

FAZED FORESTRY



This tree... →



June 2010

This is Phase 1 of the “phased forestry” process I use, wherein native trees in an evergreen oak/madrone woodland are removed selectively in a series of steps to a more balanced stand structure. The purposes of the process are to sustain a stable fire-safe condition until I can get back to it, weed control at minimal labor, minimize the loss of topsoil organic matter, and finally to provide forage and habitat for wildlife. In “Phase 1” (above) the dead undergrowth and dead or dying trees are removed to reduce the fire hazard and to be able to move around freely. The canopy is still closed and there is very little groundcover. This is a very stable configuration because there is insufficient light for understory growth.

WILDERGARTEN 5.4

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This book was originally produced under the name *The Responsible Party* for which there were two revisions, [1.0](#) & [2.0](#). Major revisions are for complete rewrites. Decimal revisions are for revised chapters or navigational changes and are not archived. Back revs are viewable by the numbered links below.

Revision History [1.0](#) [2.0](#) [3.0](#) [3.1](#) [3.2](#) [3.3](#) [3.4](#) [3.5](#) [4.0](#) [4.1](#) [4.7](#) [5.4](#)

Vande Pol, Mark Edward, 1954 –

Other writings by Mark Edward Vande Pol:

[Natural Process: That Environmental Laws May Serve the Laws of Nature](#), ©Wildergarten Press, 2001, 454pp, ISBN: 0-9711793-0-1, LOC Control #2001092201.

[Shemitta: For the Land is Mine](#): ©Wildergarten Press, 2009. Contains: 217pp text, 980pp overall, 14 picture books, 2 tables, 963 photographs, 9 maps, 2 drawings, 2 charts, 145 footnotes, 358 citations, and 216 other source references, not including external Internet links. ISBN 978-0-9711793-1-8

[Articles at Wildergarten Press](#): collected writings on Constitutional history and regulatory racketeering by tax-exempt “charitable” foundations

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...is this tree →



September 2013

The main purpose of Phase 1 was to buy time while I got control of bigger problems. In this Phase 2 thinning, I removed enough canopy that broadleaf groundcovers can begin to express themselves. The purposes of Phase 2 (above) are (1) to develop the more mature trees I want to keep, allowing them to recover from over-crowding and (2) to produce enough groundcovers such that when I expose the surface to more light in Phase 3, they will quickly cover the soil to suppress weeds without becoming grasslands that are much harder to manage. Both Phases 1 & 2 are fairly stable configurations. The wood strategically laid across the slope is to retain leafy duff that adsorbs rain impingement, slows runoff, feeds fungi, and builds topsoil. It also represents a use for wood.



Screen

...is this tree →



June 2015

This is two years later. I was able to make this cut heavier than is usual for Phase 2 because I left a screen of trees in the back left to block afternoon sun and slow down the response. I planted skullcap (*Scutellaria tuberosa*), yerba buena (*Satureja douglasiana*) iris (*I. fernaldii*), and blue-eyed grass (*Sisyrinchium bellum* also an iris), to help get groundcovers going. Weed problems have been minimal. To take this to Phase 3, next I need only remove the shade screen and one or two more oaks on the right.



June 2010

This is an 8-year old Phase 2 treatment that reverted to Phase 1. Said sparse groundcovers came in as stunted individuals 0-3 feet apart, as planned. Unfortunately, the canopy closed enough that the groundcovers receded. Nor does the treatment do anything to stop scads of oak seedlings from taking over upper right). I had also left a substantial number of stumps untreated. Having since learned better, both of those problems are now on the wane.



August 2012



Yes, one of the consequences of thinning is that trees breed. Remember: People, fire, and wildlife once consumed acorns and madrone berries. The bears are gone and coyotes get the deer fawns. Guess what happens? You get LOTS of seedlings that kill off those groundcovers. In this area, I removed and counted the equivalent of 18,000 oak seedlings **per acre!** It can be a fire hazard too.



