Sequoia sempervirens

Perhaps the Eighth Natural Wonder of the World...

Disease and Fires and Drought Oh My!!!

One very important adaptation for the coast redwood is its thick bark with deep grooves running vertically along the tree. It is this bark that gives the redwoods their fire-resistant characteristic. Older trees are able to survive fires because their bark is so thick and acts as a fireproof shell. On the other hand, young redwoods, especially less than 20 years old, burn easily because their bark is too thin to provide this protective covering. The tannin present in the coast redwood bark also helps protect the tree from coastal fires. In addition, this quality gives them their ability to withstand disease, fungi, and insect attacks. Thus, besides a few seedling diseases, there are no known killing diseases that affect the trees significantly, nor are they damaged severely by any insects so far. Most trees are affected by these factors and end up being killed before they live more than a few centuries.

Another characteristic that further reduces the trees' vulnerability to fire is the redwoods' high water content. One positive aspect of fire is that it decreases the number of competing trees such as Douglas firs. Also, fires recycle nutrients to the soil and vegetation near the ground. Though redwoods have many adaptations that lead to less fire susceptibility, fire still remains the primary damaging cause in both young-growth and old-growth stands. However, even though portions of young stands that are above ground can be killed by a single ground fire, the stands are able to sprout again and reoccupy the area. In addition, despite the fact that redwoods have a high water content, drought still affects them more than most other cone-bearing trees. Redwoods are rarely found facing the shoreline due to the strong winds. These winds cause the trees to dry

out easily and die from the high amount of salt coming from the ocean water.

Roots are another important adaptation in the coast redwoods. Shown in the picture above is the root system of a fallen coast redwood. Although they have no taproot, they do contain lateral roots that are very large. These roots can penetrate only 10-13 feet deep into the ground but have a very wide range (60-80 feet) that can intertwine with other trees and can also endure being covered with multiple layers of soil after they're mature. Most trees are likely to smother under this circumstance, but redwoods have adapted to the added silt from frequent flooding (demonstrated by the two pictures below). The redwoods' roots are also what help the trees stand strong during harsh winds. Small redwoods stand up to wind better than most other kinds of trees and large redwoods stand firm under most windy conditions as well. Some studies indicate that the combination of wet soil and strong winds is what causes the most destructive windfall damage. As a result, windfall is caused by only a few of the many storms in the winter months. In one study, it was found that uprooting accounted for 80 percent of the redwood windfall. Redwoods act in response to harsher wind conditions at treetop levels by producing pale green, awl-shaped needles toward the top of the tree. Closer to the ground are more lush, dark green needles. Besides wind from winter storms and drought, another natural cause of harm to the coast redwoods is lightening.

Enough on Adaptations? Continue to Nutrition.

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