FYI INFORMATION

A Research Summary From the Washington Forest Protection Association

Wildlife Face Challenges of Seeking New Habitat as Uncharacteristically Intense Fire Changes Structure of Washington's Forests

These three pictures were taken at the same site in a dry conifer forest setting. The first, in 1895, shows the forest in its natural state. In this type of ecosystem, frequent, low-intensity fires keep undergrowth to a minimum. The center picture, taken in 1980, shows the effect of 95 years of fire suppression—an overcrowded, unmanaged forest—which make it much more fire-prone. The final photo shows the aftermath of a catastrophic wildfire in 2001. (President's Healthy Forest Initiative 2002)

Wildfire has always played an important role in the Pacific Northwest, making the forests—and the wildlife that depend on them—dynamic to a degree not often appreciated by the general public. Forests go through constant cycles of growth, decay, and destruction through wind, fire, and disease, and the composition of the wildlife community on the landscape responds to the changing habitat.

Even before the arrival of Europeans to the area, fire created a mosaic of various stand ages and types. On the east side of the Cascades, low-severity fires burned quickly through the understory grasses and shrubs as often as every five years, keeping fuel loads to a minimum and leaving most mature trees unharmed. On the west side, the wet climate acted as a natural fire suppressant, and centuries often passed without fire. When fires occurred, however, large areas often burned completely, leaving open areas in which new forests developed. These were the two extremes, while between them intermediate fires occurred, their severity depending on the particular forest type and other factors.

In the last century, however, a policy of fire suppression has greatly changed the composition of Washington's forests—particularly in drier, east-side areas that historically had frequent, low-severity fire as a part of their natural cycle. Lack of fire has enabled far more trees to grow than in the past, creating a greatly increased fuel load. When a wildfire does develop in these overly-dense stands, its effects are now much different, mirroring the high-severity fires of the west side, which scientists often refer to as "catastrophic" or "stand-replacing" fires.

The Effects of Fire on Wildlife

James Rochelle, a wildlife biologist and consultant, recently reviewed the body of research that has been conducted throughout the Pacific Northwest in recent years on how wildlife are affected directly and indirectly by wildfire.

Direct mortality from fire for most of the more than 360 species of vertebrates in Northwest forests is relatively minor, he says. The magnitude and type of fire are obvious factors, but many species are mobile enough to move away from danger and seek new habitat, while others, such as ground-dwelling rodents that can retreat underground, are able to avoid the flames and heat. Some limited-mobility species that live above ground, however, can be affected, as well as animals trapped inside a fire perimeter. The seasonal timing of a fire can also disrupt animal reproduction, killing eggs or young of a number of different species of ground-dwelling birds or mammals, for example.

Fire Creates Both Winners and Losers Among Animal Species

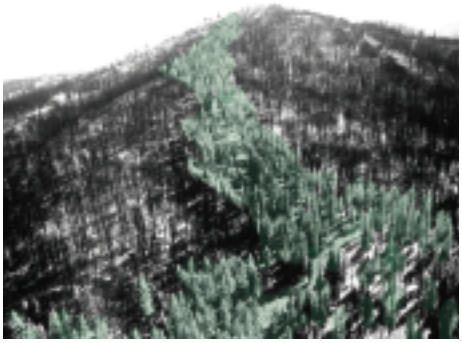
When a wildfire occurs—whether it is catastrophic or of lower severity—the structural characteristics of the forest change. It is this change, rather than direct mortality, that has a lasting effect

on wildlife. For example, when a high-severity fire burns an entire stand, that area becomes more open, allowing grasses and shrubs associated with disturbed areas to thrive. This structural change eliminates habitat for some species, while at the same time creating desirable habitat for others.