August 2012

One either needs animals to eat more acorns and berries (and therefore management of their predators) or a way to cull the seedlings. Oak is so hard to kill with sprays, that the process is deadly to non-target plants. So, I invented a tool that is faster, cheaper, and more effective than spraying with which to sever the roots and pull the tree in about 3 seconds. Wanna buy one?



October 2013

One of the consequences of tree seedlings is that they *all* want to grow. I counted about a dozen oaks on the left about six to eight feet tall in a space of about five feet. The groundcovers in the foreground are because I whacked up to this point last year. Once the stems get over 2" in diameter, they are hard to thin. Only fifteen years before, this was a road.



September 2014

So I thinned it. Note that I saved an oak instead of conifers. That is because I intend to thin the area around it after the trees (2) that I left to help the oak get over the shock of thinning without sun scald. If you look carefully, you'll see that the top scorched a bit with the extra sun and drought. In the winter of 2014 I worked down the slope uphill and to the left of this spot. I may also grow some fir here.



November 2013

In addition to stomping seedlings, I do what I can to attract acorn grazers. Deer are under pressure from coyotes around here, about which I can do relatively little considering their numbers (I bought a caller, but so far I don't make a terribly convincing wounded rabbit). Yet we do have acorn grazers in acorn woodpeckers, squirrels, and band tailed pigeons. I just lost a fir tree to a root fungus, so I plan to convert that to an acorn woodpecker roosting hostel cutting nesting pockets with a chainsaw. As to the band tails, upon occasion, we have those aplenty when the oaks drop or the madrones have berries (above). More elderberries would help keep them year-round.



June 2010

This patch is in Phase 3 (about 60yds away). I opened it up enough for patches of perennial groundcover and some shrubs with annual lotuses, clovers, blue dicks, and sanicle. There are two grasses that usually populate at this point: pine grass (*Calamagrostis rubescens*) and blue wild rye (*Elymus glaucus*), both are well suited to shade. The pine grass is low-growing, thick enough to make weeding easy, and a tremendous erosion control (my favorite grass here). There are also sedges (*Carex globosa* & *tumulicola*), irises, lilies, and numerous herbs. Just keep the brush and tree seedlings down and the other grasses out and it's OK. Note that the trees are putting out new growth lower down. Their crowns will spread and a few of them will make decent trees as we thin out the rest.



July 2011



Phase 3 focuses upon developing the few trees we have with a decent future. In this case, I retained this small oak in the foreground because its lower branched structure gives it a better chance to be a sound mature tree than most of what I had. When I removed the adjacent leaning and top-heavy oaks and madrones, it recovered immediately. I may yet take the top out of it and head off a couple of branches, because even with this degree of thinning, it is likely to bolt. The question relates to how many trees over what type of groundcover makes for the best combination of easy maintenance and productivity. The groundcovers can take 4-5 years to develop.

STANDING TOO TALL



So did I, but there was only so much I could do at a time, then inducing a delay that had consequences. Primary succession to redwood began with the Spanish burn ban in 1793 ([site history](#)). This image from [the repeat photos](#) in Part I is that process in action. There were 24" firs just up the slope. The redwoods were only 8-10". Although I really liked the oak in the mid ground, my first priority was broom (the lighter green). So the conifers had to stay until I got the broom under control. That delay was costly. Notice the relationship between the height of the oak with the [gold arrows](#) and height of the trees behind it. This was a tree I wanted to keep.



April 2002



Twelve years later, succession had progressed toward a redwood monoculture to the left and threatened the rest of this oak-madrone woodland with shade, ideally (to me) dense groundcovers among multi-aged trees and occasional shrub thickets. This is just after a **Phase 3** thinning in the foreground and Phase 2 behind the **Dark Barrier**. During the process, I had removed the fir. I left the redwood as part of the “dark barrier” to minimize weed transmission between the two sunnier areas until I had both under control. I wanted to keep the oak with the **gold arrow**, but the canopy behind it was already shading it to the point that the crown was starting to thin out.



