

# **SUSTAINABLE RANGELANDS ROUNDTABLE**

## **General Session Meeting Notes**

**Las Vegas, Nevada**

*November 30, 2011 to December 2, 2011*

Welcome and introductions – *John Tanaka*

### **Objectives – John Tanaka**

Engage in visioning for the future by reviewing SRR's annual progress and future activities in the context of SRR's strategic plan, current work plans, and funding changes. This includes ongoing SRR projects such as food security, climate change, energy, rangeland ecosystem goods and services and ranch sustainability assessment.

### **SRR Overview – Kristie Maczko**

Started in 2001 to bring stakeholders together to discuss rangeland issues in the contexts of their respective interests to find common ground and identify monitoring and assessment needs. Refocused and broadened in 2003 to include advocacy, sustainability, research, rangeland assessment, communication and coordination. A set of criteria and indicators were developed to help monitor social, ecological and economic aspects of rangeland sustainability. The full list can be found on the website, <http://sustainableangelands.org/>

### **SRR Project Updates**

*SRR Monograph Status:* published through the University of Wyoming Extension.

*Food Security:* Climate change is driving this. U.S. focused. Using National Agriculture Statistical Data for modeling. Trying to figure out the amount of red meat (beef and sheep) that the rangelands are producing.

*Climate Change:* Paper is being revised for Journal of Climatic Change. Focus on broad scale climate change and bringing it down to rangeland regional scale. Would like to put out a publication for general audiences to attract interest in the issue.

*Ecosystem Services:* Article in Rangelands coming in the October issue. The criteria and indicators are tied with ecosystem services. Need to determine which indicators are important and how to apply them to ecosystem services.

*Energy and Ecosystem Services:* Article in review with the Journal of Rangeland Ecology and Management following an initial round of revisions. Decision expected in early 2012.

*Ranch Sustainability Assessment:* The guidebook is available as a PDF on the SRR website. Additionally, an article is forthcoming in the February 2012 issue of Rangelands. 17 indicators were identified within the areas of soil, water, plant, animals, productive capacity, socio/economic and legal and institutional. There are assessment questions a rancher can use. Financial planning and ecological monitoring are also important aspects of ranch sustainability. Pilot project on the JA Ranch is ongoing - rangeland monitoring, hope to use the project as a process that other ranches could follow.

*Sustainability outreach efforts and partnerships:* Updated outreach and projects for this year are available as PDF on the website. There is a UW *Reflections* article that is available on the UW website. SRR will offer a poster display at the SRM annual meeting; host a workshop at the SWCS annual meeting; display a poster at the ESA annual meeting; and also have a session at the Grazing Lands Conservation Initiative National Steering Committee will have a conference in December 2012.

### **Agency Partner Updates**

*Forest Service:* Rick Lopez, Ralph Crawford: Some leadership changes in Washington. Briefings on the roundtable to Forest Service folks. Additional opportunities for SSR – Coordinate with researchers from all disciplines, local to national rangelands assessment efforts and topics related to societal values, economics and jobs.

*NRCS:* Chuck Stanley, Gene Fults: Some budget cuts have occurred. CIG grants funded. CEAP and NRI funded. CDSI - planning and working with producers in the field. Working on ESD descriptions. Ongoing onsite grazing monitoring. Working on training for sagebrush ID. Working with ranchers to have them do some of their own monitoring.

*BLM:* Rob Roudabush: Focus on multiple land use and criterion assessments. Looking at consequences of opening up new lands for leasing. Focusing on Sage-grouse habitat and management and the wild horse issue. Solar and wind energy are also important issues. National landscape conservation system and growing wilderness issues are being looked at in congress. Ecoregional assessments – what are the drivers and stressors- how to collect data, what data is collected and how best to use the data. AIM – Assessment, Inventory and Monitoring - “The AIM strategy will move the BLM toward a new paradigm where data describing resource conditions are digitally collected in the field, stored in spatially enabled databases, managed in an enterprise data architecture environment, analyzed to determine effectiveness of management actions, and shared across BLM offices and interested publics.”

### **W1192 opportunities within SRR – JD Wulforth**

The W1192 is a research committee established and funded through Cooperative Extension. This particular committee, through affiliation with SRR, could be a vehicle for collecting more data and being an expanded research arm associated with the SRR. Areas of interest that fit with the SRR project goals are food security, potential value of ecosystem services, importance of ecosystem services, policies and markets and mitigating climate change.

