Monitoring: An Essential Tool for Achieving Environmental, Social, and Economic Goals

The ability of land managers to restore ecosystems and steward natural resources depends in part on their ability to learn from past and current management activities and adapt policies and practices accordingly. On public lands in particular, there is a need to rebuild public trust in the land management agencies' willingness to manage in a manner that will sustain and enhance ecological, social, and economic resources. Collaborative multiparty monitoring builds trust and facilitates adaptive management by providing a process for systematically tracking changes in resource conditions and learning from the results.

It is time to recognize and commit to the importance of monitoring as a tool to build social agreement and ensure we achieve our environmental, economic, and social objectives. The Rural Voices for Conservation Coalition believes that:

- Monitoring is essential to learning and adaptive management.
- Monitoring social and economic impacts of management policies will help us achieve ecological goals.
- Monitoring is essential to the success of collaboration, which is an increasingly common way in which public land management agencies accomplish their work.
- An increased understanding of the different types of monitoring, and their relative costs and benefits, can help ensure that we are collecting information that is relevant to improving land management and administrative procedures and policies.
- Monitoring will accelerate progress toward achieving national objectives for landscape-scale restoration and management.

Key Recommendations

The Forest Service and Bureau of Land Management should:

1. Practice adaptive management by incorporating results of past monitoring into project planning documents.
2. Monitor social and economic as well as biophysical outcomes.
3. Use multiparty processes to identify desired management outcomes, develop monitoring protocols, oversee data collection, interpret monitoring results, and plan future action.
4. Share monitoring data and results by posting them on publicly accessible websites and data warehouses.
5. Allow use of retained receipts to pay for all aspects of multiparty monitoring of stewardship contracting projects.

Congress should:

1. Enact and fund the Forest Service's Land Management Planning, Assessment and Monitoring line item at $205.6 million for FY2012.

However, current monitoring practices associated with federal land management face five major challenges:

1. Monitoring is not well integrated with future planning.
2. There is insufficient monitoring of the social and economic impacts of land management.
3. Monitoring is not sufficiently collaborative to build trust.
4. Monitoring results and lessons learned are not broadly disseminated.
5. Monitoring is not adequately funded.

Working together to find policy solutions to the ecological and economic challenges of the rural West

RVCC is comprised of rural western, regional, and national organizations that have joined together to promote balanced conservation-based approaches to the ecological and economic problems facing the West. We are committed to finding and promoting solutions through collaborative, place-based work that recognizes the inextricable link between the long-term health of the land and well-being of rural communities. We come from Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon and Washington.

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Challenges of current monitoring practices

Although public land management agencies gather some data on biophysical conditions and management outputs, they do not generally monitor in a manner that builds trust, adequately illuminates their accomplishments, or acknowledges the inextricable link between the health of the land and social and economic well-being. For instance, the USDA Forest Service measures conditions, such as forest structure, and commercial outputs, such as the number of board feet harvested from national forests. Although these are important to track, they are insufficient to determine whether management actions are restoring fire adapted ecosystems, improving water quality, retaining or creating jobs, building social agreement around management objectives, ensuring critical wildlife habitat, or addressing other conditions of concern.

Broad-based monitoring, such as the social and economic data gathered in the decennial U.S. Census and the ecological data gathered through the Forest Service's Forest Inventory and Analysis program, provide interesting and useful insights into conditions and trends but do not directly address the causes of those conditions and trends; nor do they provide a fine focus on the effects of management on watershed or community conditions. Implementation (compliance) monitoring provides accountability by reporting management actions and outputs, but does not address the effects of those management actions on conditions of concern.

1. The need for monitoring and adaptive management

Land management planning and decision making should explicitly reflect learning from monitoring and evaluation of past management actions. However, in most cases, monitoring is not integrated into planning and decision making, decreasing the ability to learn from and use monitoring results to inform management. This is because most monitoring does not measure the outcomes of specific management actions and monitoring results are not explicitly used in project planning.

For monitoring to be effective, it needs to be integrated into every step in adaptive management processes. Monitoring should begin with initial assessment of conditions and desired outcomes. Monitoring plans should be developed along with management plans, and baseline monitoring should be initiated before any management actions are taken. Evaluation and adjustment of management actions should then be based on monitoring results.

The most useful type of monitoring for adaptive management is effectiveness monitoring. Effectiveness monitoring is designed to measure the impacts of actions taken on conditions of concern. This requires that monitoring be linked to both desired future conditions and planned management actions. In one example of effectiveness monitoring, the Lakeview Stewardship Group in southeastern Oregon monitored vegetation recovery

Definitions

Monitoring – the periodic and systematic collection and evaluation of data to track changes over time.

Adaptive Management – a process for learning from management actions and improving subsequent management practice or policy based on what has been learned.

Effectiveness Monitoring – measuring changes in specific conditions relative to desired outcomes. Effectiveness monitoring asks, "Did we achieve our desired results?"

Implementation Monitoring – recording actions taken and outputs; also known as compliance monitoring. Implementation monitoring asks, "Did we do what we said we would do?"