June 2010

Grasslands are 4-10 times more demanding to weed than woodland groundcovers. These open patches are shady enough to keep the grasses down somewhat. I maintained these pockets of groundcovers separated by “dark barriers,” stripes of dense cover including redwood to reduce the chance weeds would spread from one pocket to the next. In some instances I plant new trees, but I prefer to start brush first because the brush offers tree seedlings protection from browsers and induces them to develop straight trunks.



June 2010



Sometimes, the easy way to get a tree going is with a burn pile. Where there is seed, up comes Ceanothus! This pile produced twenty seedlings for transplanting, yet there are still more than this spot can sustain. There are already small madrone trees starting inside. Over decades, this burning process will help produce an uneven aged stand of oak and madrone with small patches of fire-adapted brush in between. That is part of Phase 4.



Redwoods →

... is this oak →

May 2010



Eight years after that first thinning, root rot took down the oak, which then put the groundcover at risk of becoming a grassland. The concern is that this type of oak understory takes about a quarter of the time to maintain as even a pristine meadow: one half-day, three times a year, is about all that is necessary to keep it like this. To keep it while cleansing the seed bank, I cull natives: coyote brush, fir saplings, and some of the grasses; else it would soon become unmanageable. I must also continue to thin the oaks and madrone, as they spread their canopies when allowed the extra room. I am also propagating deciduous native black oak here, which I believe I can grow in such a way as to maintain the groundcover because of the additional winter light while still shading out the grasses. Accordingly, I'll start burning here. Why, when that might start grasses? I want to see what remaining weeds respond. There were no hardwood shrubs here originally, nor since. The trees were few and one died of saprophytic root rot. If it wasn't the shade, that killed it, I want to know why. We'll probably do an 18s genetic survey for fungal species here and other spots along this slope to see if there is anything unusual to increase our knowledge and prevent future problems. That's what people do.



April 2012

Two years later, the foreground open area is now relatively free of weeds. Yet the oak canopy in the background had closed, thus shading out the groundcovers. So here I am about to remove the now-unneeded redwood “dark barrier” from this stand and thin the oaks in the background, to deal with the remnant weeds. The rationale for removing redwood from a deciduous woodland can be either that they are not doing well, or that they were doing **too** well; i.e., shading out an oak forest I wanted to keep. This was the latter.



As to the stand behind those redwoods, in 20 years they had grown so tall and gangly that few had good structure. I had taken too long getting weeds under control to thin them to be “worth” saving. An arborist friend of mine has a maxim about oak trees: “If it’s over 30 feet tall and only 6 inches in diameter, it will *never* be any good.” Of course, that depends upon what one thinks is a “good” oak tree. None here will ever meet that arborist’s standard. Nor should they. These are not *architectural* oak trees. I want trunks long enough to minimize fire hazards. I want both openings and shade with which to maintain an intense groundcover without excessive stand density. I don’t want tons of acorns. These make great firewood: they have straight trunks and long branches with few knots. They are easy to split and do not produce a lot of foliage to drag and burn. Yet to grow a stand of trees like that means no understory, they don’t live long and are subject to breakage. So in essence, my preferences in oak trees are a compromise between that arborist standard and growing for firewood. The emphasis here is upon total productivity of a varietal groundcover, lower hazards, and ease of maintenance.

I do not intend to keep all of them over the long run. I put in some black oak (*Q. kelloggii*, in the cage on the prior slide) because deciduous oaks decompose more quickly and allow groundcover growth in winter.

This is the last major thinning I have do on this upper slope. The near future will be culling individual trees, weeding, developing shrubs, shaping seedling trees, weeding... So where does it go from here?





October 2013



None of these redwoods was over 15 years old when we got here. There were no old stumps, nor was this area terraced for apples. As discussed in [the site history](#), when the Indians managed this area, the plants were early successional, mostly bulbs that are now coming back. From analysis of those species, I doubt redwood has been on this upper slope for at least 10,000 years, judging that the presence of conifers on this upland at all was an artifact of the Spanish burn-ban of 1793. There wasn't any fir here at all until 1970.



This tree...

