DeMeo and Evers

FIRE ECOLOGY OF THE NORTHWEST FOREST PLAN AREA: IMPLICATIONS FOR SPECIES MANAGEMENT

Thomas E. DeMeo¹ and Louisa Evers²

Effects of fire on both human and forest communities has become a top environmental concern throughout the West. In this presentation we outline fire ecology of the Northwest Plan area, how it varies with ecosystems, and how it has been affected by recent fires. Finally, we discuss how fire can affect habitat of species intended for protection by the Plan, notably the northern spotted owl.

Fire regimes set the environmental frame for landscapes by defining the frequency, severity, and size of fires the environment can support. Potential vegetation is used to define regimes because it reflects the climate, geomorphology, and soils of the area. Where potential vegetation maps are available, fire regimes can be easily mapped.

Condition classes are the departures of these landscapes from the natural range of variation; i.e., how the mix of seral stages and fire frequency/severity compares with a landscape not influenced by modern agriculture, forestry, and development. Although such a landscape can be projected into the future, the natural range is often based on an historical time period. In the Pacific Northwest this time period is usually the 400 years prior to Euro-American settlement (1450-1850).

Mapping condition classes can be challenging, because information on the current mix of seral stages and current fire frequency/severity is needed, as well as some modeled estimate of the historical mix of these attributes. Standardized methodology for determining fire regime condition class (FRCC) has been developed in an interagency effort and is being implemented throughout the nation, including the Northwest. Landscapes in Condition Class 1 are functioning within the natural range of variation, those in Condition Class 2 are moderately departed, and those in Condition Class 3 are severely departed. Forests in areas that historically experienced frequent fires but have had fires suppressed in recent years, with resulting development of a dense understory, are often severely departed (Condition Class 3).

Within the Northwest Planning area, 4.5 million acres of older forest (late successional and old-growth forest) fall within fire regimes where fires are infrequent (every 200 years or longer), but tend to be large and stand-replacing in nature when they occur. Areas that historically burned frequently but with low severity comprise 1.8 million acres of older forest. A third, mixed severity group where fires typically burned every 35 to 200 years, with greatly varying patch sizes, comprises 2.2 million acres of older forest.

Most of the notable fires within the Plan area in recent years (such as the Biscuit and B&B fires) were within a mixed severity fire regime (Fire Regime III). Both the Biscuit and B&B fires are considered within the historical range for this fire regime.

Long return interval fire systems, such as those associated with western hemlock, have been little affected by fire in recent years. Fires in these types burned only minor amounts of older forests in these types in the years 1994 to 2002. In contrast, stand replacement fires removed 12 percent of older forests in the Oregon portion of the Klamath Province, and 4 percent of older forests in the California portion of this province. These areas primarily consist of low and mixed severity regimes.

Despite effects of large fires in recent years, acreage of older forest continues to accrue. Even within the Klamath province (affected by the 500,000 acre Biscuit fire), older forest showed a net increase in area of almost 10 percent during the last 10 years. This includes the losses generated by the fires. (Interestingly, the only province where older forest showed a net loss was the Olympic Peninsula, one of the more fire-infrequent provinces.)

In managing for the effects on late successional species, such as the northern spotted owl, differences in fire regime have profound implications. In wetter vegetation types where fires are likely to occur at long intervals of 200-300 years, a static system of late successional reserves may be appropriate. (Managers, however, should be aware of the small but real probability of a 300-year fire event affecting hundreds of thousands of acres.)
In fire regimes characterized by more frequent fires, managers should be aware that older forests may be much less stable and have a high probability of alteration by fire. Of the ecological provinces with more than half their area in Condition Class 3 (highly departed from the natural range of variation), all of them are in either the Klamath Province or the California Cascades. These forests are likely to experience fires generating the loss of older forest (as the fires of 2002 demonstrated).

Also note, however, that the species associated with these more frequently fire affected landscapes may be more adapted to them. In the Klamath Province in California, for example, owls appear to be more adapted to forest openings than in the moister vegetation types to the north. Because of in-growth, however, this may be less of a concern than on first consideration. Nevertheless, we should realize these landscapes comprise a frequently shifting mosaic and may be poorly suited for a static reserve system. Moving these landscapes closer to the natural range of variation may be a more useful goal.


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1 USDA Forest Service, Pacific Northwest Region- 333 SW First Avenue, Portland, OR
2 Bureau of Land Management/USDA Forest Service- 333 SW First Avenue, Portland, OR