

Integrating Fire Management Into Land Management Planning for Westside Forests

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Fire management's integration into land management planning is critical to the successful management of nearly all wildland ecosystems, including westside forests, which lie west of the Cascade crest in Oregon and the northern coastal ranges in California. Restoration and maintenance of fire as an ecosystem process is critical to retention of biological diversity and ecosystem sustainability. Knowledge of the natural roles of fire across the landscape, the effects of wildfire and prescribed fire, and the levels of risk of large-scale, high-severity fire, as well as the effects of fire exclusion must be incorporated into all scales of land management planning and assessment. Fire management planning must become an element of land management planning, rather than remain separate from (and typically undertaken subsequent to) land management planning. All aspects of fire management—fire suppression, prescribed fire, fuels management, smoke management, fire planning, modeling, risk and hazard analysis, fire history and fire ecology—will need to be considered by interdisciplinary teams during land management planning.

Successes and Failures

Progress toward the integration of fire management into land management planning in westside forests of the Pacific Northwest has been slow, but ongoing over the past 20 years. Recent assessment and planning efforts, such as the hazard analysis done by Agee and Edmonds in the Draft Final Recovery Plan for the Northern Spotted Owl (1992), the Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management 1994), and the revised Federal guidebook on Ecosystem Analysis at the Watershed Scale (USDA Forest Service 1995) demonstrate some success and also some failures of the needed integration.

Efforts to integrate fire management into land management planning date back at least to the early 1970's, when the Fire in Multiple-Use Management Research, Development and Applications (RD&A) Program was initiated by the USDA Forest Service, Intermountain Research Station in Missoula, MT, to assist land managers. The message then was virtually the same as it is today—fire managers and land managers share three critical needs to support the attainment of land management objectives:

1. An understanding of the role of fire as an ecosystem process.
2. Integration of knowledge of fire's role with the management objectives of a specific land unit. Emphasis is on the

need to vary land management objectives based on fire's role and the need to vary fire management based on today's land management objectives.

3. Recognition of the difficulties in limiting damages from wildfire and, more specifically, the damage from suppression actions.

By the 1970's, land managers and government regulators had become concerned about the environmental impacts of a highly effective fire suppression policy and about the rapidly escalating cost of suppression. There was also a concern that managers were not listening to those with knowledge of the ecological role of fire and of its beneficial uses.

It may seem discouraging that we are attempting to resolve some of the same issues and problems 20 years later. In fact, the merits of using fire to maintain forest health in northern California and southern Oregon were heavily debated in the early 1900's (Pyne 1995).

The Federal Wildland Fire Management Policy and Program Review (USDI and USDA 1995) addresses the need to integrate fire into the planning process. It also mandates that the Federal agencies will develop and transmit a clearer message about the role of fire and the consequences of attempts to exclude it. Land management agencies may be required to compare risks and costs associated with attempted fire exclusion versus risks and costs of using fire and fuel management treatments in the context of meeting resource management objectives.

The essential question remains, "How do we integrate fire into land management planning?" A very good example of bringing the integration of fire into planning at a local level has been shown by recent progress in modeling fire regimes of western Oregon. Additional progress has been made at developing tools to model risk using stochastic simulation of fire events, and at communicating the expected results of fire management-related considerations using decision-tree analysis. Such analysis can indicate the probabilities of various outcomes given a series of decisions.

The Northwest Forest Plan is an example of a contradictory attempt to include fire in land management planning. While knowledge of fire's role was included in the scientific assessment from the beginning, fire management involvement was not originally considered necessary for the planning process. The Northwest Forest Plan consists of three completed sets of documents: (1) The Forest Ecosystem Management Assessment Team Report (FEMAT) (USDA Forest Service and USDI Bureau of Land Management 1993), (2) The Final Supplemental Environmental Impact Statement (FSEIS) (USDA Forest Service and USDI Bureau of Land Management 1994), and (3) The Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (published with a standards and guidelines document) (ROD) (USDA Forest Service and USDI Bureau of Land Management 1994).

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Some reviewers say that fire management is not integrated into the Northwest Forest Plan, while others state that the information on fire management is too integrated, and that it would be better to put all discussion and analysis of fire management into one section. Much fire-related information is located throughout the FSEIS nonetheless. Some of the particularly effective sections include:

- The description of the alternatives
- The ecosystem viability assessment
- The air quality analysis
- The fire management standards and guidelines
- The ecological principles for management of late-successional forests
- The Late-Successional Reserve standards and guidelines
- The northern Spotted Owl recovery plan standards and guidelines

Integration of information alone does not necessarily bring about better application. The actual implementation of the Northwest Forest Plan has been a greater barrier to the integration of fire management. "Watershed Analysis," now known as "Ecosystem Analysis at the Watershed Scale" has been focused on aquatic and hydrologic issues. Broad standards and guidelines (for example, for coarse woody debris retention) were defined only on an interim basis until they could be more locally defined in Planning Province Analyses or Watershed Analyses. On the other hand, results from Late-Successional Reserve Assessments have persuaded the Regional Ecosystems Office to grant certain area-specific exemptions to the Forest Plan standards and guidelines. This has enabled the implementation of a number of silviculture and fuels management projects. Similarly, Adaptive Management Area Plans have discovered and are supporting fire management needs that appear, at first, to be contrary to the goals of the Forest Plan.