Burn Pile

Burn Pile

March 2014



This is the subsequent Phase III thinning after removing that dark barrier. I've piled and burned the tops; else it's harder to see the forest floor for all the material. This kind of thinning must be done in stages, in that one accumulates so many logs and tops that they tangle, making pulling them out a pain. After the mayhem, I go in with my plugs and transplants (black oak in the cage), particularly in burn spots. Foresters often wonder why I don't simply slash the material and let it rot. **You can't weed it that way** and very little grows on the surface until the slash rots (which can take the better part of seven or eight years) after which the weeds come up anyway. After a couple of years (and rain), this understory will be carpeted with life. I want the weeds to germinate now while they are easier to find.



Black oaks

Redwoods
Never quit

...is this oak

May 2015



Over the next few years, the groundcovers really did spread. I'll continue to develop shrubs and deciduous seedlings. The downed oak in the right foreground had suffered from root rot for at least fifteen years and finally went down (repairing the road probably abetted the rot). Once a beautiful tree, it will now become beautiful firewood, but I will have to rebuild the adjacent culvert inlet.



Black oaks

Redwoods
Never quit

← ...is this oak

May 2017

For my trouble, I got more weeds, blackberry, some grasses, more clovers, and a lot of *Sanicula crassicaulis*. I'll continue to develop shrubs and deciduous seedlings to shade the grasses. My dear sweet wife in the photo is chasing the hedge parsley (*Torilis arvensis*).





May 2015

I will be removing selected trees to make pockets into which to drop the redwood on the other side of the road below this slope. After having given the toyon shrubs time to get used to the extra light, just before the logging job, I will coppice them to the ground which will force them to rejuvenate with strong densely foliated shoots more tolerant to the extra sun.



...is this tree



May 2015

These groundcovers spread fast where there is sun. Tree removal also likely reduced competition for soil moisture, important given the drought over the last previous few years. Some ecologists wonder why I leave so little wood for fungi or snags for birds. Good observations. For now, I have to weed it. I also need room to yard out redwood from the stand below here without interference from logs on the ground. Growing fungi and leaving snags begins with logs from the Phase 4 thinning.



May 2015

So in essence, the broadleaf forest at right is being configured to facilitate managing the conifers below it. I have left two fir trees to the right of the road to serve as “gin poles” with which to pull the redwood up the slope with the cable over a block placed in the trees. The trick is to find trees behind them to anchor the stays to keep from breaking the fir trees or pulling them over with the load.

I am also making pockets in the oak into which to drop the redwood.



May 2002

Beyond the end of the redwood stand in the prior slide in the background of this photo was the only remaining area on the property that had not yet been thinned (Phase 0). The fuel on this slope represents a severe fire hazard. Although all the visible vegetation is native, there is probably also exotic seed in the soil. The goal is what is called a “shaded fuel break” to protect the redwood. Unfortunately, trees adequate for shade are few here. With nothing on the ground one does not just thin precipitously, for several reasons. First, this is a VERY steep slope, most of it over 100% (45°), so it needs something growing on it to break the impact of rainfall. Second, weeding a steep slope like this would be laborious. Third, it is adjacent to a redwood stand I want to keep. So my goal is to maintain this as a forest, but with fewer trees to allow an herbaceous groundcover and a few shrubs of low fuel value such as hazelnut, toyon, coffeeberry, or huckleberry as food for wildlife, but without much grass (unless it is *Calamagrostis rubescens*).

In the foreground is essentially a Phase 2 thinning. I chopped up the dead brush (mostly *Ceanothus*) and thinned out the scraggly and dead oaks and madrones. In this case what came up looks like an odd form of grass. Those are *Iris fernaldii*. Lilies are a family of plants here that have returned successfully from the native seed bank. Iris are perennials more accustomed to shade than most post-disturbance forbs. That meant that they were able to keep producing seed long after the forest began to take over from what had been burned off here in the 1940s. It also suggests that the cows found this area a bit steep for their liking (iris are poisonous).

