ESSM

Integrating Adaptive Management into Rangeland Research: Looking Forward

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SRM
Society for Range Management

What Have We Learned?

- ➤ A new way of conducting management is needed
  - ✓ Moderate success in the past
  - ✓ Knowledge base for the future
- ➤ Is CAM a potential solution?
  - ✓ Compelling arguments have been made
  - ✓ Tremendous potential exists
  - ✓ Success has been limited and incremental
- ➤ Transformational change in our profession

The Anthropocene

➢ New planetary epoch associated with human-induced changes to Earth System

- ✓ We can not solve problems that we have created with the same thinking that created them – Ludwig 2001.
- ✓ Insanity is doing the same thing over and over again and expecting different results – Einstein
- ✓ Human behavior is the source of most environmental problems – Yaffee 1997
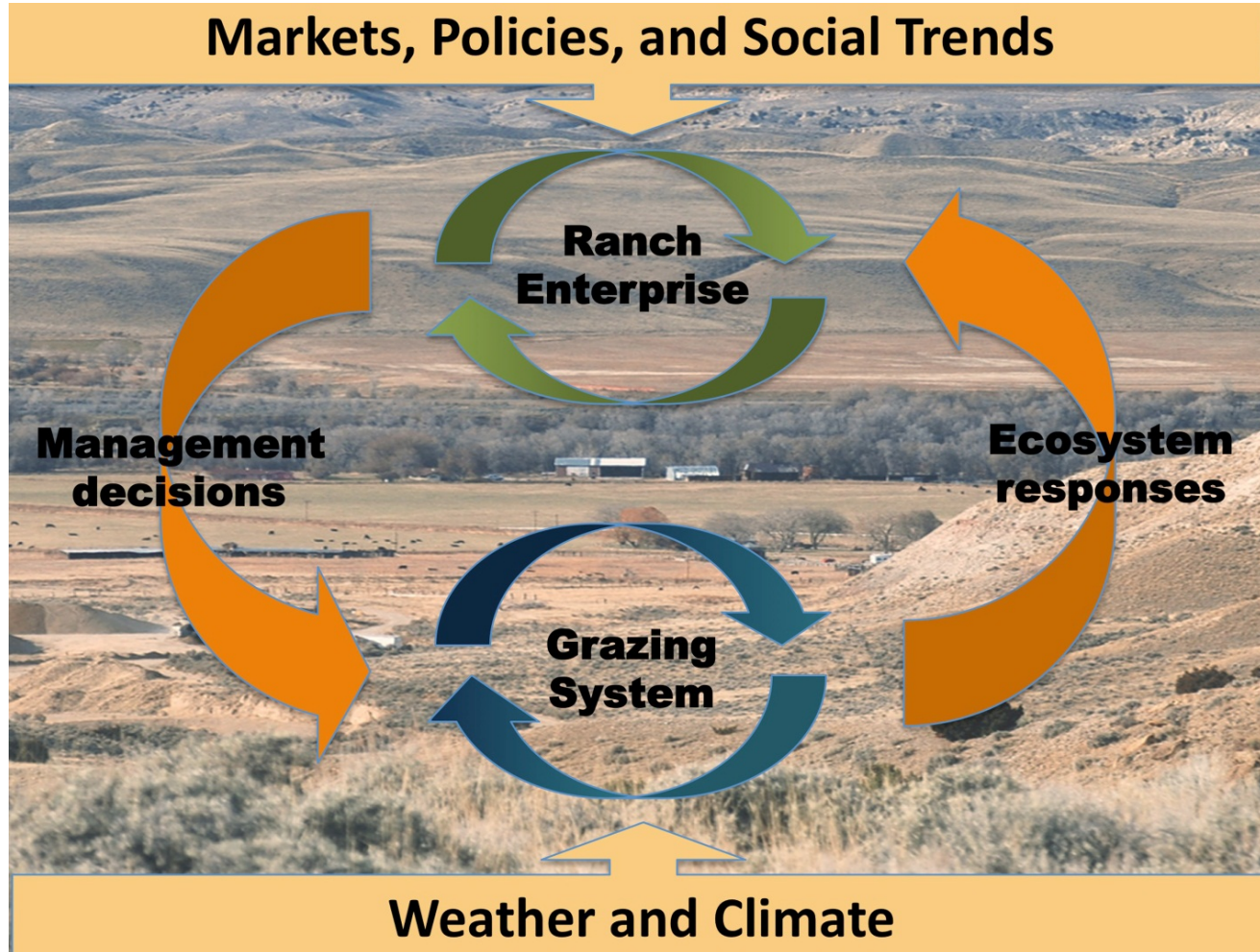
Recurring NRM Policy Nightmares

