

How the Wildlands are Recovering One Year after the Glass Fire

Steve Pride, October 21, 2021

The Glass Fire started in the Napa Valley early in the morning of Sunday September 27, 2020 and burned for three weeks both north and south of the valley destroying 1600 residential and commercial buildings and burning more than 67,000 acres. As we watched the progress of the fire that Sunday, everybody thought the fire would stay on the north side of the valley-floor vineyards but in the evening, at the narrowest “hourglass” portion of the valley, embers ignited the Mayacamas hillside forests on the south side of the valley. The fire worked its way up to Pride Mountain Vineyards through Bothe State Park that night and ran into our vineyards at 7:30 AM of Monday September 28. Figure 1 shows the outline of the fire 8 days after it began in red, as well as other recent fires in green. Because vineyards provide a nearly perfect fire

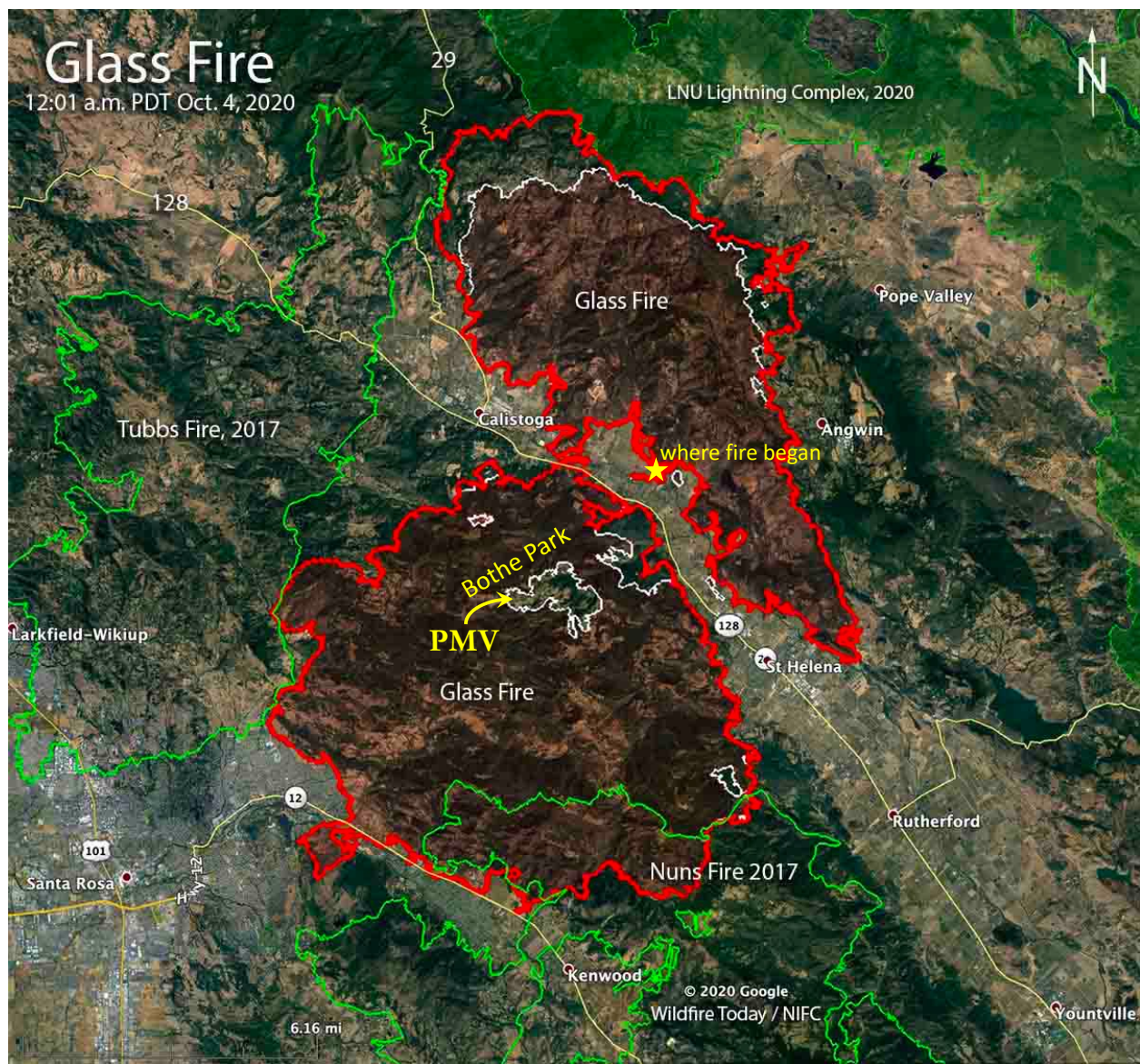


Figure 1: The outline in red of the Glass fire after 8 days, though it burned for 3 weeks.

