Collaborative Restoration Workshop
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Monitoring | Monitoring for Resilient Ecosystems: Developing Indicators and Metrics

Key Topics: Adaptive Management

Speakers

- **Tom DeMeo**, Ecologist, Region 6, USFS
- **Brett Wolk**, Research Associate, Colorado State University
- **Peter Nelson**, Defenders of Wildlife

Overview

This session reviewed broad monitoring initiatives that focus on ecosystem resilience and the emerging questions, struggles, and challenges they involve.

Peter Nelson – Ecosystem Resilience as a measure of Ecological Integrity

The restoration and enhancement of ecosystem resilience is a management priority on U.S. public lands. Adaptive management and ecological monitoring have been identified as fundamental mechanisms to evaluate the impacts and effectiveness of management approaches, test assumptions, and reduce uncertainty in the face of rapid environmental change. Operationalizing the emerging idea of resiliency for management and monitoring currently presents a challenge.

The concept of ecological integrity, which has been adopted as an ecosystem management objective in the U.S. Forest Service's 2012 planning rule and the 2014 Farm Bill's insect and disease provisions, provides a framework for establishing indicators and metrics for the assessment, management, and monitoring of ecosystem resilience.

Ecological integrity can be defined as the structure, composition, function, and connectivity of an ecosystem operating within the bounds of its natural or historic range of variation. Measuring relevant features of a historically intact ecosystem can provide a reference condition for evaluating the ecological integrity of a planning area. Simply put, a planning area is moving towards *resiliency* insofar as it aligns with the historic range of variation found within a relevant reference condition.

Tom DeMeo – Developing Adaptive Management plans for CFLRP, Pacific Northwest

Five collaborative landscape restoration (CFLR) projects were established in the Pacific Northwest: Tapash, Northeast Washington Vision 2020, Southern Blues, Lakeview, and Deschutes. Early on there was a recognized need to incorporate monitoring into the CFLRP efforts.

The Forest Service in Region 6 designed a monitoring process based on the full engagement of partners in an adaptive management context. The leaders emphasized CFLRP projects as a learning process, where results would be used to adjust to findings over time. Monitoring questions for each project were carefully vetted for cost, efficacy, support, and utility. Collaborative groups working on the projects endorsed and committed to each monitoring plan, helping to insure learning, rigor, accountability, and practicality rather than unachievable wish lists. Although challenges of agreement and emphasis continue,

the process appears to be working, as evidenced by complete monitoring plans and subsequent progress reports.

10 tips for developing an adaptive management plan:

1. Clearly understand and convey your goals and objectives.
2. Organize your monitoring as a set of questions – e.g., are our activities making our landscapes more resilient or sustainable?
3. Involve your stakeholders in developing the monitoring questions.
4. Keep your monitoring plan simple and commit to it. Failures in monitoring arise because we do not answer simple questions well, not because our methods are not complex enough.
5. Match your monitoring questions to your monitoring capacity (available resources). Do not make long lists of questions you will never be able to answer.
6. Understand the continuum of evidence of increasing complexity and rigor. *Limited resources often mean a reliance on the first three*: (a) expert panel, (b) photo monitoring, (c) landscape assessment (mapping methods), (d) quantitative ground data.
7. Often a triage concept works well. Use less intensive monitoring methods in general and reserve data-intensive methods for areas of high interest or controversy.
8. Understand the right scale for your question. For example, questions on fire regimes normally are assessed at landscape scale.
9. Only after the questions are precisely decided should the group clarify monitoring methods and logistics.
10. Involve Forest Service leadership in developing the monitoring plan.

Brett Wolk – Monitoring Program Comparison, Federal CFLRP and state WRRGP in Colorado

Partners and the Forest Service recently implemented two monitoring programs that span a large geography and diversity of management actions in Colorado. We can learn from comparing the diverse monitoring plans of the CFLR program and the Colorado Department of Natural Resources Wildfire Risk Reduction Grant Program (WRRGP).The CFLR program started a collaborative process to create a monitoring plan for projects on federal lands. The WRRGP used an independent third party organization, the Colorado Forest Restoration Institute, to conduct monitoring on private lands. Both of these monitoring programs were seeking the same field-based metrics (e.g., tree basal area, canopy cover, fuels abundance, understory plant cover, etc.), but they developed very different programs for monitoring these metrics.

On the one hand, the CFLR process has proved to be overly complicated and inefficient. There was a great deal of science and input in the planning stages. Rather than bringing clarity, the wealth of input led to complicated monitoring methods and an unmanageable number of metrics to measure. After 5 years, the monitoring program is struggling to answer basic questions about achieving inputs. The main lesson is that the monitoring was too complex to offer timely feedback for adaptive management.

On the other hand, the third-party WRRGP monitoring program was designed around simple questions that could be quickly measured and translated into reports. This ability to produce timely reports increased adaptive management possibilities (because there were timely results to discuss and learn from). Collaboration was not left out. Simple metrics and streamlined reports focused conversation between all parties and gave landowners and managers easy ways to provide feedback.

Lessons

- Getting to a small list of precise questions is very difficult, but worth it.
- To reduce tensions and build trust, emphasize a learning process we do together.

- We continue to struggle with the amount of rigor and resources to dedicate to a question.
- Time matters. Frequent (at least yearly) reporting is essential to maintain momentum and credibility.
- No monitoring program needs to reinvent the wheel.

Resources

- Tracking Progress: The Monitoring Process Used in Collaborative Forest Landscape Restoration Projects in the Pacific Northwest Region
- Socioeconomic Monitoring Report for the Deschutes Collaborative Forest Project
- Wildfire Risk Reduction Grant Program Effectiveness Monitoring Program