Five Rivers Landscape Management Project

AGENCY:	U.S. Department of Agriculture, U.S. Forest Service
INVOLVED PARTIES:	Local public
POINT OF CONTACT:	Bernard Bormann, Pacific Northwest Research, 541-750-7323, bbormann@fs.fed.us, and Jose Linares, Forest Supervisor, Siuslaw National Forest, 541-750-7008, jlinares@fs.fed.us
DATES:	***Began:*** 1998 ***Ended:*** Ongoing
INTERNET SITE:	http://www.fs.fed.us/r6/siuslaw/projects/nepa/fiverivers/index.shtml http://www.fsl.orst.edu/5rivers/index_files/frame.htm
RESEARCH REPORT:	http://www.fs.fed.us/pnw/sciencef/scifi78.pdf

PROJECT DESCRIPTION:

The Five Rivers Landscape Management Project began in 1998 as an attempt to apply adaptive management (AM) at large scales. The project was designed for 32,000 acres of productive Siuslaw National Forest land in coastal Oregon. About half of the area contained 100- to 150-year-old unmanaged Douglas fir trees; the other half consisted of Douglas fir plantations between 10 and 50 years old. The goal, as a component of the *Northwest Forest Plan*, was to convert the plantations quickly to desirable late-successional habitat. Uncertainty arose because plantations had never been converted to old growth. After consulting with a range of managers, scientists, environmentalists, and regulators, there was no consensus as to the best way to accomplish the conversion. There was simply no sound basis to select any one approach over another, and that is exactly what the planning team concluded in its environmental impact statement (EIS).

The proposed actions, designed to restore terrestrial and aquatic habitats in the Five Rivers watershed, included designating 12 management study areas as part of a learning design; commercial thinning of older plantations; reopening some temporary and system roads, building temporary roads, and closing and decommissioning system roads; precommercial thinning of younger plantations; planting shade-tolerant conifer and various hardwood trees in riparian areas; maintaining existing meadows and plantations in early-seral conditions; and issuing a special-use permit for building and maintaining a private road.

The planning team took a diversified approach by defining three simultaneous management approaches: (1) passive management, where plantations are allowed to develop into old growth with no intervention other than road closures; (2) continuous-access management, which centers on frequent light-touch thinning and road maintenance; (3) pulsed-access management, with pulses of heavy thinning (leaving approximately 40 trees per acre), followed by 30-year road closures. Each approach has a constituency who believe that their approach will most effectively produce old-growth forest structure.

ADAPTIVE MANAGEMENT (AM) ELEMENTS:

What management issue was the primary driver?

The Five Rivers watershed is being managed, under the direction of the *Northwest Forest Plan* (an amendment to the *Siuslaw National Forest Plan*), to produce late-successional and riparian habitats starting from existing rapidly growing plantations. These objectives follow the directives laid out

for the land allocations (late-successional and riparian reserves) distributed across the Pacific Northwest region. Very briefly, late-successional habitat targets are stands with a minimum of 10 trees per acre greater than 28 inches in diameter, multiple canopy layers with shade-tolerant species, 10 standing snags, and 22 tons per acre of downed coarse wood. Riparian targets include increasing shade and coarse wood to streams and decreasing sediment from roads. Because road maintenance strongly interacts with habitat targets, access is an important variable in the three approaches. For example, stand management depends on road access, and deferred maintenance is thought to have negative effects on streams (direct water paths connecting streams to roads). The primary evaluation criteria for the three approaches will be the current condition, the stand-growth trajectory, and likelihood of disturbances. Although implementing the approaches will start changing forest conditions and trajectories right away—thinning will increase tree diameters and encourage second canopy layers—the longer-term outcomes will be influenced by the interaction of management with disturbances such as wind throw (wind damage), insects and diseases, and possibly fire. Interpretation of the approaches will need to be conservative until sufficient time has passed to understand fully the effects of episodic processes. No timelines for such interpretations have yet been specified. Other anticipated and unanticipated effects may emerge that alter the wider desirability of each approach. Monitoring silvicultural and floristic changes in the stands managed under the AM program will likely raise new questions and new ideas for fine tuning the management approaches or creating entirely new strategies.

What uncertainties led to an Adaptive Management approach being selected?

The major specific uncertainties about how well the different approaches would perform were:

1. Inexperience with converting young plantations into functioning late-successional or riparian habitat.
2. Uncertainties as to how natural disturbances will interact with the management approaches. For example, wind throw following thinning can be expected, but the extent and effects of wind throw cannot be predicted with any accuracy. Remaining trees are subject to a greater risk of wind throw until they adjust to the more open condition—usually 5 years. Wind throw and snow breakage in overly dense (unthinned) stands can be expected, but the extent and effects of these events cannot be predicted with any accuracy. As another example, Swiss needlecast and other diseases and insects are expected to have effects on stand density, but, again, the extent of these events cannot be predicted with any accuracy.