Once the groundcovers are growing securely in place at a spacing of one every one to two feet, I can then start taking down the large and unsound trees. Unfortunately, in this case there aren't any decent seedling trees. So, what I am hoping will happen is to gain some fir seedlings from which to select and then thin it. There are plenty of nesting sites nearby, so that is not a consideration here.



November 2015

Thirteen years later, I was amazed this tree was still standing. This “fuel break” to be is in transition between hardwood and conifer. I’m taking it back to primarily hardwood. This leaning fir at the top dominates the slope below, which is killing the hardwood and abetting both redwood and other fir trees. Again, the solution here is shrubs at the top and in this case madrone on the slope because it holds soil so well along with perhaps a few bay trees despite their propensity to burn because they’ll do well with the shade.



November 2015 – I try to get to things eventually.



WIRED FOR SOUND



June 2010



We're back to the main ridge with this repeat photo. To recap, I was losing grassland to the broadening canopy of oak / madrone woodland. I took out a couple of trees on the right, the grease bush (*Baccharis pilularis*- a male), and thinned the slope at left.



May 2012

I thinned that slope on the left a lot, for reasons. First, once I had grasslands under more control, I could afford to get a little more aggressive about forestry and the resulting weeding demand there. (The flags represent a soil experiment we'll discuss in Part III.)



May 2012



Second, this heavy Phase 3 cut was under a power line where rightly we don't want trees at all. The eventual goal is a band of low fuel brush at the top (toyon (*Heteromeles arbutifolia*) and coffeeberry (*Rhamnus californica*)) to shade the slope below for similar reasons as the last project discussed. Note the impressive response of the forbs after only two years.



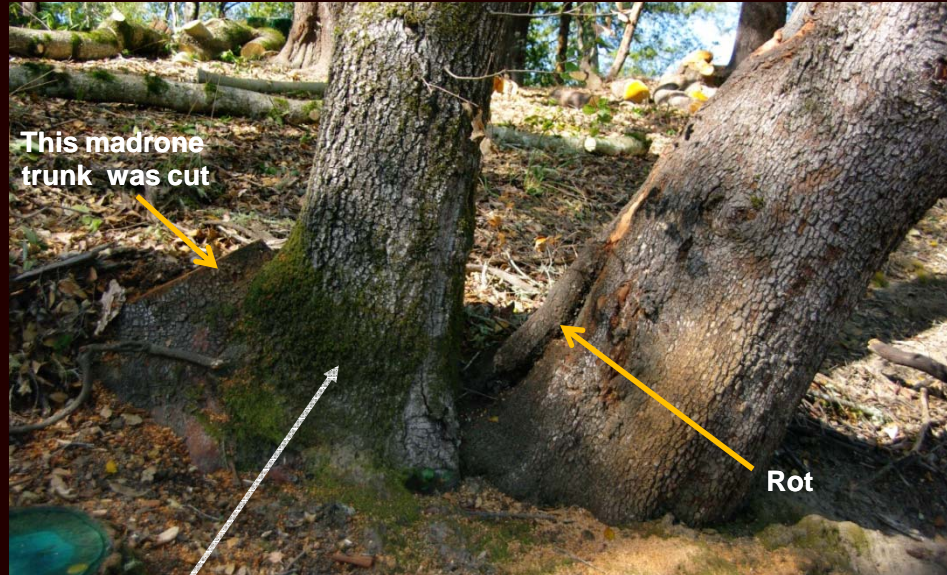
October 2013

These shots are from either end of the same span.

The power company spends enough money managing their rights-of-way here to make my electricity effectively free. The operational goal is to make that unnecessary. The aesthetic goal is to make the rights-of-way so much a part of the landscape that they are invisible, which can take a decade or two because I have to wait for the trees to become a hazard before the power company will remove them. Yet there are simple tools in the palette. One can train an oak to grow low and spreading when in a deeper draw under a span. One can blend a chaparral from the forest onto the ridge. It just takes the willingness to play with it.