break, our vineyards and those of our various Spring Mountain neighbors to the east of us created a 500+ acre white-outlined area seen in Figure 1 that, for the most part, did not entirely burn. Everybody in that white-outlined area had fire burn right up to their vineyards and then it was some combination of luck (mainly), the presence of firefighters and pre-fire mitigation efforts that determined whether buildings were burned. We were one of the lucky properties that did not have any of our buildings burn. Roughly 60% of our fruit had been harvested by September 27, 2020 but the 40% (all red grapes) that was hanging did suffer smoke damage and is not being used in our various 2020 reds. So our damage from the fire was substantial, including the loss of 80 acres of our forests, even without the loss of buildings.

The focus of this report is on how our surrounding wild lands are recovering a year after the fires were declared completely extinguished on October 20, 2020. Our 235 acre property with 85 acres in vines is bordered to the north by Bothe State Park. A couple months prior to the fire, I happened to take a couple photos from our vineyards looking out toward Bothe Park as shown in Figure 2. Prior to the fire, the park was dominated by stands of Douglas fir but also



Figure 2: Two photos taken a couple months prior to the Glass Fire. The upper photo is looking north and the lower is looking more to the west. Although Doug fir has been dying in recent years due to drought stress and an associated bark beetle, the vast majority of trees in the park were healthy and thriving prior to the fire.

supported a wide range of forest and chaparral species. You could not walk into Bothe Park from our property due to the impenetrable brush and poison oak. But all that understory was

burned away in the hot Glass Fire and one of the upsides of the fire is that over the past year we can now walk easily through the park right from our property.



In particular, once the brush and scrub was gone, I was delighted to discover an old trail that runs along the Napa-Sonoma County Line, which is the ridge-line crest of the Mayacamas Mountains. This trail starts at our property on the south and traverses Bothe State Park to Diamond Mountain on the north. There is a stake on this trail, shown to the left, denoting the Napa-Sonoma county line. A photo taken a year after the Glass Fire from the top of Diamond Mountain looking south to our property is shown in Figure 3. Compared to all the other trees and brush species that have the ability to push new growth and recover after fire, Doug fir do not have this ability. They drop their pine cones which may or may not make seedlings, though none so far, but the Doug-fir trees themselves are killed by fire. When our deer fence



Figure 3: A photo taken October 19, 2021 standing at the top of Diamond Mountain looking south to some of our vineyards and winery buildings on the other side of Bothe State Park. The fire revealed an old trail that had been completely covered in brush that runs along the Napa-Sonoma county line as shown in red. The forest in the park entirely burned and the dominant Doug firs will not be returning. Even the Doug fir with some green in the right foreground had its trunk burn and is in the process of dying. This photo makes it clear how lucky we were that our many buildings on the property did not burn. Vineyards make wonderful fire breaks. The inset with the stake is an old marker placed right on the Napa-Sonoma County Line.

bordering the park burned and was down for two months, our vineyard property including four ponds provided a verdant oasis for the wildlife escaping the park including predators like mountain lions, bobcats, coyotes and raptors as well as deer, rodents (squirrels, gophers, chipmunks etc.), hares, snakes, insects and birds.



Figure 4: Comparative photos taken from the Napa-Sonoma County Line Trail looking northeast toward the Napa Valley and the Vaca Mountains in the distance. It is only over the last few months of summer that we have begun seeing regrowth.

I will now show some comparative side-by-side photos showing how the flora is recovering in the park. In Figure 4, we see two photos taken roughly one year apart looking toward the Napa Valley from Bothe Park. For about three months following the fire, the park was completely sterile with no sprouts or insects or other noticeable signs of flora and fauna. The fire in Bothe Park burned hot.



Figure 5: Photos taken roughly 7 months apart looking north from the Napa-Sonoma County Line Trail. By March, about 5 months following the fire with some mild winter rain, various grasses and other sprouts were beginning to push but none of the trees or bushes had begun to significantly regrow yet. Again, all the Doug fir (large tree on the right foreground) are completely dead and will fall over in a couple years.