### **Indicator Revision Process – James Bernard**

At the Austin meeting reviewed indicators and looked at data gaps. What is behind the 64 indicators and what data supports the indicators. Some of the criteria are not directly measurable because they are so broad; i.e. criterion 5.

### **The Forest Service Vegetation Ecology Program – Ric Lopez**

The new “All Lands Approach” represents a paradigm shift for the Forest Service. Components emphasized by the Secretary of Agriculture include:

- Conservation of working landscapes
- Integrated Resource Restoration
  - Stressors and resiliency of the ecosystem
  - Engagement of diverse groups
  - Use of markets to improve ecological functions

The new FS draft planning rule was requested by the Secretary of Agriculture with goals to ensure management and restoration...while protecting water, climate and wildlife as well as creating local economic opportunity. Once finalized, the new rule will provide a framework for management of 193 million acres of national forests and grasslands.

The NFS Range staff is working to reinvigorate the vegetation management programs with a focus on integrated resource management. Four key areas for continued development are:

- Mission Leadership and Policy Direction (e.g., Rangeland Assessment, Inventory & Monitoring Handbook; the Rangelands Ecological Site Description Handbook)
- Communication between Headquarters Program Leadership and field offices, private/public partners, tribes, and other agencies
- Collaboration and Coordination that fosters more integration/sharing of ecological knowledge/data and technical expertise (e.g., Federal Geographic Data Committee Vegetation Subcommittee, Interagency BLM/NRCS/USFS Ecological Site Description development and implementation)

- Science Delivery and Technology Transfer utilizing landscape ecology approaches (i.e., multiple-scale field-based and RS/GIS/modeling approach)

Specific FS Vegetation Management Programs include:

- Overall Vegetation Ecology Program
  - Shifts in habitat from temp/precip. intolerance
  - Influx/spread of invasives/opportunists
  - Biological diversity
  - Restoration actions and planning
- Botany Program
  - Rare Plants
  - Native Plant Materials
  - Pollinators
  - Ethnobotany
  - Vegetation Inventories
  - Information and Education
- Invasive Species Program
  - Adopted a new Invasive Species Systems Approach (ISSA) for FY12 to create a more effective response to the threat of invasive species
  - Identifies 12 actions USFS should address within 4 critical areas of Prevention, Detection, Control/Management, and Restoration/Rehabilitation
  - Uses R & D tools/methods with a focus on standardized, science-based methods
  - The ISSA outlines guiding principles and roles/responsibilities with a 3-year local-to-national review process
- National Riparian Service Team (NRST)
  - An Interagency Strategy created in 1996 (BLM, NRCS, and USFS)
  - Mission: Healthy streams by bringing people together
  - Many other agencies & cooperating partners
  - Operationalized by the NRST and a network of riparian practitioners (i.e., the Creeks & Communities Network)

Additional Opportunities for SRR/USFS Collaboration include:

- Coordination with researchers from all disciplines
- Local-to-National rangeland assessment efforts (e.g., ESD's, GRASS, Oregon Pilot, 'Rangelands on the Edge')
- Topics related to societal values, economics, and jobs (e.g., ecological goods and services)

## **Conservation Effects Assessment Project and the National Resources Inventory (NRI) – Ken Spaeth, NRCS**

The Conservation Effects Assessment Project (CEAP) literature synthesis confirms the approach to rangeland conservation planning are valid. Monitoring protocols are a valuable tool and now work is continuing to further improve.

*Background.* CEAP began in 2003 as a multi-agency effort to quantify the environmental effects of conservation practices and programs and to expand the science base for managing the agricultural landscape for environmental quality. One of the major thrusts of CEAP has been the development of literature syntheses that help us understand what we know and do not know about agricultural resource conservation. Since 2006, the CEAP-Grazing Land component has reached out to approximately 80 scientists seeking the latest and best science concerning conservation practices and combinations of practices on rangeland, pastureland, and grazed forest.