Do you see a problem? It is a serious one and *way* too common. Well I didn't see it, and neither did the foresters contracted to the power company who walked these lines every year looking for adequate clearance. The tree at left has adequate clearance, but it also has a very weak crotch with co-dominant trunks tall enough to take out the lines and enough windage to put a heavy moment-load on that crotch. The reason nobody noticed it is that there were were so many trees one could not see it easily. Nor was that the only critical problem on this one span (photo below).



This oak is holding down a nearby madrone that overhangs the lines like a big staple. It is the only thing keeping the madrone from falling on the line. The madrone trunk had internal rot. When an inspector is looking *up* at wires a bad stump *below* is easy to miss. So, removing hazards to the power line was the second reason for the thinning. The third reason is that the distance between the ridge and the power-line right-of-way is so short that there really isn't room for a forest. The fourth is that the slope is so steep and shady that the trees don't grow straight. Instead, they will fall toward the lines and tear out a hunk of soil. A screen of brush at the top is the plan.



Sometimes thinning produces unpredictable results partly due to the vagaries of weather. In the case of these two trees, I wanted the same thing: Both were way too tall and skinny and both were along power lines. So they either must regenerate from lower down or be removed.

I thinned both areas same year. Yet just as they were leafing out, we had a 105° heat wave in a drought year. Both trees apparently suffered from “sun scald,” a condition in which the bark is too thin in a tree accustomed to shade to tolerate sudden exposure to full sun. The tree on the left put out new growth on the side where I wanted it and sacrificed a branch where I did not want it. In other words, it did what I wanted it to do. The one on the right couldn't take it.

I've had this problem before in oaks and the recovery was very slow. It is also quite common with madrone and shrubs like coffeeberry or toyon.



October 2013





October 2013



OK, so what do I do with all that wood? Some of it I use to slow down the runoff from rain (left). Some of it is left in place to retain organic matter, feed bugs, and build topsoil (upper right). I use less than two cords as firewood to heat my home and donate a few more to families in need. The rest gets a highly-accelerated process with which to return it to the soil, and here is where things get a little “out there” for most restoration people.



April 2013



Split it, stack, it and burn it. Considering all the work it took, it looks rather wasteful, doesn't it? What the hell is he doing?



April 2013

Making charcoal, lots of it, as a soil amendment. We'll get to why in a later chapter discussing grassland soil conditions.

THEN TRY IT AGAIN?



October 2013

When we started this project, we began with the easiest type of problem to see, namely, excessive fuel loads. Most people *know* intuitively that this broadleaf forest with dying chaparral and invading fir trees is too much fuel for anything to survive a fire (this is my neighborhood; I didn't have to go far to find it). Most people know what must be done; else they **know** what will happen. A lot of them close their eyes and pretend everything is just fine because they don't want to do or pay for this much work.



October 2013

To the north is that other successional condition in redwood: These 50' trees were *not* doing well in a stand that was already thinned. Their tops were frying even with the afternoon shade of a prosperous redwood stand on the other side of the County road. They were not doing any favors for the oak-madrone woodland below them either. Given the gangly state of the hardwoods, I am seeking to develop the few smaller oaks in here to be broader and lower trees interspersed with more productive fruit-bearing shrubs for wildlife. Therefore, these redwoods were the next to go... *after* the nearby forest yellow-jackets (*Vespula acadica*) were done for the year!



January 2014

This image is a good example of oak/madrone forest in transition between its original condition as I found it and what we are trying to accomplish in restructuring it as something between a multi-aged woodland and a savannah with primarily perennial groundcovers for easy maintenance. Because this area is farther along, here we have several decent young trees. The redwoods in the prior slide have been removed. What you see remaining are some very spindly oaks along the road and a few with potential down below. I'll be leaving these "spindlies" as a source of partial shade until the groundcovers and shrubs have recovered from the transition.

Note the madrone (black arrow) overhanging the nicely shaped young oak below it (red arrow).



The madrone was the last hazard tree to remove for the season. It leaned over my power lines and was rotting in the middle of the trunk. Eventually, it would have broken and fallen on both the power lines and said nicely shaped young oak below it (such trees are rare here). Hazard trees like this one cost about \$350-500 apiece to take down. They are common in these mountains.