Figure 5 is another panoramic comparison looking north to the tufa cliffs on the south-facing slopes of the Diamond Mountain ridge. Although you can see some grass growing on the hillside in the March photo, it is only over the last few months (July to October) that some of the brush is beginning to grow again on the hillsides, mainly pushing up from buds on the burned crowns at ground level.

Figure 6 is another one year comparison looking south along the Napa-Sonoma County Line Trail at what was a brush covered hill prior to the fire. The fire completely sterilized the land for many months following the fire. As the brush has begun to return these last few months, it does so both from new seedling growth and from the root crowns of the burned plants, pushing up from ground level.

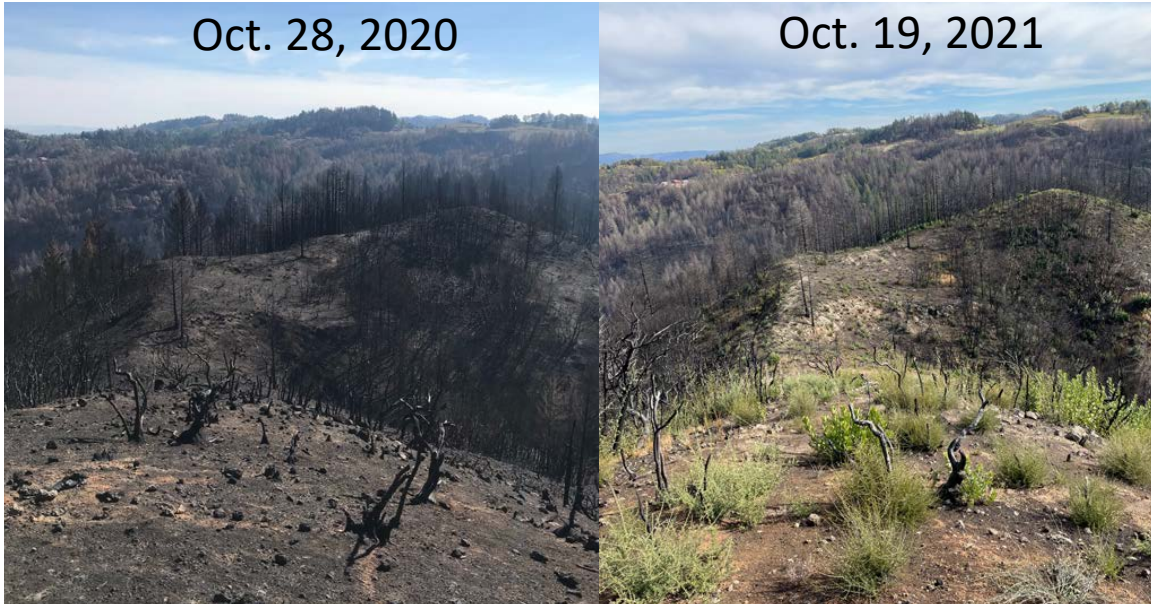


Figure 6: One year comparison of what had been a brush covered hillside prior to the fire looking south along the Napa-Sonoma County Line Trail.



Figure 7: In March (left) the land was still mainly sterile though you can see some sprouts in the lower foreground that grew into what you see on the right. Behind the big Doug fir that is completely dead and will ultimately fall over, we see on the right the bay (California laurel) trees beginning to grow from the burned crowns. Bay trees are the species returning with the most rapid growth.

In Figure 7, we see a typical scene of the totally dead Doug firs along the Napa-Sonoma County Line Trail at the highest elevations of Bothe Park. The habit of the limbs on Doug fir when they are alive is to extend upward as still seen five months after the fire on the left photo. But as seen on the right, at one year following the fire, these burned limbs are bending down toward the ground and in many places throughout the park is making it hard to walk around. In another year or so, it will be dangerous to be out in the park during storms as these big Doug firs begin to fall in the winds.



Figure 8: A large double-trunked bay tree burned hard during the fire and fell over. When I first ventured into the park a week following the fire, this tree had just fallen and was still on fire. I did not bring my iPhone that day. The scrub oak (the four trunks in the foreground and the two trunks up the slope) are beginning to grow from the crown over the last two months.

In Figure 8 we again see that other than for random sprouts, the land was still rather sterile back in March. On the right we see some scrub oak beginning to push from the crown and in the background of the 10/19/21 photo, bay trees are pushing from the crown at a faster pace.



