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Eye on the Environment

## **Whitebark Pine: Burns, Birds and Bears**

By Zach Wallace, Northwest Connections

Sitting in my car at the highway turnout opposite Barber Creek, I watched the glowing embers of fire strung out across the Swan front. The small blazes flickered and glowed like candles along the ridgeline. Every few minutes a whole tree would torch out in a crown of flame, then slowly fade back into the darkness.

The cool, wet spring and lack of electrical storms this summer have made for a mild fire season. The familiar sound of choppers and the smell of smoke have mostly been absent from the valley this year.

The helicopter that I watched flying along the ridgeline earlier that day wasn't dropping water or retardant, it was dropping fire. This particular fire had been planned for over three years - carefully mapped as a series of polygons running from the ridgeline down the Buck, Barber and Holland Creek drainages.

Ideal weather windows on September 16 and October 2, allowed Flathead National Forest Assistant Fire Officer John Ingebretson to go ahead and light what is called a "prescribed ecological burn."

Some may ask the question, "Why spend time and money burning ridgelines in the high country when there is plenty of need for fuels reduction in the wildland-urban interface of the valley bottom?"

It is a fair question, and one that I believe sheds light on the important interconnections between the valley and the high country. We all value the spectacular scenery and recreational opportunities offered by the ranges that cradle this valley. But, this

prescribed burn made me think about the less obvious ecological connections between the mountains and the valley – namely the link between the decline of whitebark pine trees in the high country and the increasing number of grizzly bears that we are seeing in the valley bottom.



Understanding how the decline of a high country pine tree could lead to more bears getting into our garbage requires some knowledge of the unique qualities of the whitebark pine.

Whitebark pine is a five-needled pine tree found in the high elevation forests of the Swans and Missions. In the high basins, whitebarks grow as tall trees with gracefully spreading crowns. In the harsh conditions of rocky ridges and exposed slopes, whitebarks resemble gnarled, stunted bonsai trees.

For the last several decades, whitebark pine has been in serious decline throughout its range. Whitebark pine trees in this area have been hit especially hard. The trees are suffering the combined effects of an alien fungus, bark beetles and fire suppression, not to mention the negative effects of climate change.

The fungus, white pine blister rust, weakens the trees, making them more susceptible to bark beetles. Fire suppression eliminates the bare, burned soil that whitebarks need to reestablish themselves. Without fire to clear the ground, whitebarks are shaded out and eventually replaced by fir and spruce.

The most remarkable feature of whitebark pines – a feature that is not found in the spruces or firs that grow up to replace them -

is their giant, fat and protein rich seed. Whitebark pine seeds are the size of the pine nuts you buy at the grocery store, and are an important, high-calorie, concentrated food source for bears.

Red squirrels collect whitebark cones by the hundreds in store piles called middens. In the fall, Bears raid squirrel middens to put on fat before they den-up for the winter. In the spring, when Bears emerge hungry from their dens, they dig deep into the snow pack to reach the stored cones.

Studies in Yellowstone have shown that the decline of whitebark pine in the high country pushes grizzlies into valley bottoms in search of food at these critical times of year. A similar effect may be occurring in the Swan.

We all know that more bears in the valley bottom leads to more conflict with humans. Conflict with humans leads to greater mortality for bears, like the young grizzly killed on highway 83 last month.

The Clark's Nutcracker is another high country visitor that we may see more of in the valley as a result of whitebark pine decline. Nutcrackers are noisy, grey birds, about the size of a jay, with a striking black and white pattern in their tail feathers. Nutcrackers share a very special relationship with the whitebark pine.

Like bears, nutcrackers harvest the rich seeds of whitebark pines each fall. While bears store the bounty of their harvest in a thick layer of body fat, nutcrackers store the seeds by burying them. They cache the seeds that they collect in the soil of open slopes – most often in sites cleared by fire.

Their amazing spatial memory allows Nutcrackers to hide, and then relocate, thousands of individual seed caches each year. Even with their incredible memory, Nutcrackers fail to recover some of the pine nuts that they bury. These seeds are left in the soil to grow into the next generation of whitebark pines. In fact, this is the *only* means by which whitebark pines spread their seed.

Without the bare ground left by fire, nutcrackers have nowhere to plant seeds, less whitebark pines grow and our birds and bears lose an important food source. Likewise, as blister rust and beetle-killed trees produce less and less seed each year, nutcrackers and bears

are searching elsewhere for food. In the years to come, more nutcrackers may be visiting the valley bottom in search of the next largest seed, that of the Ponderosa pine.

The decline of the whitebark pine is an example of the connection between the valley bottom and the high country. The way we manage land in the valley has rippling effects across the landscape. These ripples can reach all the way up to the high country and come cascading back down into the valley in unexpected ways – like hungry grizzly bears.

The web of relationships between whitebark pines, grizzlies, Clark's nutcrackers, blister rust fungus, bark beetles and fire makes for a complex problem to solve. It also makes for many avenues into the problem, each of which is a piece of the solution.

While scientists work to breed blister rust-resistant whitebark pines, we can address the bear encounter piece of the problem by incorporating bear aware practices into our lifestyles and the fire-suppression piece of the problem with ecological burning.

For more information about whitebark pine communities, visit the website of the Whitebark Pine Ecosystem Foundation at <http://www.whitebarkfound.org/>. For more information about bears in the valley, contact the Swan Ecosystems Center at 406-754-3137. You can also learn more about Clark's Nutcrackers, and help monitor changing bird populations in the valley, by participating in monthly bird counts hosted by the Grounded Eagle Foundation, at 406-754-2880.