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Peer reviewed

Review: *Fire Ecology of Pacific Northwest Forests.*

By James K. Agee

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Agee, James K. *Fire Ecology of Pacific Northwest Forests.* Washington, D.C.: Island Press, 1993. 490 pp. US \$50.00 cloth ISBN: 1-55963-229-1.

Fire has been a major component of the forests of much of North America, including the Pacific Northwest, over the millennia. Agee has produced a well-written, comprehensive account of the ecology and management of fire in the northwestern United States, which emphasizes its importance and inevitability. Although the fire regimes in Sitka spruce, hemlock and redwood forests are much longer than in the pine forests of the interior, fire still should be expected. Agee points out that disturbance is inevitable in these forests, and returns to this theme repeatedly. While we are now better able to predict fire behavior, the effects are less predictable.

This book requires knowledge of plant succession, which is aided by the glossary. Agee's definition of fire regimes using vegetative characteristics is used throughout the book. There is a good discussion of weather patterns and their influence on fire regimes and vegetation. Fire behavior models are described and an example of the use of these models is provided, although this is not a how-to-burn manual. The discussion of the history of fire management is primarily confined to Washington and Oregon. It is of interest that in recent times no use of prescribed fire has occurred in the Blue Mountains, but just across the border in Idaho, fire is commonly used in forestry. Agee concludes that fire use must be tailored to specific areas and for specific purposes, something those who plan for broad regions in the continent should take note of.

There is some use of jargon that the practitioner will be familiar with, i.e. the JABOWA disturbance model. The chapter on environmental effects includes a comprehensive discussion of soils, soil chemistry, and biological properties of soils, including the use of a soil nutrient thermometer, which helps visualize effects of different temperatures on soil nutrients. A section on the effects of fire on wildlife is disappointingly

short, since habitat changes relative to fire are a major reason for its use. However a section on spotted owl habitat and fire provides insight into short-term vs. long-term views of forests. Also reference to major reviews of fire effects on wildlife is provided.

Chapters on the ecology of fire in redwood, spruce, hemlock true fir, mixed conifer, pine, and hardwood forests in the northwest are comprehensive, illustrating the variable role fire plays in these forests. Effects of fire on air quality include means to reduce the polluting effects and types of effects. Effects of burning cultural resources include estimations of the temperature at which various artifacts may be destroyed.

While Agee emphasizes adaptive management which is process rather than goal-oriented, much of the last chapter deals with goals and policies, and is very thought provoking. He points out that use of the natural forest paradigm based on past characteristics is constraining and a less meaningful guide than a more definitive classification based on desirable ecosystem characteristics. National parks and wilderness areas are presumed to have policies emphasizing the natural role of ecological forces and minimization of artificial intervention, but Agee observes that we have witnessed a more conservative policy since the fires of 1988, which included the Yellowstone fires. A section on 'new forestry' emphasizes the need to adapt mimics of natural processes more effectively if we are to integrate ecology and timber production. The book concludes with a sobering discussion on global climatic change, which means increased fire frequencies as the climate warms.

Our forests and rangelands are not static entities that we can preserve without change, and perhaps the fire ecologists realize this more than anyone else. There is a real message in this book for thoughtful people to grasp as we seek to more effectively manage and understand our wildlands. This message runs counter to prevailing thought, and is disconcerting for some because it means that we must confront change, sometimes without knowledge of what the changes mean. The history of fire management of this region is an excellent lesson to learn from, and Agee leads the way in portraying these lessons for us.

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