How was the monitoring and science framework designed to support timely management adjustments to changing resource conditions and increased certainty?

Initial responses in the three management approaches will provide valuable data for developing forest plan revisions scheduled for around 2009. In the meantime, many less directly trackable adjustments are and will be happening. For example, experience at Five Rivers with heavy thinning (40 trees per acre residual trees) has dispelled many peoples' various concerns with this practice, and it is becoming more widely applied elsewhere in the forest with little or no regulatory or legal constraint.

A scientific framework is being applied for the forest monitoring program. An especially important goal is to be able to evaluate responses at the landscape scale. Techniques such as random subsampling within the framework of traditional monitoring are to be used as much as possible. The later addition of powerful remote sensing may help better measure how well targets are being met in all approaches.

Please describe the process used for involving partners/stakeholders.

Most stakeholders were involved using the standard National Environmental Policy Act (NEPA) public involvement process, i.e., scoping and public comment on documents. In addition, research and university partners were deeply involved regarding the application of scientific principles associated with the AM program.

Please describe the mechanism for adapting decisions based on monitoring results. Was an Environmental Management System (EMS) used ?

The Five Rivers Landscape Management Project is based on an EMS model. This has been approached as a learning and research project, so the lessons learned here will be applied to other similar situations in the future. Unlike other AM cases, the intent here is not to adjust these actual treatments, but to learn from them and apply the results when making future decisions.

Was the AM approach established as a result of a National Environmental Policy Act (NEPA) process (analysis and documentation supporting the decision to implement the AM)? If so, how did the NEPA process address subsequent adaptive decisions and actions?

The Five Rivers project grew out of frustration with implementing AM regionally and specifically on the North Coast AM area. A central purpose of the project was to test ways to add learning objectives as "Purpose and Needs" in associated NEPA documents. The premise was that NEPA is the primary mechanism to change management and that AM would be more effective if it were directly linked to NEPA. Reflecting upon the agency frustrations with NEPA, especially environmental assessment (EA) appeals and environmental impact statement (EIS) workloads, the team reconnected with original NEPA and Council on Environmental Quality-handbook language. This language appeared well suited, if not foundational, to AM. The team, advised by the Office of the General Counsel, then decided to attempt a landscape-scale, integrated, long-horizon EIS that specifically highlighted a learning objective, and that was written to be more readable by focusing on highly relevant evidence and clear, concise writing (84 pages of main text for a 32,000-acre plan).

AM changed by being in a new NEPA framework in important ways. By stating learning objectives in the EIS and record of decision (ROD):

- A decision was made that managers will learn as part of normal business.
- AM became seen as a management, not research-led, activity.
- Learning was focused on a specified learning objective, rather than being more piecemeal and diffuse, as with traditional NEPA monitoring.
- Long-term support associated with the long-term project is more likely.
- AM results likely will fold more easily into new planning and decisions because they are already integrated in a decision.

See http://www.fsl.orst.edu/5rivers/index_files/NEPA3.DOC for a detailed discussion of the new NEPA framework used for this project.

Has the AM approach been evaluated in a subsequent NEPA process? If so, what has AM contributed to the NEPA process?

This project has not been evaluated in a subsequent NEPA process. The plan calls for implementing the management prescriptions as described in the EIS and monitoring for 20 to 30

years (a relatively short time span for creating old-growth forest structure). There was an instance where the results of an Endangered Species Act consultation for marbled murrelet triggered the need for a consistency review to determine whether revised management practices (as directed by the consultation) were consistent with the AM program prescriptions. The revised management practices were found to be consistent with the AM program prescriptions and a record of the consistency review as added to the administrative record.

RESULTS:

Benefits provided by AM to date (i.e., reduced uncertainty, improved project efficiency and efficacy compared with other management options):

Many factors led to the environment that allowed AM to develop. Certainly the emphasis on AM in the *Eastside Forest Health Assessment* and the *Northwest Forest Plan* was conducive, and the experience with the AM area helped (if only by its problems). Perhaps most important was the leadership and critical mass of involved and supportive staff in the forest at the time, combined with interest by researchers in finding a place to test AM concepts. Seed money from the Pacific Northwest Research Station and the region was also critical.

