



Sustainable Rangelands Roundtable

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SRR Background

- Since its inception in 2001, SRR has had over 150 participants from more than 75 organizations involved in activities and initiatives.
- SRR has identified 64 indicators of social, ecological, and economic rangeland sustainability, categorized under 5 criteria:
 - Conservation & Maintenance of Soil & Water Resources on Rangelands
 - Conservation & Maintenance of Plant & Animal Resources on Rangelands
 - Maintenance of Productive Capacity on Rangelands
 - Maintenance and Enhancement of Multiple Economic & Social Benefits to Current & Future Generations
 - Legal, Institutional, and Economic Frameworks for Rangeland Conservation and Sustainable Management
- SRR has identified 27 core indicators, those easiest to assess with current tools, technologies, and inventory platforms.



SRR Indicator Review Process

- SRR conducted an indicator review and revision workshop in June 2007, led by SRR Steering Committee member and indicator expert James Bernard.
- Preliminary results were presented at the SRR meeting in Albuquerque later in 2007, and the process is ongoing.
- Overlaps, omissions, ambiguities, and compound indicators were identified, along with linkages to rangeland ecosystem goods, services, and core processes.
- SRR does not currently have access to financial or personnel resources to conduct a review of current indicators comparable to the intensive year-long process undertaken by the Roundtable on Sustainable Forests. If resources become available, SRR would welcome the opportunity to engage in such a process.



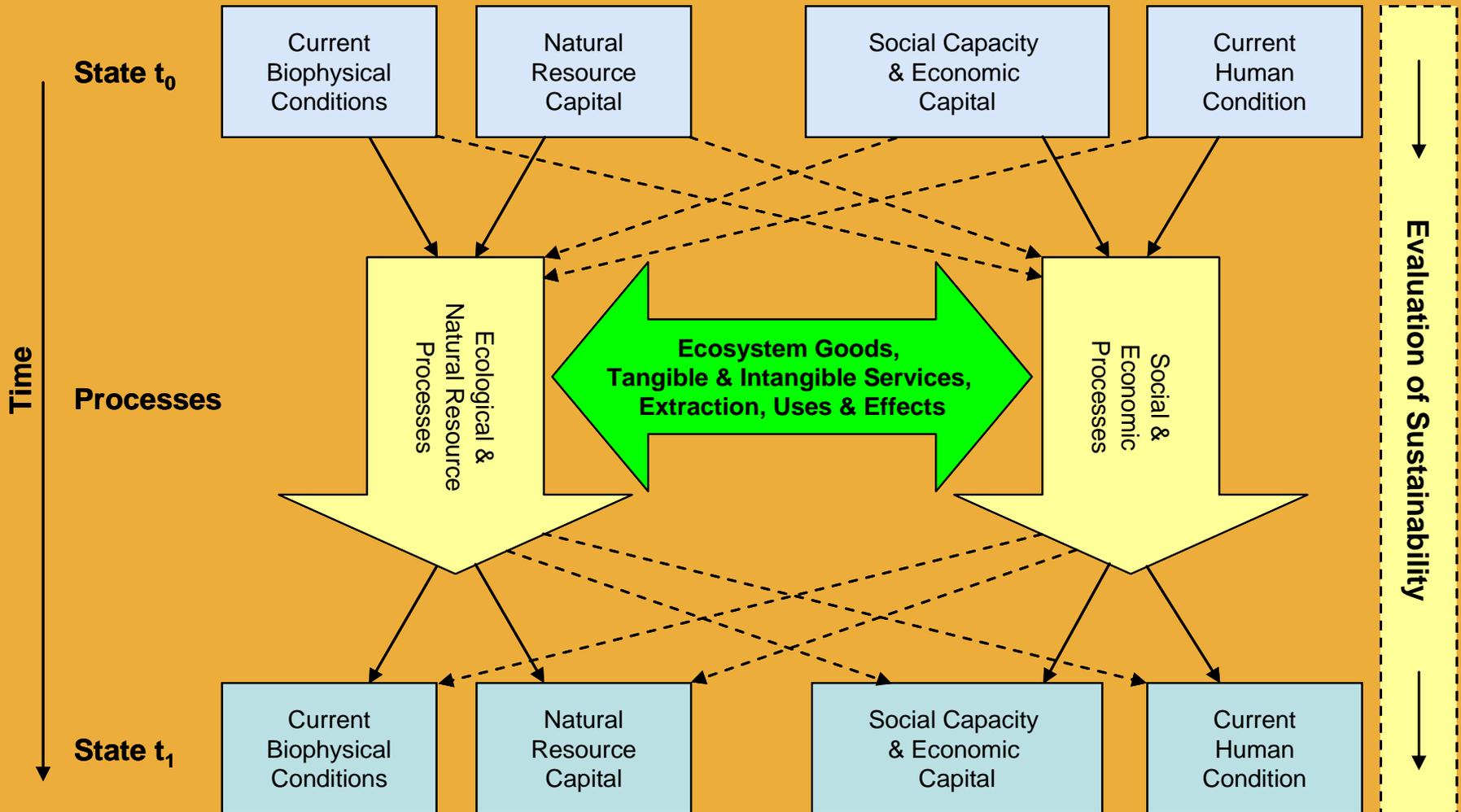
SRR Conceptual Model (ISEEC)

