Forests, Forest Management, Climate Change, Fire, and Wildlife

by Jonathan Haufler

As I write this article, smoke still hangs in our Valley, and scorched trees less than a quarter mile away remind me of the recent proximity of the Jocko Lakes Fire that threatened our community. When this fire came to life a month ago and roared toward town, fire specialists say its extreme behavior exceeded existing fire models. The community survived, with loss of only one house, thanks to some valiant fire-fighting efforts, defensive fuel thinning that had been done by homeowners, and a couple of timely breaks in the weather. It could have been much worse, and future fires may be worse with the predicted effects of climate change that may make summers like this past one the norm rather than the exception.

Already the discussions are starting. Who was responsible for the Jocko Lakes fire, and what can we do? While a record hot and dry summer is clearly the primary cause, some have been pointing fingers and making statements such as intensive forestry operations caused the rapid spread of the fire while others are saying a lack of forest management was responsible for the intensity of the burn.

Many people are looking for the silver bullet to solve the problem- the one simple answer to these concerns. I've heard various opinions expressed about what needs to be done. However, from my perspective as an ecosystem ecologist, the answer will not be a one-size-fits all solution, but a number of solutions, tailored to meet specific locations and objectives.

The Seeley Lake Fuel Mitigation Task Force has been promoting development of defensive space around homes, an effective means of protecting homes from wildfire. Where homes exist, this is a good plan. But should all forests be thinned?

Fuel thinning of many of our lower elevation forests can address forest health, wildlife habitat, and fuel reduction objectives, all at the same time. Historically, ponderosa pine and dry Douglas fir forests were adapted to the occurrence of frequent fires, and were kept in an open condition by these burns. Management in these forests that leaves an array of tree sizes in open stands provides thinned fuels that reduce wildfire risks, reduces moisture competition of the trees, and provides wildlife habitat for most wildlife dependent on lower elevation forest types.

One strategy for wildlife habitat management is to provide forest conditions in similar compositions and patterns as occurred in an area historically, based on the premise that these conditions were what supported the diversity of species in an area. By managing stands to represent historical conditions we can enhance conditions for native wildlife. In lower elevation forests, wildlife habitat can be enhanced while also providing for fuel reduction, forest health, and other objectives. However, this compatibility of objectives does not occur in mid and high elevation forests, where the situation gets more complex.

Historically, high elevation forests only rarely reached dry enough conditions to carry major fires. Snow pack melt was late enough in the summer, and summer moisture frequent enough to keep these forests from burning except for the rare year. High fuel loads would build, and in the rare dry years, intense burns could occur. Resulting stands were often young, dense, regenerating forests in varying sized patches. In mid-elevation forests, characterized by moist stands of Douglas fir, western larch, lodgepole pine, and subalpine fir, historical fires were variable in intensity, burning as cooler understory burns in areas intermixed with lower elevation dryer forests, and burning as patchy crown fires in areas with more consistent moister forest types. Western larch was favored by such variable fire patterns, being

fairly resistant to being killed by fire, and able to dominate following fire on many sites. Where crown fires occurred, lodgepole pine would typically regenerate, often in very dense thickets. In sites more protected from frequent burns, Douglas fir or subalpine fir would typically dominate the stand, and could be dense and structurally diverse.

In the mid-elevation and higher elevation forests, climate change is altering fire regimes. Snow pack melt is occurring earlier, drying out these forests earlier in the summer, and making them more susceptible to fires. The reduced moisture available to trees due to hotter and dryer summers puts additional stress on these trees. This, coupled with the age of many of our existing lodgepole pine makes them more vulnerable to beetle kill and other mortality factors. When these trees die, they become more flammable, increasing the intensity of fires that might occur.

Unlike many other areas of western Montana, the Clearwater Valley has relatively small amounts of low elevation, dryer forest types, and larger amounts of the mid and high elevation forest types. Thinning of mid-elevation and high elevation forests can reduce their flammability, and provide defensive areas for fire protection. However, it also produces conditions that are usually atypical than those that occurred historically and that supported the diversity of wildlife that were adapted to the historical stand compositions and structures. While certainly some wildlife will use thinned stands and even benefit from these changes, many mid and high elevation species including species of concern such as Canada lynx will be negatively impacted by thinning.

So how do these factors link back to the forest management questions? Forest thinning in low elevation forest can contribute to multiple objectives, restoring historical forest conditions, reducing fire risk, maintaining forest health, and creating wildlife habitat. The same management, applied to mid-and high-elevation forests, while reducing fire risks, often produces conditions unlike those that occurred historically, and reduces the value of these forests for many wildlife species.

Intensive forest practices can produce young stands of dense trees which in some ways may resemble the early age classes produced by historical crown fires, providing habitat for some wildlife species. Leaving forest stands unmanaged will allow for dense, structurally diverse conditions that occurred on various sites historically, and that support habitat for wildlife species associated with mature, dense forests. Both of these types of stands may burn with considerable speed or intensity, but are important to have in our Valley. Climate change is increasing the risks of wildfire to our Valley, and increases the challenges of providing for diverse forest conditions while keeping people and their property safe.

To me, one recommendation is clear. The more we can concentrate our development of homes into identified areas, often termed the wildland urban interface, the more we can reduce potential conflicts over multiple objectives and risks. In these areas, fuel thinning can be conducted to protect human life and property, while maintaining forests further away for production of forest products, recreational opportunities, and wildlife habitat values. The importance of this is being increasingly recognized, as it makes sense economically, ecologically, and for human safety. What types of forest management are appropriate outside of the wildland urban interface is more complicated. Multiple objectives across the various ownerships need to be considered and incorporated into forest management plans. There is no silver bullet for simple solutions in these areas.

The Clearwater Resource Council will be exploring various topics related to fire and forest management at its meetings this fall. Look for notices and come join the discussions.

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