Applegate Wildfires - Past, Present, and Future

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Residents of the Applegate Valley understand that wildfire risk in the region has been increasing over recent years. Of course, we are not alone. Before looking at trends, it's worth reflecting for a moment on the unusual climate the Applegate Valley shares with western states. Our Mediterranean winter wet / summer dry climate occurs in 5 other locations across the planet (Western S. Africa, SW and SE Australia, Western S. America, and the Mediterranean, duh!). One outcome of this climate is that summers are hot and dry, and regions are susceptible to drought. The result is annually dry soils and vegetation and a proclivity for fires, once initiated, to burn large areas. The consequence is vegetation systems that are fire prone, fire adapted, generally fire tolerant, and fire dependent.

A look at the trends reported for lands under fire management by the Oregon Department of Forestry offers some valuable insights (Figure 1).

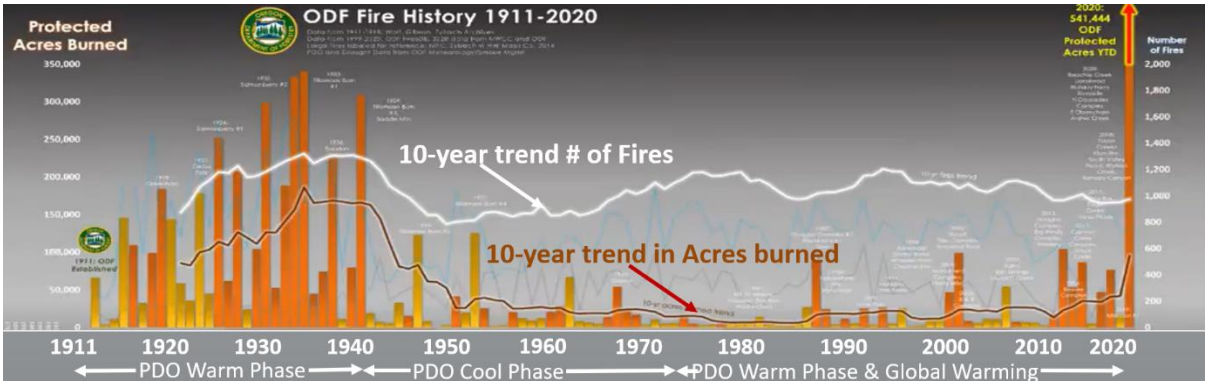

Figure 1. Trend in wildfire frequency and area burned in lands managed by the Oregon Department of Forestry. PDO = Pacific Decadal Oscillation. Image modified from: https://digital.osl.state.or.us/islandora/object/osl%3A957101/datastream/OBJ/view

The first and most obvious impression is that 2020 was clearly 'off the chart.' However, if we look back over time, we find some interesting trends. While we tend to think of the last few decades as representing an atypical acceleration in fire risk, a view through the last century reveals a different story. Indeed, two variables exhibit patterns that might surprise us: the first is that the area burned a century ago was actually greater than the current frightening pattern (2020 excepted); meanwhile, the number of fire initiations, though variable, has not exhibited much, if any, change.

The pattern depicted leads us to ask the critical and reasonable question: "Why?" There are potentially two explanations – and it may well be a combination:

1) Looking at the conditions imposed on the region by the regional climate pattern known as the Pacific Decadal Oscillation, we find that the beginning of the last century the region experienced a warm and dry phase in which conditions were perfect for fires, once initiated, to spread. From the 1940s to 1970s, the PDO reversed, and we experienced a cool moist phase that would have depressed fire activity. After that, the warm dry phase returned again drying soils and vegetation and encouraging initiated fires to spread. More recently, global warming and its climate change consequences have reduced snowfall and caused even greater drying in our already summer dry Mediterranean climate.
2) During the early 1900s, fire suppression was imposed to protect timber production from the fire hazard. This was enhanced in the 1940s when the Smokey Bear campaign was developed to increase the effectiveness of fire suppression. As a result, relatively open dry forests experienced invasion of fire intolerant species that increased the density of understory and sub-canopy vegetation. Again, and still, global warming and its climate change consequences have reduced snowfall and caused even greater drying. The result is that fires encounter a much greater density of fuel and can spread more widely across the landscape.

The degree to which each of these processes comprises the dominant factor is the subject of some disagreement among forest watchers, but there is general agreement that the climate change resulting from global warming is trumping other factors as a driving force.

The problem we face is that because of the Mediterranean climate in which our forests developed, continued global warming will increase wildfire risk. The messages for Applegate Valley residents are two-fold (1) mitigate the problem by doing whatever we can to reverse the global warming trend, and (2) adapt or prepare ourselves for an inevitable future wildfire scenario. Even if we reverse the climate crisis, the Mediterranean climate will continue. Thus, wildfires will always be in our future; we need to learn to manage them and live with them.