- The **SRR conceptual model working group** developed an applied case study for the model, described as an Integrated Social, Economic, and Ecological Concept (ISEEC).
- A paper describing the model has been accepted for publication in the Journal of Society and Natural Resources and will be published later this year.
- Steering Committee members Bill Fox, Bob Breckinridge, and John Tanaka have been engaged in this effort, along with other agency and NGO authors. Questions can be addressed to Dr. Bill Fox at Texas AgriLife Research, w-fox@tamu.edu.



SRR Conceptual Model (ISEEC)

Tier 1





SRR Indicators & Climate Change

- Dr. Jack Morgan, an international expert on rangelands and climate change working with the Agricultural Research Service (ARS), has reviewed the SRR indicators in terms of their applicability for detection of changes associated with climate change.
- Results of this review were presented at the RSF meeting held in March 2008 and is available upon request; the presentation is posted on the RSF website.



SRR Indicators & Climate Change

- Dr. Morgan will continue working with SRR as we decide how best to contribute to the national and regional dialogue on climate change. SRR will use the ISEEC model to further evaluate SRR's indicators in the context of climate change.
- To additionally inform SRR's activities with regard to climate change, potential efforts have been discussed with the Consortium for Science, Policy and Outcomes (CSPO) at Arizona State University. This organization is engaged in analysis of ongoing climate change research and policies, and their studies can enhance any efforts that SRR may undertake.



SRR Ecosystem Services Work

- SRR convened a special rangeland ecosystem goods and services workshop in October 2007, followed by a smaller writing workshop in October 2008 to integrate products from the original session into a cohesive document emphasizing importance of rangelands commodity and amenity values.
- The document has eight chapters, plus appendices. Individual chapters address topics including:
 - Evaluating Ecosystem Goods & Services
 - A Conceptual Framework for Assessing Ecosystem Goods & Services
 - Using Indicators to Inform Management for Ecosystem Goods & Services
 - Using Indicators to Assess Ecosystem Goods & Services
 - Incentives for Production of Rangeland Ecosystem Goods & Services
 - Future Directions: Rangeland Ecosystem Goods & Services Research



SRR Ecosystem Services Work

- The document is available online at http://sustainable.rangelands.org/pubs/EGS_SRR_Monograph_3.pdf
- SRR's current rangeland ecosystem services efforts focus on effects of renewable and non-renewable energy extraction. This work is designed to be part of a peer-reviewed document now in draft form and slated for submission to *Bioscience* later this year.



SRR Ranch Assessment Project

- SRR has partnered with the Wyoming Business Council, Wyoming State Grazing Board, Public Lands Council, University of Wyoming, Grazing Lands Conservation Initiative, Natural Resources Conservation Service, Forest Service, Bureau of Land Management, and several private ranchers.
- This project is designed to identify indicators applicable at the ranch level to assist a rancher in improving ecological, economic, and social sustainability of his/her ranch through a business plan approach to assessment and evaluation.



SRR Ranch Assessment Project

- A Wyoming rancher is engaged in a pilot project to test the metrics identified by the work group for ranch level application.
- A Texas/Oklahoma application has been slower to begin, but is in the works. Partners are still optimistic and working to move forward in TX, as well as exploring opportunities in Oklahoma.
- Indicators and the business planning process will be the core of a special session to be presented in Reno during December 2009 at the 4th National Conference on Grazing Lands.
- Agency partners are collaborating in conjunction with a memorandum of understanding (MOU) with the Public Lands Council to develop a ranch monitoring handbook based on this initiative.



SRR Landscape Pattern Work

- A workshop on rangeland landscape pattern and fragmentation was conducted in November 2007.
- A white paper detailing values of rangeland resources, landscape pattern metrics, and SRR indicators related to rangeland fragmentation will be forthcoming this year.
- Metrics developed by Forest Service spatial analyst Kurt Riitters were identified as an appropriate initial metric for use in measuring landscape pattern. However, weighted metrics advocated by Dr. Dave Theobald of Colorado State University may be adopted in the future after further analyses and review.