*Content and Application.* The Rangeland CEAP literature synthesis is available on the NRCS website. It provides an unprecedented source of evidence-based information to guide the development and assessment of management practices and conservation programs on the nation's rangelands. It assesses the effectiveness of seven NRCS-recommended rangeland conservation practices: Prescribed Grazing, Prescribed Fire, Brush Management, Range Planting, Riparian Management Practices, Wildlife Management Practices, and Invasive Plant Management. Also assessed were two cross-cutting issues: A landscape approach to rangeland conservation, and a social and economic assessment of rangeland conservation practices. It is anticipated that the rangeland CEAP literature synthesis will help to inform policy in the next Farm Bill. The recommendations from the synthesis are being considered for incorporation into revisions of agency rangeland practices and program delivery, and the science and principles from the synthesis are expected to help rangeland managers and conservationists to adapt to expected changes in climate in the decades ahead. The synthesis will also strengthen the scientific basis of training for agency employees and decision-making for planning activities with private landowners.

Although these analyses collectively indicate that NRCS investments in conservation programs are sound, it was not possible to determine the magnitude or trend of conservation benefits originating from these investments because of the paucity of information documenting conservation benefits. Thus, there is a clear need to develop protocols and programs aimed at generating standardized and systematic evidence-based assessments of conservation investments on the nation's rangelands. Such assessments must extend their focus beyond traditional agricultural production systems to explicitly include other key services that ecosystems provide to society. This synthesis provides recommendations for addressing the challenges associated with the incorporation of environmental quality considerations in conservation planning and enhancing the cost-effectiveness of future conservation programs.

#### Major CEAP Recommendations and Benefits:

- Implement monitoring as a necessary component of conservation planning to specifically document conservation benefits and to enhance cost-effectiveness by providing information to strengthen evaluation of practice efficacy.
- Structure conservation programs so that compliance will encourage landowners to use adaptive management as a means to optimize conservation benefits following practice adoption.
- Broaden the presentation of conservation programs to engage multiple stakeholders by emphasizing the wide array of ecosystem services provided by rangelands.
- Strengthen conservation management–science linkages as a mechanism for guiding development and implementation of the next generation of conservation practice standards.

*Availability.* The second product of this effort, the CEAP rangeland literature review, “Conservation Benefits of Rangeland Practices,” is now available in hard copy as well as online. This publication describes highlights of findings and recommendations from this effort. The publication may be ordered free of charge from the NRCS National Publications and Forms Distribution Center. You may also call 1-888-526-3227 or e-mail [NRCSDistributionCenter@ia.usda.gov](mailto:NRCSDistributionCenter@ia.usda.gov). The publication is also available in PDF format on the NRCS Web site.

#### **Collection of NRI Data on BLM lands – Rob Roudabush**

The AIM Strategy will move the BLM toward a new paradigm where core data describing resource condition are digitally collected in the field, stored in spatially enabled databases, managed in an enterprise data architecture environment, analyzed to determine effectiveness of management actions, and shared across BLM offices and interested publics.

BLM has not had a reliable national, regional or local reporting system for public land health.

#### BLM Challenges:

1. BLM collects data at the field (local scale) primarily for use-authorizations
2. FIA and NRI historically have not been connected to BLM management questions and thus we have been reluctant to move forward with them.
3. Our current budget climate has made it critical for us to drive data collection by management questions

This presentation is about the evolution of BLM’s AIM strategy which has been influenced by everything we could find, ie all of you. We did not want to re-invent anything. Take Home messages are:

1. Scale matters and it must be addressed and it must be connected to the management questions at those scales. This drives:
2. Core indicators and standard protocols which are a requirement for sharing data across boundaries.
3. Integrated sampling frameworks where all points have a chance to be selected and can be used across scale.
4. Stratification is necessary when addressing scale and the management questions. We are doing it on the biophysical settings
5. Data must be ecologically referenced.

*SRR Challenge is to critique us, peer review us, help us find the canaries and the ecological models that move interagency data collection forward.*

When possible, data collection should not be driven by a single issue—it must be process driven so it can be used many times for many purposes. Therefore data must be:

- comparable and compatible
- utilize core indicators and methods
- Resource condition and trend is site data
- Location, abundance, and pattern are geospatial products but utilize site data
- Stressors – energy development, fire, invasive species, urbanization, climate change.
- Interaction of stressors and resources – concept models.

