



Oregon State University



Willamette National Forest



HJ Andrews Forest



Pacific NW Research Station



Bureau of Land Management

Blue River Landscape Study

Testing an Alternative Approach

Purpose

The Blue River Landscape Study is a large scale, long-term effort to develop and monitor the effectiveness of an alternative landscape management strategy. The strategy uses historical disturbance regimes as a general model for management activities intended to achieve the objectives of the Northwest Forest Plan: late-successional habitat, aquatic ecosystems, and sustainable timber production. Timber harvest and prescribed fire are used to create future stand and landscape patterns similar to historical landscapes.

Setting

The study includes the entire Blue River watershed (approximately 57,000 acres) located within the Central Cascades Adaptive Management Area, an allocation in the Northwest Forest Plan that encourages development and evaluation of new approaches. The H.J. Andrews Experimental Forest (15,700 acres), established in 1948, is located entirely within the Blue River watershed.

Landscape management plan

Landscape Areas

Portions of the watershed outside of reserves were subdivided into three areas, termed "Landscape Areas", based on the historical fire regime interpreted for each area. Fire frequency, severity, and spatial pattern have historically varied across the watershed. Wetter, cooler sites experienced infrequent severe fires and warmer, drier sites experienced more frequent lower severity fires. For each landscape area, timber harvest and fire prescriptions were based on the underlying fire regime, as interpreted from tree ring records. Timber harvest frequency and rotation age (100 - 260 years) were based upon historical fire frequency, timber harvest intensity (15% - 50% overstory canopy retention) was based upon historical fire severity, and the spatial patterns of timber harvest were based upon the

spatial patterns of historical fires. Fire prescriptions are integrated with the timber harvest prescriptions.

Aquatic Conservation Strategy Objectives

An integrated, alternative strategy to achieve the aquatic ecosystem objectives in the Northwest Forest Plan (NFP) has been developed as part of the landscape management plan. This strategy consists of multiple components:

1. A less intense timber management regime patterned after historical fire regimes - this results in a significantly lower timber harvest frequency and intensity as compared to Matrix land management in the NFP.
2. A stream corridor reserve system applied to fish-bearing streams - this less extensive riparian reserve network (as compared to the NFP) allows for implementation of timber harvest at spatial scales and patterns more similar to historical fires.
3. A small-watershed reserve system consisting of 200-600 acre blocks distributed across the watershed - these reserves are intended to meet multiple objectives including maintenance of watershed processes and large-patch late-successional habitat.
4. Large wood, coarse sediment and water quality source area management - areas most likely to provide these materials to key stream reaches are mapped and specific prescriptive elements are provided to ensure continued delivery of these materials to streams.
5. Riparian and lower slope prescriptions - specific prescriptive elements are included to ensure retention of large trees and hardwoods in riparian and lower slope areas.
6. Road restoration strategy - all roads in the watershed have been evaluated for risks to aquatic ecosystems, and restoration priorities have been established and integrated with the overall landscape management plan.



LANDSCAPE PLAN

- Landscape Area 1
- Landscape Area 2
- Landscape Area 3
- Reserves



INTERIM PLAN

- Matrix (General Forest)
- Scenic
- Reserves

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7. Watershed restoration - a variety of other restoration activities are being implemented including addition of large wood to stream channels, encouraging growth of large conifers near streams, and removal of human-placed migration barriers.

Evaluation

A series of analyses has been conducted to evaluate the potential consequences of this landscape management plan. For comparison purposes, a second scenario, termed the "Interim Plan", was developed to represent how management activities would occur in the Blue River watershed if it were to be managed as the Northwest Forest Plan prescribes for lands outside of Adaptive Management Areas. This plan relies on Riparian Reserve and Matrix (general forest) allocations to achieve its goals. Future timber harvest patterns were scheduled and mapped 200 years into the future for both plans to facilitate these analyses.

Results show that the Landscape Plan will produce more late-successional habitat in a less fragmented landscape characterized by larger patches, more interior habitat, and less edge between old and young forests as compared to the Interim Plan. This is expected to more fully benefit species associated with late-successional habitat, such as the northern spotted owl and pileated woodpeckers. Other analyses have assessed the aquatic conservation strategy objectives in the Northwest Forest Plan and stream-breeding amphibians. Analyses are underway to evaluate lichen communities, future stand structures, and economics.

Monitoring and modeling assessments

A long-term, multi-scale monitoring and modeling plan is being implemented to evaluate the effectiveness of this landscape management plan. Some monitoring projects are continuing long-

term monitoring associated with the Andrews Experimental Forest, others have recently been initiated. The monitoring framework is organized along a hierarchy of spatial scales; projects are underway to evaluate the following components:

Watershed scale

- Landscape pattern
- Northern spotted owls
- Economics

Subwatershed scale

- Stand and landscape structure
- Stream discharge
- Social acceptability

Small-stream scale

- Stream-breeding amphibians
- Stream temperature
- Stream channel morphology and large wood

Site scale

- Erosion
- Forest regeneration
- Stand development
- Nonvascular plants

For more information

- Cissel, John H.; Swanson Frederick J.; Weisberg, Peter J. 1999. **Landscape management using historical fire regimes: Blue River, Oregon.** *Ecol. Applications*, 9(4): 1271-1231.
- **Web site:** <http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/>

