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Eye on the Environment

Adapting Our Forests For Fire Resiliency

by ANNE DAHL, Swan Ecosystem Center

What are the three most important points to consider when reducing fire risk in your forest—beyond the immediate area surrounding your house and outbuildings?

“Take care of the soil,” is Roger Marshall’s first response. Roger is one of Swan Ecosystem Center’s (SEC) two land and forest stewards. He is a retired Plum Creek Timber Company forester, now working under contract with SEC to help Swan Valley landowners develop stewardship and restoration plans.

Plenty of information is available on how to make home sites safer and more defensible in the event of wildfire. Two organizations with Web sites come to mind: Fire Safe Montana at FireSafeMt.org and Firewise at Firewise.org.

Yet, when it comes to reducing fire risk deeper into the forest, fuels reduction can be more complicated. If you want to make your forest more fire safe—and also protect habitat for a diversity of wild plants and animals, reduce the spread of noxious weeds, and grow the trees most likely to thrive in specific micro-habitats, there is much to consider.

In 2009, SEC was awarded an American Recovery and Reinvestment Act “stimulus” grant to provide landowner assistance and

stimulate jobs. Since then about 70 landowners have been involved in the program and nearly every Swan Valley contractor has been employed to reduce fire risk near homes, while also protecting or enhancing forest integrity. This has spawned a lot of forest stewardship and restoration planning.

“Soils are the foundation of a healthy forest,” Roger said. As you move further away from your structures, it is okay to leave more woody debris on the forest floor to replenish soil nutrients.

Soil can be protected by chipping and scattering woody debris on site, or by machine “trampling” the slash to reduce flame heights and speed the decomposition of fine woody material.

Roger recommends limiting soil impacts by logging in winter on snow and frozen ground, or in summer after the soil is dry. When skidding, create multiple smaller log decks and several small “jack pot” piles for burning as you work through the forest, and limit excessive travel by heavy equipment that compacts soil and leaves large patches of exposed ground vulnerable to weeds and erosion.

Mike Palladini is also a Swan Ecosystem Center land and forest steward. His first recommendation is: “Take the forest site and ecological setting into account.” Mike’s background is in wildlife biology.

“Excessive amounts of fine woody debris can increase the risk of a fire igniting and spreading through the understory, while high densities of small and young trees can carry an understory fire into the canopy,” Mike said. “In a dry ponderosa pine stand, thinning the understory and treating ground fuels can be a straight-

forward and ecologically beneficial solution. Open stand conditions and relatively small quantities of woody debris are conducive to ponderosa pine regeneration and survival. But on wetter sites, particularly on the west side of the Swan Valley, stands naturally have higher tree densities and larger amounts of downed woody material." Fires here naturally burn less frequently and with higher intensity.

The trees that have adapted to the west side of the valley, and to shady pockets on the east side, are the species most likely to be consumed in a wildfire. It gets complicated when you want to promote the trees designed by Nature to thrive in cool wet areas, while also reducing fire risk.

This is when it makes sense to give more thought to your site, relative to prevailing winds and natural fire breaks like streams and wetlands. You might be willing to accept more risk in places where fuel breaks will slow a fire, but take less risk if there is a continuous forest canopy up wind.

If maintaining wildlife habitat for a diversity of species is a goal, you'll want a variety of trees, shrubs and smaller plants in your forest. You may be able to create a mosaic of small clearings intermixed with open and dense stands of varying sizes and shapes, giving careful thought to the lay of the land and the species' preferences for micro-habitats. Well-spaced openings can slow a fire and prevent the loss of an entire forest. And a mosaic allows you to select the best sites for the optimum growth of individual species.

In the Swan Valley, most of the land is shaped by small ridges and valleys that face in various compass directions. A typical 20-acre parcel may have several micro-habitats: damp sites

favoring shade-lovers like grand fir and spruce; cooler, drier sites more suitable for lodgepole, larch and Douglas-fir; and warm dry sites where ponderosa might thrive.

With careful planning and some knowledge of the growth requirements of trees and understory species, a stewardship plan can address fire safety, forest resiliency, and habitat for a diversity of wild plants and animals.

To benefit wildlife, maintaining connectivity with narrow patches of dense cover away from houses and outbuildings can enable bears, lions, and wolves to move across your property without entering your yard. Dense patches of forest are warmer in winter and cooler in summer, providing "thermal" cover for deer, elk and moose. Connected strips of cover can be separated by open patches to interrupt a canopy fire.

A third point to consider has to do with safety and each individual's tolerance for risk, related to loss of timber and forest resources. *Human safety should never be in question.* Access for firefighting equipment and escape routes should be designed into any forest stewardship plan. Water sources should be mapped and equipment should be available for their use.

People have different value systems when it comes to wildfire. Rod Ash, Swan Ecosystem Center's founding chairman, and his wife June took steps to make their forest more fire-resilient. Rod often said he would rather lose his house than his forest. His sentiment is not uncommon in the Swan Valley.

Accepting risk in a fire-adapted landscape is a necessary part of forest living. How we manage our forests can depend on our individual

tolerance for change. Disturbance is a normal condition of a natural forest.

This summer will be the centennial of the 1910 fires that created massive disruption in the region and started many of the forests now dying from tree insects and disease. In the Swan Valley, 1919 was a year for big fires that created thousands of acres of new lodgepole and larch stands. As Nature persists, those stands will burn again and return nutrients to the soil for new life.

On larger properties it may be possible to welcome fire's return—if steps have been taken to limit fire's intensity. Using forest stewardship and restoration principles is the first step toward managing change.