I don't like climbing leaners. The flip rope tends to sag and slack as you climb, making it easy to roll off to the side hanging upside-down from the flip rope (not good). I was also concerned about the extra load my weight would put on a trunk with rot in the middle causing it to snap with me tied to a log 40 feet up. So I called in a tree service. Their lead came out to look at it. Nice guy! He got out of his truck, turned around, and just stood there, staring at the forest. He knew how much work this had been, so his silence was a compliment. After a pleasant exchange, he looked at this one for me and said, "I'd climb it, but then," (with a smirk) "I weigh 140 pounds." Knowing my trepidation (and that I'm 180), he suggested the nifty trick of wrapping the flip rope once around the trunk to keep it from sliding so easily. We shook hands and he left, no charge. To him, it was a job too small to bother with, one he knew I could do anyway. To me, his appreciation was an honor and his advice a potential life-saver.

So I bought a longer flip rope and waited for a Sunday to do the job so that my wife could be around in case I had a problem. Among other things, giving her the job of taking pictures might make her a little less likely to fret (it's not good to be listening to your wife getting scared while you're up a tree). Besides, I don't get many pictures of me working, so it's nice to have it to share with people to give them an idea of what this involves. So... I sent this photo around to some friends and, frankly, their reaction was stunning... "Is that you???"

Really, after all these years, I thought they knew better.

There is a lot yet to do. In places, we are getting there. But there is always the unexpected.



November 2014

Despite my good intentions, trouble, and risk, this young oak came down with a case of **sun scald**, in which the removal of the canopy over the tree left it unprepared for the extra light. The angle of the sun would not have suggested this reaction because the madrone had been mostly to the north of this tree. Hence, I didn't think this would happen or I would have removed the madrone in the fall. The good news is that this oak is not dead although recovery might take several years. To what degree depends principally upon rain.



May 2015

Same stand from below. The goal here is a low maintenance perennial cover. I'll start with an annual show of bulbs: irises, blue dicks, globe lilies, death camas, blue-eyed grass, *Triteleia*, and herbs: skullcap, sanicle, hedge nettle, snowberry, blackberry, yerba buena, and sedges in between occasional shrubs and trees. Despite my having thinned this in late spring two years before, the groundcover response has been significant. Two species in particular responded intensely, sweet cicely (*Osmorhiza berteroi*) and blue wild rye (*Elymus glaucus*) (both are fine with me). There were a fair number of mountain lilac seedlings (*Ceanothus papillosus*), some of which I transplanted, although I left a few under this power line right-of-way. I planted some skullcap tubers (*Scutellaria tuberosa*), transplanted a manzanita, and added some plugs of California Fescue grass. 2014 was a terrible drought year, so that these transplants survived at all was simply amazing. I chose not to allow California brome in here, as it would be harder to weed.



May 2017

Removing redwood brought grasses. There are at least 15 stumps here with more to go at right, but the scalded oak is recovering nicely. From a management perspective, brome grasses are undesirable because it is harder to weed among them and therefore slows me down. I may burn it but here but there is always the risk of more grass thereafter. I am hoping the blackberries and other perennials will take over the grasses. So exposing this area to sun was a gamble from a management perspective in that I am expecting perennial groundcover succession to fix the problem for me until I can grow new hardwood trees where the redwood was.



December 2012

So, how does specifically *periodic* disturbance apply here? This spot was just down the slope from the prior photo but five years prior.

Once it was thinned, in came tree seedlings that then displaced the groundcovers. My goal is a mix of annual and perennial groundcovers among the trees, so this many tree seedlings is a problem. The programmatic disturbance is to thin the seedlings with my root-slicer once every 2-4 years. It takes a few hours per acre. It could be done with fire, but the bureaucracy is excessive, never mind the risk. As I build that groundcover, it will resist the oak intrusion somewhat and soften the soil for cutting the seedling roots. What I need here is MORE disturbance in the form of herbivory, whether deer, squirrels, or birds is fine (goats would bring in weeds). This many seedlings is indicative of a predator problem, and indeed we have way too many coyotes. Hunting is a disturbance too.