Oregon Multi-Agency Pilot Project

- This effort was not an SRR project, but rather a collaborative initiative undertaken by NRCS, FS, and BLM, with assistance from USGS, in response to formal requests from SRR stakeholders that the agencies pursue a coordinated resource assessment.
- The Oregon Multi-Agency Pilot Project (MAPP) looked at 5 ecological indicators and 4 socio-economic indicators over 13 counties in central Oregon.
- MAPP had its first field season of data collection during summer 2008, and analyses and report-writing continued for the rest of the year.
- A formal external review was conducted during January 2009, and reviewers commended the agencies' efforts while making recommendations for improvements during subsequent field seasons.



Oregon Multi-Agency Pilot Project

Ecological data were collected using NRCS National Resource Inventory (NRI) and Forest Service Forest Inventory and Analysis (FIA) protocols. Socio-economic information was extracted using existing US Census Bureau and National Agricultural Statistics Service (NASS) data.

Ecological indicators:

- Bare ground
- Vegetation composition
- Invasive species
- Landscape pattern & fragmentation
- Amount of rangeland

Socio-Economic indicators:

- Land tenure, land use & ownership patterns.
- Population pyramid & population change.
- Employment, unemployment, & underemployment by industrial sector.
- Sources of income and level of dependence on livestock production for household income.



Potential FY2009-2010 Projects

- Finalize review synthesis for MAPP
- Complete SRR landscape pattern white paper
- Complete ecosystem services & energy publication
- Initiate ecosystem services & climate change work
- Use ISEEC to further assess utility of SRR indicators for climate change effects assessment
- Finalize review and revision of SRR indicators
- Continue to support the agencies' efforts to expand MAPP regionally & nationally
- Participate in Inter-Roundtable Project(s), potentially on the Colorado Front Range and in the Chesapeake Bay area.



QUESTIONS?

sustainableangelands.warnercnr.colostate.edu



SRR Core Indicators

I. Conservation & Maintenance of Soil & Water Resources on Rangelands

Soil-based Indicators

1. Area and percent of rangeland soils with significantly diminished organic matter and/or high Carbon:Nitrogen (C:N) ratio.
4. Area and percent of rangeland with a significant change in extent of bare ground.
5. Area and percent of rangeland with accelerated soil erosion by water or wind.

Water-based Indicators

6. Percent of water bodies in rangeland areas with significant changes in natural biotic assemblage composition.
7. Percent of surface water on rangeland areas with significant deterioration of their chemical, physical, and biological properties from acceptable levels.
9. Changes in the frequency and duration of surface no-flow periods in rangeland streams.



SRR Core Indicators

II. Conservation and Maintenance of Plant and Animal Resources on Rangelands

- 12. Rangeland area by vegetation community.
- 14. Fragmentation of rangeland and rangeland plant communities.
- 17. Extent and condition of riparian systems.
- 18. Area of infestation and presence/absence of invasive and nonnative plant species of concern.
- 20. Population status and geographic range of rangeland-dependent species.

III. Maintenance of Productive Capacity on Rangelands

- 21. Rangeland aboveground phytomass.
- 24. Number of domestic livestock on rangeland.



SRR Core Indicators

IV. Maintenance and Enhancement of Multiple Economic and Social Benefits to Current and Future Generations

27. The value of forage harvested from rangeland by livestock.
32. Rate of return on investment for range livestock enterprises.
33. Area of rangelands under conservation ownership or control by conservation organizations.
39. Index of social structure quality.
43. Sources of income and level of dependence on livestock production for household income.
44. Employment diversity.
47. Value produced by agriculture and recreation industries as percent of total.
48. Employment, unemployment, underemployment, and discouraged workers by industrial sector.
49. Land tenure, land use, and ownership patterns by size classes.
50. Population pyramid and population change.



SRR Core Indicators

IV. Legal, Institutional and Economic Frameworks for Rangeland Conservation and Sustainable Management

59. Professional Education and Technical Assistance. Extent to which laws, regulations, and guidelines, institutions, and organizations provide for professional education and the distribution of technical information and financial assistance related to the conservation and sustainable management of rangelands.
60. Land Management. Extent to which land management programs and practices support the conservation and sustainable management of rangelands.
63. Measuring and Monitoring. Extent to which agencies, institutions and organizations devote human and financial resources to measuring and monitoring changes in the condition of rangelands.
64. Research and Development. Nature and extent of research and development programs that affect the conservation and sustainable management of rangelands.