Figure 9: Standing just inside Bothe Park on the County Line Trail looking toward our westernmost vineyard block of syrah that we call the Sunsent Block. Although the brush (mainly chamise in this image) is just beginning to grow again, the land after one year has had relatively little restoration of the understory so far and almost no restoration (other than the redwoods) of the overstory.

Figure 9 is a typical scene of what used to be our chaparral. Prior to the fire, the chaparral (brush consisting of chamise, manzanita and coyote brush but also small trees like scrub oak, madrone, buckeye and toyon) was impenetrably dense. After one year it is only very slowly returning. I have mixed feelings about the chaparral restoration. Although dense brush in the park is what is natural between fires, it is very much a fire hazard and, more selfishly still, it has

been a pleasure this year to be able to walk freely over ground that is normally impassable. I must admit, I am not looking forward to the brush returning over the years to come.

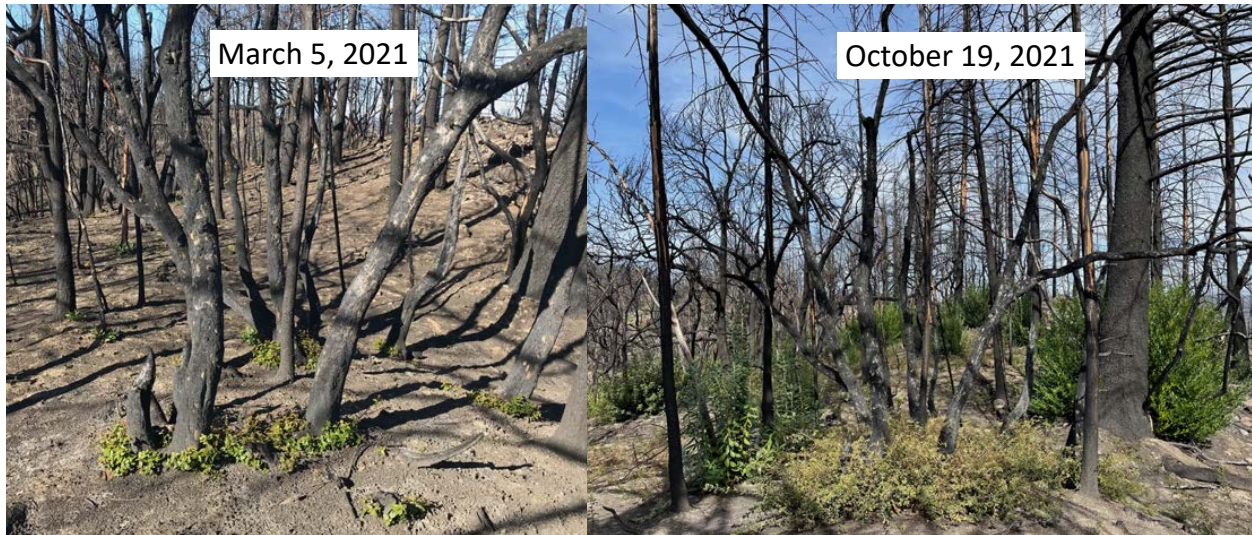


Figure 10: The same group of burned scrub oaks photographed in March and again in October. The bay trees in the background had barely started to push new shoots in March but by October was the species of tree that saw the most shoot growth over the summer. You can see how much easier it was to walk around right after the fire prior to the regrowth.

Figure 10 shows how scrub oak was one of the first species to begin to grow in March from the burned crowns but when this same group of scrub oak was photographed in October, it was actually the bay trees (the dark green foliage in the background) that had produced the most growth over the summer. It is also clear from this photo comparison that although it has been a pleasure to walk along the County-Line Trail without understory impediment this year, such free passage is transitory and that by this time next year it will be much more difficult to get around in the park.

Let me next present photos all taken on October 19, 2021, one year after the fire, that show various aspects of how the parkland is recovering. In Figure 11, we see four tree species that are recovering in entirely different ways. The Doug firs, which are formally called “Coast Douglas Firs”, have worked their way inland from the coast range over the last few hundred years and are not well adapted to recovering from fire. The recent fires when combined with climate change likely means the Doug fir are on a retreat back toward the coast. Our part of the Mayacamas have historically been oakland and will be returning to that over the decades to come. The redwoods, which are also a coastal species, do have a fire-recovery mechanism and will very much return to our burned forests. What happens to the black oaks and various other large trees that have overstories that burned and will not regrow but that are recovering by shoot growth from the crown is uncertain. Will the limbs of the burned trees decay and simply fall off over time as new multi trunks form from the current shoot growth at their base or will the entire burned tree fall over one year tearing up some of the new trunks trying to form? I will watch with curiosity over the years to come.



