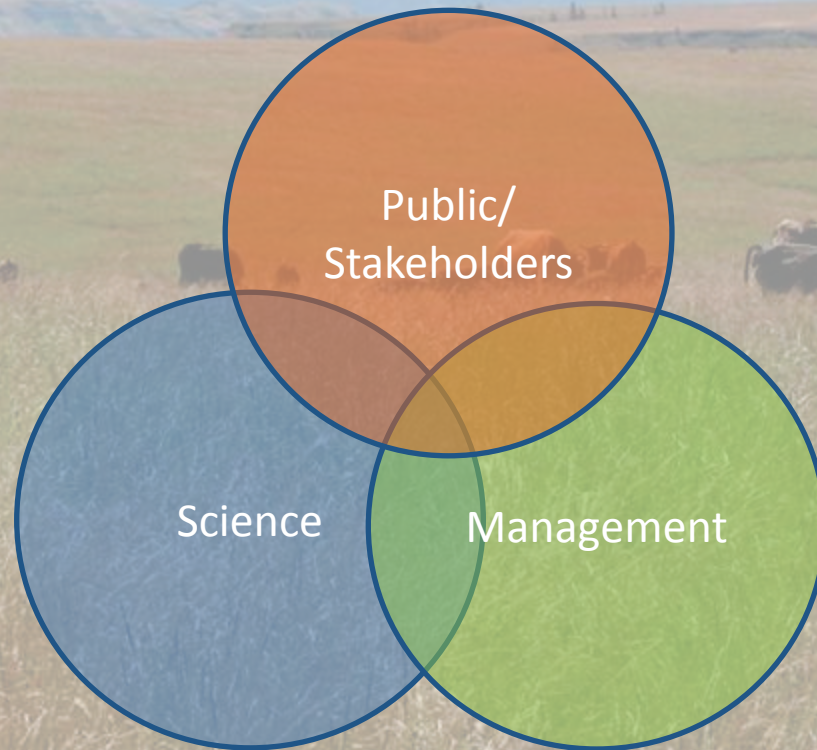


Collaborative Adaptive Management



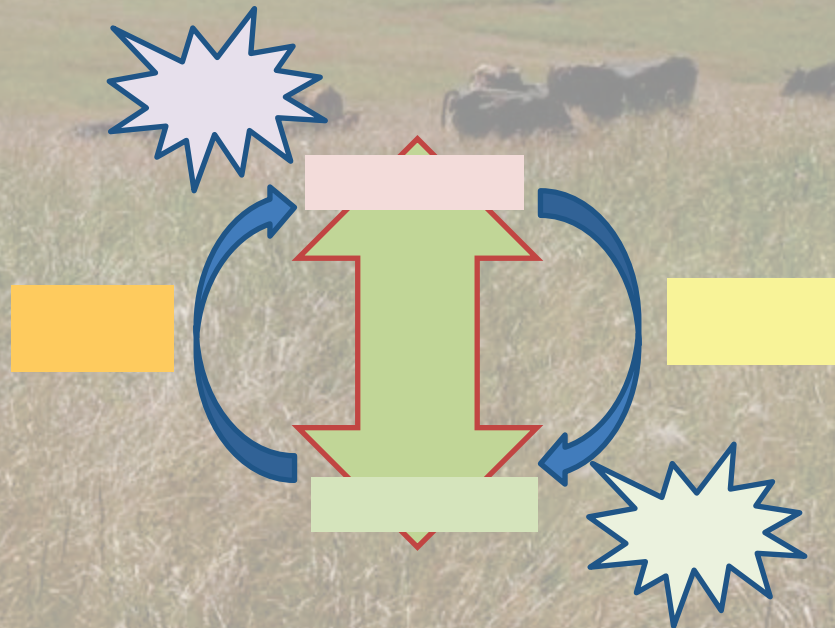
Collaborative AM Increases Learning and Adaptation by