The AIM Strategy has taken a number of years to complete, largely because of the complexity of the BLM mission and the need for data at multiple levels of the organization. Numerous pilot projects and studies were conducted at the local, regional and national scales. Commonalities were identified. Reports were authored. An initial strategy was prepared and suffered through numerous internal reviews. Ultimately the report was finalized internally and then sent out for an external peer review. Those comments were incorporated. The final report is indeed a strategy, not an implementation plan. The strategy defines a process to develop a monitoring plan that will be useful at multiple scales, leverage site data for use to train remote imagery, and allow data to be used many times, for many questions at multiple scales. All of this requires core indicators, common methods, a scalable sample design, and a robust data management plan.

A brief sequentially review of some significant watershed moments:

- **2005** OMB directed the BLM to develop a strategy for monitoring
- **2007** Healthy Lands was initiated by Sec Kempthorne and continues to be a major component of field implementation of strategic landscape treatments
- **2008** Director Caswell was convinced the BLM needed to avoid foreclosing options to manage critical habitat and initiated Rapid Ecoregional Assessments

- **2010** Reality of changing reference conditions was recognized and Climate Change initiative was funded

The BLM has taken this sequence of events and developed the Landscape Approach. Although the pieces were disjointed at their conception, this has become a well defined program of work and will effectively position the BLM to make informed and effective land management decision. Just as a point of clarification: Adaptive management has been a program defined buzz word for some time, but here we are introduce that adaptive management requires knowing the condition of the resources, establishing measurable resource condition objectives, identifying the stressors to those resources (natural and man induced), modeling the interactions, monitoring to inform management the impact of decisions (authorizations and treatments) and to validate model assumptions, and changing management decisions if the resource condition objectives are not met. Adaptive management requires the right data at the right time and personnel with right resource knowledge and the right tools.

Demonstration areas and projects for the BLM Landscape Approach:

- BLM National landscape monitoring framework
  - Implement NRI sample design (1,079 sample sites in 137 counties in the West)
- Management driven monitoring:
  - Sage Grouse breeding areas (NRCS)
  - NLCS biotic resource values
  - WH&B Herd Management Area condition
  - Energy basin ecological effects and disturbance
- Optimization of site data for training imagery
- Extraction of core indicators from imagery
- Establish wildlife indicators
  - Heinz center, states and other stakeholders
- Legacy
  - LTDL
  - Integration of legacy data with AIM process

Core indicators are recommended wherever BLM implements quantitative vegetation and/or soil monitoring. Core indicators are generic enough to be accepted by a wide range of users and can provide a number of measures that can be applied to many different management objectives. Core indicators can (and should) be supplemented by additional indicators/measures to meet local objectives. For examples, the core indicators could be supplemented with utilization measures for allotment-level monitoring of grazing.

- Bare ground is one of the most sensitive indicators of rangeland condition.
- Vegetation composition is measured in almost all monitoring protocols and is sensitive (when combined with vegetation cover measures) to changes in the



status of terrestrial ecosystems. Composition is also necessary for determining FRCC (Fire Regime Condition Class).

- Non-native invasive species have the potential to alter ecological processes and displace native plant communities. This indicator is essentially a component of vegetation composition and requires no additional effort to collect.
- The status of plant species of management concern is required for BLM reporting. This indicator is also a component of vegetation composition and requires no additional effort to collect
- Vegetation height is necessary to characterize vegetation structure which is an important determinant of wildlife habitat and potential for wind erosion.

#### Data Collection Methods:

- Three Core Methods for Six Core Indicators
  - Line-point intercept + species search
    - 1. Bare ground
    - 2. Vegetation composition
    - 3. Non-native invasive species
    - 4. Plant species of management concern
    - Many more possible indicators...
  - Height along selected LPI points
    - 5. Vegetation height
  - Canopy gap intercept
    - 6. Proportion of soil in large inter-canopy gaps (when gaps present)

Some indicators can be reliably predicted without having to be measured (e.g., stand density index will be zero in plots where there are no trees), and there is no need to include/measure them all the time. These are called **contingent indicators** and are only measured when necessary.

- Stand density index (SDI) is a measure of the density of trees that is an indicator of invasion or loss of woody species. SDI is scaled specific to each species, and has been identified by BLM as the most useful indicator for forests. Should be evaluated when trees are present.
- Proportion of soil surface in large intercanopy gaps is an indicator of wind/water erosion potential and can be used with vegetation height to predict wildlife habitat quality. Should be evaluated on plots where there are intercanopy gaps of 20cm or larger.
- Soil aggregate stability is an indicator of changes in soil erodability and soil organic matter cycling. Should be evaluated on sites where soils are not expected to be highly stable.
- Accumulation of toxins is an indicator of major threats to human and environmental health. This indicator should be evaluated when there is reason to believe that significant accumulation of toxins exist.