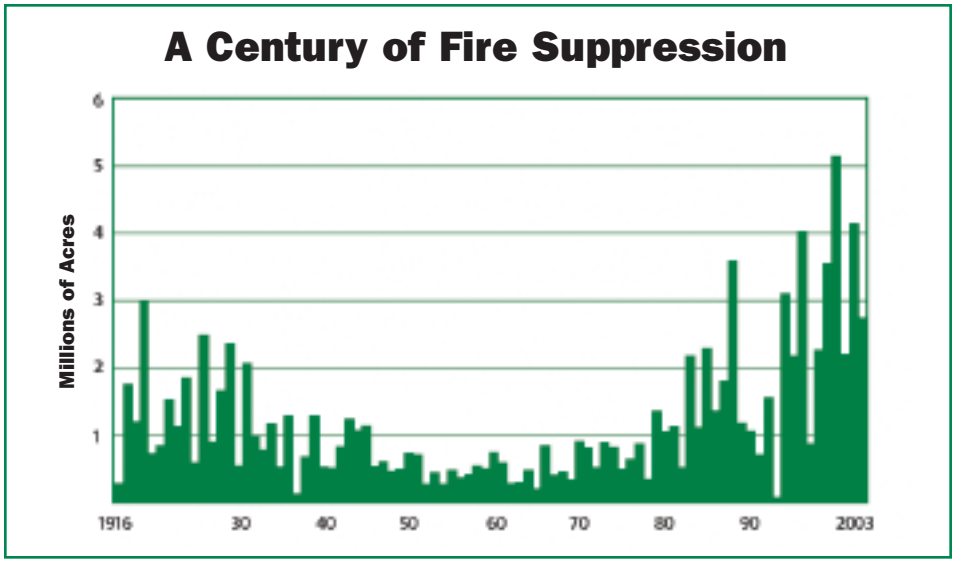
Eagles, owls, and other platform-nesting birds—as well as conifer seed-eating rodents—generally prefer more mature structure, so the loss of larger trees will negatively impact their preferred habitat. The open grass-forb habitat that the fire leaves behind creates a beneficial environment for other wildlife, including many ground-nesting species, grass-seed eaters, and grazing animals.

Research Points to Thinning and Prescribed Burns as Solutions

Fire suppression and past management practices have contributed to both overstocking and increased fuel loading, primarily in the state's middle-aged and more mature, late-successional forests. These conditions occur mostly on federally-owned land where little or no management is occurring, such as parks, wilderness, and areas set aside for endangered wildlife species habitat. "To date, management efforts to reduce risk from fire have not addressed the backlog of changes that have occurred in fuel loading and stand composition," said Rochelle. "The preponderance of evidence points to thinning and prescribed fire to reduce tree densities and fuel loading as the approaches with the greatest potential to maintain wildlife habitat in these areas while reducing the risk of catastrophic fire."



Thinning, which often occurs in managed forests, makes them more fire resistant. The photo above of the 1995 Tyee fire shows a strip of thinned forest (here color enhanced for clarity) where wildfire passed through without killing the trees. Surrounding the thinned fuelbreak, the forest was completely burned. (Photo: U.S.D.A. Forest Service)



This chart of the number of acres burned by wildfire in 11 western states, including Washington, since 1916 shows the result of nearly a century of fire suppression. The lower areas of burned forestland beginning in the 1930s are the result of improved firefighting techniques, but as forestland became more dense and overstocked as a result of suppression in the last few decades, fires have become more intense and devastating. Fire ecologists have called for thinning and controlled burning to help reduce understory vegetation and return forestland to its historic condition of more frequent but less intense fire. (National Interagency Fire Center)

Weighing Benefits and Risk

The question comes down to a simple one for forest managers in these reserves: Is the short-term disturbance associated with thinning or prescribed burning worth the long-term benefit in avoiding the complete loss of that habitat to fire? The answer is an unequivocal "yes," according to Rochelle. "The temptation is to just let nature take its course in these areas, but a policy of inaction is actually an action in itself because of our past fire suppression policies. These forests are no longer able to withstand fire on their own, and the only way to bring them back to their historical fire regime is through reducing stand densities."

John Marzluff, a researcher at the University of Washington, voiced the same opinion. "Determining how to reduce fuel loads and barred owls in landscapes used by spotted owls may be essential to their future survival in Washington," said Marzluff in a recent paper reviewing the owls' status in the state. "Comparing such reductions on timberlands to similar reductions in reserved lands could provide the knowledge needed to conserve spotted owls in Washington and possibly across its range."

Rochelle points out that recent studies have given us a much better understanding of what types of thinning could most benefit wildlife habitat, and that the Northern spotted owl in particular seems to be unaffected by minor harvest activity in its nesting territory. He believes that an adaptive management approach to fuel reduction treatments is called for, constantly evaluating their effects on wildlife species and adjusting as needed.

The problem that concerns forest managers and wildlife biologists today is that when catastrophic fire occurs in these drier, overstocked pine and mixed conifer forests that historically had only small, low-severity fires, soils and other biological characteristics may be damaged to an unprecedented extent and may prevent or substantially delay the natural recovery of forestland. Managers are faced with a course of action in reducing stand densities that may create short-term risks in order to achieve long-term benefit for the forest and the wildlife that utilize it.

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