Because all activities had to meet the plan standards and guides minimally, the EIS had to justify each pathway. The EIS sought to do this by synthesizing a broad range of evidence and avoiding focusing on evidence that only supported the most popular pathway and, thus, by simple inclusion, all approaches became viewed as more legitimate. Combined with on-the-ground evaluation of the different approaches, resistance to commercial thinning evaporated on the Siuslaw, resulting in an increasingly large timber-sale program on this forest. Further, there is some evidence that the forest is adopting different approaches in different places, perhaps increasing the diversity of approaches being tried. This diversity may help the forest meet its habitat objectives.

The landscape-scale EIS is thought to have saved considerable planning time by writing a single EIS in place of a series of EAs to accomplish the same tasks. While this approach probably took 50 percent more time than it would have without a learning objective in the NEPA documents, this was a one-time cost (the extra time was not needed in a subsequent application in the *Biscuit Fire Environmental Impact Statement*).

Another benefit has been that the success in implementing the Five Rivers project has brought many more people into the planning process to assist the U.S. Forest Service with resource planning rather than entering the planning process to polarize or shut down resource management and/or project planning.

Limitations of using AM:

The Five Rivers experience has helped to assess the limitations of active AM. Limitations encountered included intolerance among stakeholders, unintended legal ramifications, difficulty in crossing boundaries between research and management, and long-term funding.

Unintended legal ramifications: Five Rivers was swept up in the general Judge Rothstein decision because it had cited the U.S. Fish and Wildlife Service biological opinion, the focus of the suit. This suit caused a 2-year delay.

Crossing boundaries: By current agency interpretation of appropriations law, U.S. Forest Service managers are the doers (they manage) and researchers are the learners (they research). This

segregation (independence) is thought also to be needed to maintain the credibility of the researchers. The cultural and legal divides between managers and researchers make AM difficult, especially when it is interpreted as researchers trying to do management or managers trying to do research. Clarification on whether learning is allowed by managers would help avoid some of these problems.

Long-term funding: A premise of the Five Rivers project was that AM must be normal business. Special allocation of resources, especially during a period of unprecedented funding declines in the U.S. Forest Service, Pacific Northwest region, was unrealistic. Five Rivers was possible because of initial seed money funding from the Pacific Northwest Research Station, the Siuslaw National Forest, and the U.S. Forest Service Regional Office. Subsequent application of the idea may not require this seed money, at least on the forest side. Continued implementation of Five Rivers may require that timber receipts are invested in monitoring. A fixed proportion of receipts allocated to monitoring would be helpful.

Financial cost of implementing AM:

Cost is not yet tallied. The very nature of planning, with its starts and stops and funding sources, makes it very difficult to determine costs for a specific planning effort. The AM process (or options forestry as the researchers at Pacific Northwest call it) is being adopted on a large-scale and is becoming a standard way of doing business. Thus, attempting to identify costs specifically associated with this project is something that will likely not be tracked through the budget process.

How did the AM approach affect the timeline for managing the system?

See third paragraph under benefits provided by AM to date.

Degree of stakeholder buy-in:

We have evidence of broad buy-in. For example, the project was removed from Judge Rothstein's injunction when the environmental litigants, after being briefed, asked the judge to do so. In addition, timber industry interests expressed support for the program to the U.S. Forest Service Regional Office, and the local watershed council has expressed support at the U.S. Department of Agriculture undersecretary level.

CHALLENGES:

What impediments, constraints, and/or challenges were overcome? How?

1. The unintended legal effects of the Judge Rothstein injunction were overcome through discussion with litigants (who then requested the project be removed from the injunction).
2. Managers were challenged to accept learning as a core activity and then to reorganize management to increase learning. These barriers were overcome through collaboration, a realization by managers of the potential value of learning, and researchers learning to communicate aspects of the scientific method. Essentially constraints were overcome by finding common ground that mutually benefited management and research missions.

What aspects of the project need improvement?

The groups and individuals implementing the AM program need to find a way to maintain focus on executing the project, assuring continued financial support for monitoring, and locating funding for associated research. Stable funding, and in particular a full-time implementing and monitoring coordinator, is needed to assure that the project is fully successful. At present, the project only continues when high-grade researchers and managers find time to do the coordination job that a full-time, lower-grade employee could do. Stable funding is essential to gaining such a position. Continued funding for monitoring (perhaps through receipts alone) would be a likely outcome of having such a position.

How and when will the need for improvement be addressed, if at all?

Ideally, the forest can appoint a full-time lead person to coordinate activities across the forest and with researchers. Hopefully, research or management agencies can find the funding for studies associated with the management comparisons, for example, long-term retrospective pseudo-experiments establishing historical context and learning from past management influences. These concerns may be addressable as the Siuslaw National Forest implements its stewardship contract for the Alsea River watershed.

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