Figure 11: Four different tree species on the County Line Trail that are all recovering quite differently. In the left foreground is a black oak that is beginning to regrow slowly from the crown. In the right foreground are bay trees also growing from the burned crowns. Just behind the burned black oak is a large Doug fir and to the right a younger Doug fir that are both completely dead with no regrowth. Behind the bays are three skinny redwood trees that are entirely covered by new shoot growth, which is how they recover following a fire.



Figure 12: On the left, is a characteristic fairy ring of relatively young redwood trees that are beginning to grow again after a hard burn. Growth is both as new shoots all along the burned trunk and also as shoots growing from the burned crown. On the right, standing on the County-Line Trail looking down into a valley that had a growth of young redwoods prior to the fire. You can see at least one fairy ring and how the redwoods are the only burned tree to see recovery in their overstory.

In Figure 12 we see the recovery of various young redwood trees. Redwood trees often grow in circles called fairy rings. This occurs when there was a large initial redwood present that, as it died for some reason including logging, caused shoot growth to occur around its circumference resulting in the fairy ring. Redwoods are likely the most resilient tree in the forest to a whole range of aggressions including fire. The small diameter trees seen in the photo are generating shoot growth from the crown as well as shoot growth up and down the trunk. Given the small diameter of these trees, the new trees that grow from the shoots around the circumference of each crown will not form separate fairy rings but will generate a single tree with merged trunks from the various initial shoots growing today.



Figure 13: On the left is a typical stand of large Doug firs that burned and are now gone forever. On the right, we see a pit where the Doug fir that was present there prior to the fire was already dead and so it burned completely during the fire. Dead trees burn the most intensely and are an extreme fire danger.



Figure 14: October 19, 2021 photos of chaparral regrowth. On the left is chamise, in the middle manzanita and on the right scrub oak all regrowing from the crown of the burned plant.

In Figure 13, we see a stand of large Doug firs that burned. Note that the trees do not burn entirely unless the tree was already dead prior to the fire. In that case, the tree tends to burn entirely and down into the root zone leaving behind pits where the dead tree used to reside. This burn pit in Figure 13 is covered with fir needles and other leaves masking the places where the roots burned that were visible right after the fire. In Figure 14, we see closeups of the regrowth of various species of chaparral.

In say 50 years, when our grandchildren look into Bothe Park, they will not be able to say with certainty whether the park burned back in October 2020. But what returns following the Glass Fire will for sure look different than what was there before September 28, 2020. If nothing else, most of the Doug firs are gone forever.

Let me end with two ironic fire-related facts. First, although the burned lands are beginning to grow again, the ladder fuel for igniting fire in the burned land that surrounds us is at a 100 year low and will continue to be low for at least another few years. Combining that with the fact that we took a direct impact from a major wildfire and our buildings did not burn, you would think our insurance premiums would have gone down this year. We passed the test. But no, the insurance premiums sky rocketed for less coverage at our renewal this past summer!

Second, the one thing our recent fire experience shows is that vineyards are wonderful fire breaks that stop fire and in so doing save jobs, property and lives. But the counties (both Napa and Sonoma) strongly discourage the forestland on our mountaintops to be converted to vineyards; they have put in place strict regulations that only allow you to convert 3 acres of timberland to vineyards for the lifespan of your ownership, regardless of whether your property is 3 acres or 3000+ acres. Following the Glass Fire, we have about 10 acres of gently-sloping burned forest that would be perfect for vineyard but we will only be allowed to plant 3 of them to vines. I will keep the other 7 acres permanently bare of all vegetation to serve as a fire break even though vines and cover crop would do that job better and be better for the environment. Vineyards and their surrounding margins, including ponds, prevent the spread of fire and provide an oasis for flora and fauna alike during fires and are a net good to the environment, using considerably less water compared to the transpiration from Doug fir forests. Given the reality of climate change, drought and the ongoing threat of fires, having more vineyards on our mountaintops can only be seen as good for the citizens of Napa and Sonoma County, providing fire safety, employment and tax revenue to the counties; it makes no sense that our county supervisors are not allowing timberland to be converted to vineyard but that is their firm position in front of perceived pressure from environmental groups who think, without scientific or common-sense justification, that forests on the ridge tops are better for the people of Sonoma and Napa counties than are vineyards.