

Save The Pines

(Walking on Earth column published in Tucson Green Times/The New Southwest, January 2011)

By Melanie Lenart

Inhaling the scent of pine resin, walking on a cushion of needles, feeling the corky bark of a Ponderosa tree – all good reasons locals alluded to a sanctuary when naming the Mount Lemmon town Summerhaven.

Yet forest havens throughout the Southwest could dwindle if we just sit by as temperatures rise and the winter snow that sustains them melts earlier in the season. A layer of snow acts like moisture in the bank. The closer to the growing season that it releases its cache of stored water, the more interest on the part of plants.

That's partly why, in much of the Southwest, snow often marks the spots where forests can thrive. As higher temperatures melt snow cover earlier in the year, though, wildfires could turn many southwestern forests into ashes on the winds of climate change.

The end result can look all too much like the wildfire that scorched Summerhaven in 2003, leaving char-broiled pines in its wake. Since then, residents have replaced many of the quaint but burned-down buildings with blocky two-story structures. But it will take decades before pine seedlings grow big enough to hide the views of blackened trees.

It's difficult to say just how much warming the Southwest's mountainside pines could take before they shrink uphill with the snow that sustains them. Several factors are at play, and some of them lend clues about how we can help.

Southwestern forests respond not only to temperature and occasional snow, but also to rains throughout the year. All of these factors relate in part to heat-trapping greenhouse gases. The more we release, the more problems we invite. So reducing our emissions could help here.

On a positive note, the greenhouse gas most to blame for the ongoing rising temperatures – carbon dioxide – provides a buffer on the temperature climb. Trees use carbon dioxide to make carbon-based wood and leaves, so more carbon dioxide in the air helps them deal with rising temperatures. Because plants lose water to evaporation from the same place they collect carbon dioxide, higher levels of carbon dioxide can allow them to hold their water more effectively.

Still, the extreme drought years bridging 2002 and 2003 showed that pine forests suffer in unusually dry heat, even when bathed in the extra carbon dioxide of modern air. During those years, bark beetles ravaged drought-stressed trees throughout the

Southwest while wildfires blasted not only Summerhaven but also nearly half a million acres of mostly forest in Arizona's White Mountains.

Is there anything we can do about that?

As a matter of fact, there is. If we clear out some of the smaller trees that are carrying flames into the crowns of majestic old-growth pines, we'd leave our pine forests with a fighting chance for dealing with unusually high temperatures and the drought that will inevitably return in some years.

Research on several fronts has shown that flames generally dropped to the ground when they reached stands where earlier burns – or people – had thinned out the smaller trees crowding the forest. To help protect remaining White Mountain forests from another big fire, government agencies and environmental groups ranging from The Nature Conservancy to the Center for Biological Diversity have promoted local efforts to thin out many trees smaller than 16 inches in diameter.

Now the main barrier is funding. Because small trees are less profitable to mill, the government actually has to pay people to thin them out.

It's a worthwhile investment in our future forests. Mountains provide the main replenishing of groundwater aquifers, and mountain forests help keep the water clean. Even snow will often persist longer in the shade of trees. Wildlife depends on these islands of forests in the desert. As for people, anyone who lives in a desert city like Tucson will agree that we need these local sanctuaries.

Some days, the scent of fresh pine needles almost acts like a smelling salt – a few good whiffs, and it's possible to head back down to the sixth month of summer heat. That's one more good reason to do what we can to safeguard these sanctuaries as we face hotter days and decades ahead.

Author: Melanie Lenart is an environmental scientist and writer, and the author of Life in the Hothouse: How a Living Planet Survives Climate Change.