Multiparty Monitoring – monitoring that involves discussion and shared learning among a diverse group of individuals with a range of knowledge and interests.

Process Monitoring – tracking how well projects or programs function in terms of things like public access to agency services, communication, and relationships.

Target – desired outcome or output; a standard by which results can be measured or judged.

Trigger Point – an undesirable monitoring result that suggests a need to reevaluate or change management.

after road closure. When they found that outcomes were less desirable in areas where the subsoil had been worked, the Lakeview National Forest implemented a policy to not plow below the topsoil level. In other words, this group did not simply track management actions and outputs (e.g., area or distance that was subsoiled); they monitored the effects of management actions on conditions of concern, and then used what they learned to change management actions to improve outcomes.

Data collection and analysis are important aspects of monitoring, but they have limited utility unless they are part of an adaptive management process that includes identifying conditions of concern and desired management outcomes, evaluating the effects of management actions, and adapting management based on what has been learned.

Monitoring rigor should be appropriate to the sensitivity of the project. A higher level of confidence is needed when there is uncertainty or controversy over possible management outcomes. The monitoring methods should match the level of uncertainty, the sensitivity of the resource, and what the stakeholders believe is necessary to build or retain trust.

2. The need for social and economic monitoring

Social, economic, and ecological systems are connected in complex ways. It is difficult to effectively manage ecosystems without taking into account social and economic issues such as the available workforce and infrastructure for stewardship work and traditional uses of natural resources. Similarly, it is important to understand how administrative policies and procedures affect economies and social behavior.

Some of the most important social and economic monitoring variables are local economic impacts of land management work, including: (1) the dollar number and value of service, stewardship end-result, and timber sale contracts awarded, and the locations of the businesses that were awarded those contracts; (2) the amount of material sold, the proportion sold to local firms, and what it was utilized for; (3) the number of jobs and associated wages paid, and the number of local workers hired or the total wages paid to local residents; (4) numbers of and trends in on-the-job injuries and accidents for contracted and subcontracted work; and (5) trends in the number of wage and safety inspections and types of violations.

Other relevant variables measure changes in capacity to do the work, such as (1) the size of the available restoration workforce; (2) types and volume of wood and other restoration byproducts that can be utilized locally; (3) public attitudes and behaviors towards land management practices; and (4) the ability and willingness of stakeholders, including the land management agencies, to engage in collaborative planning and management.

For example, the multiparty monitoring team working on stewardship projects in and around the Siuslaw National Forest in Oregon tracks contractors' and employees' places of residence to determine whether project funds stay in the area. They then look at indirect economic effects, such as impacts on the local tax base. This information on the economic benefits of stewardship projects in local economies has helped build trust between the Forest Service and local stakeholders concerned about projects being awarded to contractors from outside the local area. It also gives the agency information on local workforce capacity available for future work.

3. The need for a collaborative multiparty process

Monitoring should involve diverse interests to ensure maximum learning and trust building. Determining desired future conditions, project goals, and what constitutes an undesirable outcome are all value-based decisions that are best made through a collaborative process. In some cases, stakeholders concerned about potential management outcomes will support management actions if they are confident that the results will be carefully monitored. Likewise, the interpretation and application of monitoring results require social agreement, or they will not be used.

Monitoring is most effective when it takes place through a process of informed collective review and discussion. Collaborative groups representing diverse interests should be involved in defining desired social, economic, and ecological conditions and their interrelationships; developing a monitoring protocol; reviewing and interpreting

monitoring results; and making management recommendations based on what they have learned. Multiparty monitoring is particularly beneficial when there is uncertainty or disagreement about the potential effects of management actions.

4. The need for transparency

Agencies, research institutions, and other groups gather considerable data on ecological, economic, and social conditions and management actions. However, monitoring results are not widely disseminated, and monitoring data are rarely shared. Agency data in particular are often not readily available for public review and discussion, and management plans and policies do not demonstrate how monitoring data were used to inform decision making. This creates an apparent lack of accountability, even though monitoring may have been completed and used to inform management. Multiparty and third-party monitoring are often conducted independently of agency planning and decision making, with the result that information sharing and collaborative learning, if any, are not reflected in agency plans and projects.

Making these data widely available will reduce duplication of efforts, reduce costs, and build trust. Monitoring data and interpreted results have utility to both future projects in the location where the data were gathered and for comparison or aggregation with information from other places. Monitoring data and final reports, including a discussion of how monitoring results were used to inform management, should be made available in a timely manner and be easily accessible to the public on the Internet.

5. The need for funding

Monitoring should not be viewed as an added expense that draws funds away from planning and project implementation. When focused on specific management actions and conditions of concern, monitoring can reduce overall costs by minimizing time spent implementing ineffective management practices and potentially reducing appeals and litigation. Monitoring should be recognized as a standard part of every project budget, because without monitoring it is difficult to know whether or not management actions are accomplishing the desired results.

Please see the next page for a full list of recommendations.

Recommendations for the Forest Service and Bureau of Land Management

1. Practice adaptive management by incorporating results of past monitoring into project planning.

1a. Develop monitoring plans concurrently with management plans.