Remote sensing integration refers to the simultaneous use of field and remote-sensing data for assessment and monitoring of rangeland systems. This will be the next phase of AIM that is developed/implemented. Remote-sensing integration includes the following:

- Use of field data to train and validate remote-sensing based products like vegetation classifications, landscape-level maps of attributes like bare ground cover, biomass production, invasive species prevalence, etc...
- This is an area where legacy data will likely be able to play a significant role
- Use of remote-sensing data to aid in selection of field sampling locations
- Use of remote-sensing data for extrapolating field data results to broader landscapes
- Integrated approaches to creating assessment/monitoring information based on geostatistics

Data Storage - Database for Inventory, Monitoring, and Assessment (DIMA):

- MS Access database
- Collects AIM indicator measurements
  - Plus many others
- Designed for Tablet PC
  - Fast, electronic data entry
  - GPS integration
  - Downloads USDA Plants database codes and NRCS Ecological Sites

### **Oregon Multi-Agency Pilot Project (MAPP) Update Summary**

Among different agencies there are different standards – how to standardize the process for monitoring and reporting on US rangeland sustainability? The MAPP emphasized experimentation with integration of NRI and FIA data to get a more comprehensive picture. MAPP facilitated a collaborative approach to share the workload across agencies and initiate collection of data on BLM lands, not currently part of either survey as of 2007. Large, long-standing databases provide scientific credibility and real word information to test potential for data integration across sampling platforms.

The Rangeland Tech Team Leonard Jolley and Gregg Riegel met several times during Aug. 2010 – Jan. 2011 at UC Davis, and worked with Doug Powell in Washington DC to address peer reviews comments.

Next Steps as of November 2011:

- Core Team members and Design Team members are coordinating efforts to finalize responses to reviewer comments and complete editing of the MAPP report.
  - discuss several outstanding reviewer comments/recommendations

- FIA and NRI field methodology comparisons
- Some specific statistical comments/recommendations
- Settle on a final manuscript format\*
- Prep/submission for publication

**Vision for SRR's Future – led by John Tanaka**

An exercise in brainstorming suggestions:

*Priorities* – suggestions with no constraints:

- Integration of data sources within format available to interested stakeholders
- Develop strategies for attracting resources
- Science advocacy to state legislatures
- Avoid non-action of on-the-ground management via stagnation or gridlock
- Promote National Rangeland Assessment
- Action plan/strategy to collect additional data on Core Indicators
- Refine measures for SRR indicators that address major issues
- Focus on adaptation rather than mitigation
- Economic linkages to rangelands
- Integrated research at regional scales with focus on landscape disturbances
- Examine means to reduce fragmentation i.e. combine allotments on public land, change inheritance laws on private lands
- Modeling and oversight of stressors to ecological conditions
- Implement management to control woody invasive species, and exotic annual grasses

*Low Hanging Fruit* –

- Interpreting current data into “sustainability” evaluations
- Develop measures of core indicators and publish
- Send regular position papers to agency chiefs, directors and legislators on issues such as monitoring
- Peer reviews of ongoing/ developing monitoring projects as resources and Agency actions/strategies
- Free data
- Use of NRI design
- General interest publications that tell existing stories to highlight the importance of monitoring and assessment
- Lobby for more one-on-one technical assistance with landowners
- Case-studies of continued management success
- Report results of the Oregon Pilot Project
- Increased, regular communication and idea interchange
- Education, communication and outreach
- 2012 project proposal with WERA/SRR

- High level agency Task Force to push use of FIA – NRI databases at all levels

How to accomplish complex goals? Going virtual to increase communication. Think tank. Need to ask others to do what the SRR can't do. Look at funding beyond the traditional core of rangeland influence.