Some procedures and tools recommended to help field units integrate fire into the Watershed Analysis planning process have been accepted by the Regional Ecosystem Office. For example, the Fire Disturbance & Risk Module can be summarized in the following steps:

1. Describe the natural fire regime. What is the role of fire (both historical and current)?
2. What are the vegetation conditions, including live and dead fuels, and the effects of fire exclusion?
3. What are the probabilities of fire occurrence, by size and intensity?
4. What are the likely consequences of these fire events?
5. What are the composite risks to the resources being managed?
6. What potential mitigation measures can decrease the risk (for example, fuels modification, or changes in fire suppression strategy or response)?
7. What are the biological (species and function) and landscape (ecosystem and process) needs for prescribed fire?
8. What are the consequences of continued fire exclusion or attempted fire exclusion (for example, deferred events)?

This basic framework for the module can be used in any scale of analysis and planning beyond Watershed Analysis. The Northwest Forest Plan was a large project done in a short period of time. Perhaps if it had been initiated after the final Federal Wildland Fire Management Policy and Program Review, it would have included much more emphasis on risk

reduction. Nonetheless, we must recognize that planning is a continual process. Broad-scale plans must be adapted to local needs by another tier of planning. In this "bottom up" approach, projects are planned from the local land management plans. Within this hierarchical model, all of these planning tiers can, and do, undergo revisions and amendments.

Conclusions

Fire as an ecological process is rarely a single, one-time event. Moreover, when fire is deliberately used as a tool in restoring maintaining ecosystems, fire is often applied repeatedly (and always with great care when applied after a prolonged exclusion). When fire is integrated into land management planning, it frequently requires a change in the thought processes of resource managers. This is also not a single event. Like fire's application as a tool, incorporating fire management into land management planning will also require great care and diligence. The integration process must be repeated with each assessment, with each plan, and with each project.

References

- Agee, J.K. 1993. *Fire Ecology of Pacific Northwest Forests*. Washington, D.C. and Covelo, CA: Island Press. 493 pp.
- Agee, J.K.; Edmonds, R.L. 1992. *Forest Protection Guidelines for the Northern Spotted Owl*. In: Final Draft Recovery Plan for the Northern Spotted Owl. Washington, D.C., U.S.D.I. Appendix E.
- Pyne, S. 1995. *World Fire*. Holt and Company, New York. 368 pp.
- Swanson, F.J.; Jones, J.A.; Wallin, D.O.; Cissell, J.H. 1993. *Natural Variability—Implications for Ecosystem Management*. In: Jensen, M.E.; Bourgeron, P.S., eds. *Eastside Forest Ecosystem Health Assessment—Volume II: Ecosystem Management: Principles and Applications*. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station.
- Tappeiner, J.; [and others]. 1992. *Managing Stands for Northern Spotted Owl Habitat*. In: Final Draft Recovery Plan for the Northern Spotted Owl. Washington, DC, USDI. Appendix K.
- Teensma, P.D.A. 1987. *Fire History and Fire Regimes of the Central Western Cascades of Oregon*. Eugene, Oregon: University of Oregon, Department of Geography. 188 pp. Ph.D. dissertation.
- USDA, Forest Service and USDI, Bureau of Land Management. 1993. *Forest Ecosystem Management: An Ecological Economic, and Social Assessment*. Report of the Forest Ecosystem Management Assessment Team [FEMAT].
- USDA, Forest Service and USDI, Bureau of Land Management. 1994. *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. [FSEIS]
- USDA, Forest Service and USDI, Bureau of Land Management. 1994. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (published with Standards and Guidance for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl)*. [Northwest Forest Plan].
- USDA Forest Service. 1995. *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis*. USDA Forest Service, Pacific Northwest Region, Regional Ecosystem Office, Portland, Oregon. Version 2.2, revised August, 1995.
- U.S. Department of Interior and U.S. Department of Agriculture. 1995. *Federal wildland fire management policy and program review*. Boise, ID. U.S. Department of Interior, Bureau of Land Management; final report. 45 p.
- Williams, G. 1994. *References of the American Indian Use of Fire in Ecosystems*. Draft manuscript. Portland, OR: USDA, Forest Service, Pacific Northwest Region. On file with: Interagency SEIS Team, P.O. Box 3623, Portland, Oregon 97208-3623.