1b. Use effectiveness monitoring to understand how management actions are impacting conditions and processes of concern.

1c. Complete the adaptive management cycle by interpreting monitoring results and using lessons learned to improve future management.

1d. Develop performance measures that track completion of key steps in the adaptive management process. Performance measures could include: (1) creation of a multiparty monitoring team; (2) development of a monitoring protocol; (3) completion of data collection and analysis; and (4) holding a multiparty meeting(s) to interpret monitoring results and recommend management adaptations.

2. Monitor social and economic as well as biophysical outcomes.

2a. Monitor social and economic benefits of land management projects, including the number and types of jobs created and retained, making this a part of the Bureau of Land Management and Forest Service's regular program of work.

2b. Monitor trends in capacity to do restoration work, including local workforce and infrastructure capacity, and the ability and willingness of the agencies and their partners to engage in collaborative planning.

3. Use multiparty processes to identify desired management outcomes, develop monitoring protocols, oversee data collection, interpret monitoring results, and plan future action.

3a. Involve people with diverse knowledge and perspectives in defining conditions and management actions of concern and build trust by identifying and monitoring issues of concern.

3b. Use a multiparty process to encourage learning among all participants; ensure that data interpretation takes into account the broader ecological, social, and economic context; and increase the likelihood that monitoring results will be used in subsequent planning and decision making.

4. Record and share monitoring data.

4a. Post monitoring data and results on publicly available websites, and provide raw and analyzed data to partners and stakeholders. Collaboratively share raw and analyzed data, lessons learned, and actions recommended or taken as a result of lessons.

4b. Contribute data sets and geodata to www.data.gov and other interagency Internet-based data warehouses to make it available for re-analysis and interpretation. Data and analysis should also be stored in multiple locations, perhaps with additional entities to reduce the risks of data loss.

5. Allocate funds to monitoring.

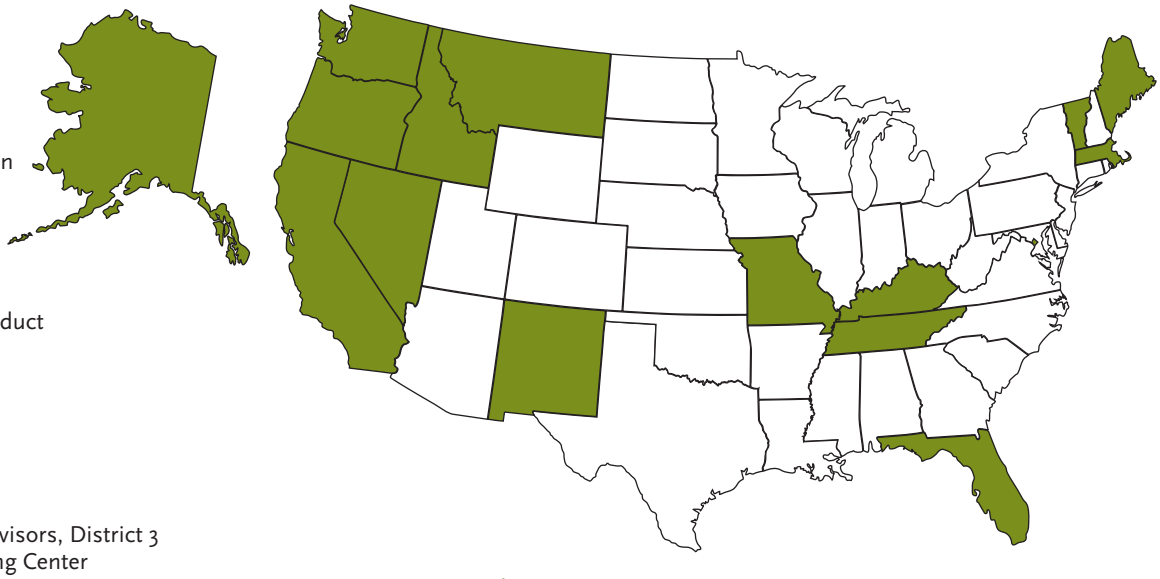
5a. Allocate at least 10% of project planning and implementation funds to gathering, analyzing, and interpreting monitoring data – preferably by multiparty teams. Funding should be proportional to project size, complexity, and controversy.

5b. Revise agency policy to explicitly allow the use of retained receipts from stewardship end result contracts for all aspects of monitoring, including planning, data collection, and data analysis.

Recommendation for Congress

1. Enact and fund the Land Management Planning, Assessment and Monitoring line item at $205.6 million for the Forest Service, as proposed in the President's FY2012 budget to encourage and support greater community engagement in identifying, prioritizing, and implementing programs and projects to address ecological diversity, watershed health, and the impacts of climate change on federal public lands. This funding will ensure the agency's ability to support community engagement in national forest planning and monitoring.

Coalition Partners



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Alliance of Forest Workers and Harvesters
Calaveras Healthy Impact Product Solutions (CHIPS)
ForEverGreen Forestry
Fourth Sector Strategies
Mattole Restoration Council
Redwood Coast Rural Action
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