*The remainder of this session not documented here focused on work sessions to review and revise the SRR Strategic Plan, which is due for a five-year update effective October 1, 2012. Since work on the new strategic plan is ongoing, recommended revisions have not been summarized here but rather will be incorporated into the new plan upon its release later this year.*

### **Livestock Grazing Impacts on Rangeland Productivity- Robert Washington-Allen**

Rangelands make up 1.5 million mi<sup>2</sup> of the U.S. land surface, cover 41% of the Earth's land surface, and support some 36% of the human population, but the ecological condition and trend of these lands is unknown at regional and national scales because past rangeland assessments that were conducted from a local field sampling perspective failed to capture the spatial and temporal heterogeneity of vegetation and soil response to disturbances. Time series of historical remote sensing data have been recognized as having the appropriate derived ecological indicators and the spatial and temporal characteristics necessary to monitor and assess landscape degradation. Consequently, this proposal presents a simple GIS protocol for using remote sensing to monitor and assess the spatial locations of rangeland degradation in relation to livestock use at the regional and national scale of the United States.

*Objectives and Approach:* 1. To further develop and apply a protocol for remote-sensing based monitoring of U.S. rangelands developed by Washington-Allen et al. (2006). 2. To assess trends in productive capacity of U.S. rangelands in relation to livestock grazing using an ecological footprint approach developed by Sanderson et al. (2002) and Imhoff et al. (2004). 3. To develop a model that retrospectively assesses and predicts livestock impacts based upon inputs from climate change (precipitation, evapotranspiration), land use, urbanization, and population density. This study will build upon other ecological footprint studies showing effects on productive capacity by developing a GIS data base of livestock extent and numbers, population, urbanization and access, land use and land cover, administrative boundaries, climate, and gross and primary productivity related map products. This study will define and delineate the spatial extent of rangelands and generate a livestock number and distribution map for a number of years and relate this to rangeland extent to yield a livestock footprint map. The livestock footprint map is then related to Moderate Resolution Infrared Spectroradiometer (MODIS) derived map of gross primary productivity (GPP) allows a measure of both appropriated net primary productivity by livestock (LANPP) and appropriated net ecosystem exchange (LANEE) over a number of years.

*Potential Impact and Progress:* The goal of this study is to determine the impact of the US livestock herd on rangeland productive capacity from 1982 to 2009 using satellite remote sensing. Objectives of this study are to 1. Delineate and output a map of US rangelands 2. Generate and output spatial maps of livestock forage demand from 2000 to 2009 at county and state data resolution. 3. Standardize 8-km resolution Advanced Very High Resolution Radiometer (AVHRR) normalized difference vegetation index (NDVI) data time series from 1982 to 2006 to 1-km resolution Moderate Resolution Imaging Spectroradiometer (MODIS) net primary productivity (NPP) from 2000 to 2009 to output predicted MODIS NPP from 1982 to 2009. 4. Generate spatial maps of forage available to livestock from 2000 to 2009 at 1-km spatial resolution and 1982 to 2006 at 8-km spatial resolution. Test Hypotheses that: 1. Livestock impact NPP at the national level. 2. Rangeland NPP in national parks is greater than rangeland NPP outside the parks in the same ecosystem. The digital maps output from the 4 objectives will be and were used to test the two main hypotheses. The Resource Planning Act of 1974 is focused on reporting to Congress the status and trend of US Forests and Rangelands. Consequently, the ultimate audience is the US Public. A 2003 satellite study of net primary productivity (NPP) from 1982 to 1999 detected a global net carbon gain, primarily in the northern hemisphere. A 2010 study indicated a net global carbon loss from 2000 to 2009, primarily in the southern hemisphere. This loss was attributed to the frequent droughts in the last decade related to increased temperatures and decreased precipitation. Researchers 1) defined the area of US rangelands at some 258 million ha on average over the period from 2000 to 2009, and 2) calibrated using linear regression an 8-km annual sum AVHRR NDVI from 1982 to 2006 to MODIS NPP from 2000 to 2009, on a pixel-by-pixel temporal basis using the overlap period from 2000 to 2006. They found 3 new changes of knowledge including that 1) NPP and above-ground biomass trends in US rangelands from the same dataset from 2000 to 2009 indicated a net carbon gain for drylands at a rate of 8 million Mg of biomass per year despite five major droughts. 2) state-level commercial grazing is significantly correlated with rangeland NPP, thus grazing at high levels drives down NPP and 3) NPP was on average over the period from 2000 to 2006 was 58% greater in the rangeland ecoregions in the parks than the rangelands in similar ecoregions outside the parks. They concluded that commercial livestock grazing appropriated < 58% of NPP because the role of fire and other land use practices are unknown.