➢ Short-term decisions override long-term decisions
  ✓ Willingness to discount the future

➢ Competitive behavior trumps cooperation

➢ Diverse interest and values of society
  ✓ Extreme views limit meaningful dialogue

➢ Fragmented authority and responsibility

➢ Disjointed information and knowledge
  ✓ Disciplines, silos, and centralized control

(Yaffee 1997)

What is CAM?

- ➢ Manipulation of a system to <u>test</u> responses and <u>apply</u> information gained to future decisions
- ➢ <u>Systematic</u> evaluation of management decisions
- ➢ Outcomes <u>monitored</u> and <u>feedback</u> to future planning and implementation
- ➢ Multiple stakeholder involvement from the outset
- ➢ Enhance our ability to create and shape future change

Complex Adaptive Systems

Potential Outcomes of CAM

- Social learning and knowledge integration
  - ✓ Frame relevant, complex problems and challenges
  - ✓ Most valid source of management information
  - ✓ Credibility and acceptance of recommendations
  - ✓ Keep pace with rapid and unanticipated change
- Build adaptive capacity to sustain resilience

Challenges to CAM

- Who's job is it?
  - ✓ Authority and coordination
  - ✓ Funding and planning
  - ✓ Information storage, management and retrieval
  - ✓ Peer review, publication and distribution
- Complexity of human dimensions in management decisions are underappreciated
  - Fire in ecosystems
  - Climate change

Science vs Mental Models

➢ Collective representations of explicit assumptions and evidence based on theory
  ✓ State and transition models & resilience theory

➢ Personal, context-dependent representation of external world used for decision making
  ✓ Choice and timing of management actions

➢ Two critical, but <u>distinct</u> slow variables

➢ Mental models strongly influence management

(Jones et al. 2011)
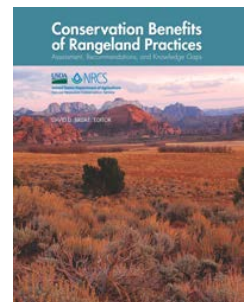
Information vs Knowledge

- We are drowning in information, while starving for wisdom – E.O. Wilson 1998
  - ✓ Information is organized data and explicit facts
  - ✓ Knowledge is contextual experiences and values that provides a framework for decision making
- Science shares explicit information, but not necessarily knowledge
- Information is readily shared, but knowledge sharing requires in-depth human interaction

(Roux et al. 2006)

Complex, Wicked Problems

- Difficult or impossible to completely resolve
  - Solutions create new problems within the system
- Multiple, competing solutions exist
  - Priorities must be set and tradeoffs established
- Large number of variables that are dynamic in time and space
  - Multiple perspectives and knowledge sources required

Promotion of CAM

➤ Strengthen M-S-P partnerships

➤ Organize and fund CAM projects

➤ Cross-disciplinary training opportunities

➤ Conduct monitoring to <u>anchor</u> CAM

➤ Decentralized power of social organizations
  ✓ Increase knowledge generation and sharing

➤ Minimize organization – resource mismatches
  ✓ 1 yr contracts in federal programs
  ✓ 3 yr funding cycles in research

Rangeland Ecology & Management

Conservation Benefits of Rangeland Practices

Framework for CAM

- How do we fit CAM into our profession?
- Management platform capable of storing, managing and retrieving information.
  - ✓ Monitoring information
  - ✓ Outcomes of CAM projects
- Do ESDs provide a platform to compile expert <u>management</u> knowledge?
- Version of CEAP that emphasizes management rather than scientific knowledge.

Take Home Message

➢ Management landscape is rapidly changing.

➢ Current approach to management moderately successful.

➢ CAM offers a compelling case for an alternative management approach.

➢ It is a transformative change with numerous challenges confronting implementation.

Discussion Questions

➢ Is current management sufficient for the future?

➢ Is CAM a viable management alternative?

➢ Can CAM be effectively implemented? By whom?

➢ Does an alternative management approach exist?

➢ Should management and scientific knowledge be integrated? If so, how?

➢ What is the appropriate knowledge base from which to manage rangelands in the future?