- Promoting multiple-loop learning
- Fostering social learning processes

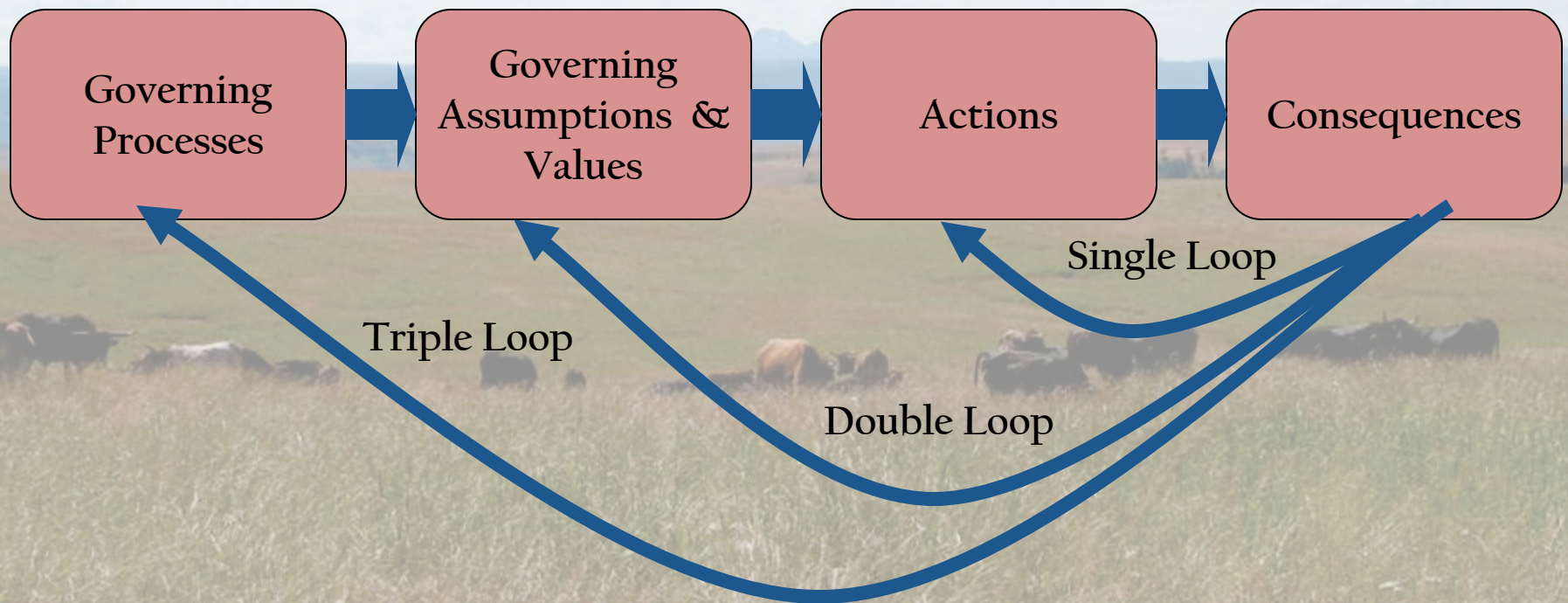


Learning

- A process and an outcome
 - Process of acquiring knowledge, skills
 - Change in understanding, skill
- Ability to learn increases capacity for adaptation



Multi-loop Learning



(Keen et al. (eds). 2005. Social Learning in Environmental Management; Towards a Sustainable Future. London: Earthscan)

Adaptive Management & Multiple-loop Learning

- Explicit system models highlight assumptions
- Experimental approach tests assumptions as well as management effectiveness
- A M Adaptive Management promotes multiple-loop learning

Social Learning

1. Change in understanding among individuals,
2. That permeates wider community (diffusion),
and
3. Occurs through social interactions among actors
within a social network

(Reed et al. 2010. What is social learning? Ecology and Society)

Working Hypotheses

- Collaborative Adaptive Management leads to:
 - Multiple-loop learning
 - By making mental models explicit
 - Testing hypotheses about underlying assumptions as well as management outcomes
 - Social learning
 - By involving people with diverse knowledge, experience, goals and values
 - Adaptation
 - By linking learning and action to management goals, objectives and practices
 - Fostering active experimentation to test multiple strategies

CAM Leads to Double-loop Learning

Public Lands Partnership,
Delta, CO



“Everyone is going to come to the table with their opinions, but you are able to actually learn about stuff that you may have had preconceived notions about but may not be true. Maybe you will learn that. I know I have.”

CAM Leads to Social Learning

Wallowa Resources Upper Joseph Creek Watershed Assessment



“It was really neat to see what had come out of the collaborative process. The entire county seems to be pretty much on the same page.”

(Fernandez-Gimenez, Ballard, and Sturtevant. 2008. Adaptive management and social learning in community-based monitoring. Ecology and Society 13(2): 4)

Social Learning Leads to Increased Adaptive Capacity

- Mongolian *dzud* of 1999-2003 and 2009-2010



(Fernandez-Gimenez, Batkhishig and Batbuyan. 2012. Cross-boundary and cross-level dynamics increase vulnerability to severe winter storms (*dzud*) in Mongolia. *Global Environmental Change*)

Comparison of winter preparations and impact among 4 case study sites. CBRM = formally organized community-based rangeland mgt.

		Mountain CBRM	Mountain Non-CBRM	Gobi CBRM	Gobi Non-CBRM
Winter Preparations 2009	Hay cut (tons) Mean (SE)	1.5 (.3)	1.4 (.2)	1.7 (.6)	.1 (.1)
	Fall <i>otor</i> (%)	81.3	33.3	75.0	62.5
	Reserved spring pastures (%)	48.4	11.1	30.4	36.4
Impact of Dzud	% of herd lost Mean (SE)	30.7 (3.34)	42.9 (6.7)	13.7 (2.2)	38.9 (5.9)

Across all sites, those who fattened their herds on fall otor, and those who had reserved spring pastures lost a smaller proportion of their herds in the 2010 dzud.

	Percent of Household Herd Lost Mean (Standard Error)		df	T	P
	Yes	No			
Fall Otor	26.1 (2.8)	35.4 (4.2)	89	1.884	0.063
Reserved Spring Pasture	21.6 (3.8)	34.2 (3.3)	78	2.364	0.021

Summary