### **Project Working Group Reports**

*Ranch Sustainability Assessment:* The workgroup discussed plans for the upcoming WSARE-sponsored workshop at the Soil and Water Conservation Society annual meeting, to be held July 22-25, 2012 in Fort Worth, Texas. After much debate, the group concluded that Wednesday, July 25, 2012 would be the best day to hold the Ranch Sustainability Assessment Workshop. SWCS coordinator Dewayne Johnson will roll over abstracts originally submitted in 2011 for the 2012 session. The group also reviewed progress on the JA Ranch Sustainability Assessment Pilot Project and

advocated the addition of new monitoring associated with oil and gas extraction road development that will cross the JA Ranch. It is anticipated that monitoring can be incorporated into the contracts with the oil and gas extraction industry to ensure that appropriate compensation is received for an impacts to the JA Ranch. This enhanced monitoring for oil and gas will also feed into plans to refine workshop content for the SWCS session. Incorporation into the upcoming general interest publication, *Climate Change on the Range*, of management lessons learned on the JA Ranch regarding drought, resource condition and conservation was also developed. Additional efforts discussed include a second edition of the *Ranch Sustainability Assessment Guidebook* with expanded emphasis on interpretation of the monitoring data and perhaps more material related to Legal and Institutional indicators. Upcoming activities include a workshop planning and guidebook revision meeting sometime during Spring 2012, perhaps also including discussion of a reinvigorated Wyoming pilot project, as well as a JA Ranch Pilot Project meeting and technical tour. The latter will take place during July 2012, in conjunction with the Ranch Sustainability Assessment workshop at SWCS.

*Rangelands Climate Change Assessment:* This work group endorsed SRR's involvement with the evolving National Climate Assessment, specifically opting to participate as a Sustaining Member in the NCAnet, an organization focused on communication of assessment information. Work group members completed an enrollment form for this effort, identifying SRR representatives and relevant products. This project complements materials submitted previously as part of an NCA Expression of Interest and builds upon commitments agreed to in both the SRR Steering Committee and Leadership Council meetings, held earlier in the week. Related SRR projects include both the peer-reviewed and general climate change specific publications, as well as the broader First Approximation Report on indicators of rangeland sustainability. More tangentially, the emerging food security and energy projects also may be relevant. James Bernard will be the SRR Steering Committee representative affiliated with the NCAnet effort, and Kristie Maczko will remain the SRR point of contact for involvement. The completed enrollment form will be submitted to NCAnet by year end.

*W1192 Workgroup:* Participants brain-stormed new hypotheses that would be broader and more inclusive of the new committee members' interests. The result was a set of draft hypotheses that will be the basis for a proposed new WERA focused on issues that impact rangeland sustainability in the Western U.S. Additional time was spent finalizing the formal WERA proposal, which will focus on four key objectives:

1. Coordinate activities of land grant university scientists and federal land management agencies related to maintaining and enhancing the social-ecological resilience of rangelands.
2. To exchange information on current and future research activities related to social, economic, and ecological aspects of integrated

rangeland management.

3. To investigate the ecological, social, and economic values of ecosystem services from rangeland ecosystem restoration.
4. To investigate social-ecological linkages of rural communities and economies to rangelands.

## **Participants**

1. Gene Fults, NRCS
2. Chuck Stanley, NRCS
3. Ken Spaeth, NRCS
4. John Mitchell, unaffiliated
5. Ralph Crawford, FS
6. Ric Lopez, FS
7. Rob Roudabush, BLM
8. Doug Powell, unaffiliated
9. J.K. "Rooter" Brite Jr., GLCI
10. Stan Hamilton, NASF
11. Lori Hidinger, ASU - CSPO
12. James Bernard, Consultant
13. Bob Breckenridge, Idaho National Laboratories
14. Bill Fox, TAMU
15. JD Wulfhorst, University of Idaho
16. Urs Kreuter, TAMU
17. Robert Washington-Allen, TAMU
18. Dean Bibles, Public Lands Foundation
19. John Tanaka, UW
20. Kristie Maczko, UW
21. Tex Taylor, UW
22. Don Snyder, Utah State University
23. Tom Foulke, UW
24. Allen Torrell, NMSU
25. Man-keun Kim, Utah State University
26. Tom Harris, University of Nevada - Reno