October 2011



A word on stumps. When we thin a lot of forest, we get a lot of stumps. It simply makes life easier for me to treat them properly because I then don't have so many wads of stems to dodge. It takes a powerful saw on a short bar to cut stumps, as the sap is falling into the bar trying to gum up the chain. I use a wedge, making a clean cut as low as I can working the saw from inside to avoid dirt dulling the chain. I brush off the chips and treat it as soon as possible, twice, with a 3:1 mixture of turpentine to **Turflon**[®] along with a dye. Then I inoculate the face with soil to get the fungal spores going.



October 2011

If the slope allows, I cover it with leaves to provide shade and retain moisture. When it's done, it looks like this. With stumps that are hard to treat (such as madrone or bay), the efficiency of the process improved if performed in the fall when the phloem is moving downward into the roots (the flow of sap in the spring can really gum up a saw). Triclopyr does not work on redwood. I would have to use glyphosate and sever the roots between trees first to which there may be an alternative which is still experimental at this point.



May 2015

Here it is, 3-1/2 years later. The stump has rotted to the point that it made a six inch deep hole when I stepped on it. Between the immediate inoculation and covering it with leaves, this process really works.



October 2013



Treated properly, the stump won't ever look like this. Left alone, these wads can be ten feet across and six feet high in just a few years (which is how I learned that I should treat stumps), then requiring a *very* expensive dose of Roundup[®], often twice, and then whacking off the dead stems and treating them. Yet sometimes it is actually useful to let a stump sprout, particularly if I need a temporary bush or simply wish to regenerate a new tree from one that has adventitious buds on its roots, such as a madrone or bay.

PHASED FORESTRY OVERVIEW: AN EXPLANATION OF THE GRAPHIC (NEXT PAGE)

For a spatial summary of the progression of phased forestry projects, please consult [the chapter on aerial photography](#).

Parts of the next graph are the same, but much of it is completely different in concept. The first two lines again display emphasis upon forestry activities by type: conifer or hardwood. There is an important reason conifer work is included in our treatment of oak madrone woodland because large firs (and in places redwoods) are commonly found invading oak madrone woodland here because of fire-suppression. Unfortunately, I do not possess the equipment to deal with large fir logs at will; they are way too big. Hence, that type of “logging” is an activity specific to having the equipment on hand and therefore on a separate line from hardwood management. Yet the log removal had to be lumped in with actual redwood logging elsewhere.

For example, the redwood timber job I did in 2000 was almost exclusively for the purpose of illustration for writing *Natural Process*, albeit I learned a lot more from that job than expected, as you shall see. At that time I had several large fir trees removed from hardwood forests on other parts of the property.

Fir is usually treated here as an artifact of fire suppression higher up on ridges. None were older than 80 years while the larger redwoods I’ve cut were about 110. Hence, as little as 50 years ago, Douglas fir trees were probably not found where oak madrone woodland is today, then again as the site history pointed out, oak madrone woodland may not have been there that long ago either. That choice is made primarily because woodlands are so much easier to maintain than are grasslands of which I can only handle so much depending upon conditions.

Said lines of emphasis are there to show that from 2003 to 2010 I did relatively less hardwood forestry while I was focused upon getting control of our grasslands. During those “middle” years, I harvested 2-6 cords of firewood per year, not the 30 of the first year or the 18-20 cords per year typical since 2010 (a cord is 128 cubic feet of tightly stacked firewood). During that time, the status of the phases below do not change much.

The other lines lower on the graph roughly depict Phase status as a function of time; i.e., any particular line depicts the approximate fractional area in that particular phase. The top two lines of the graph map onto those below them as does the time available at the bottom.

And all of that is why we call it a “convolution.”



PHASED FORESTRY OVERVIEW

If these graphs don't work for you, [please let me know](#).

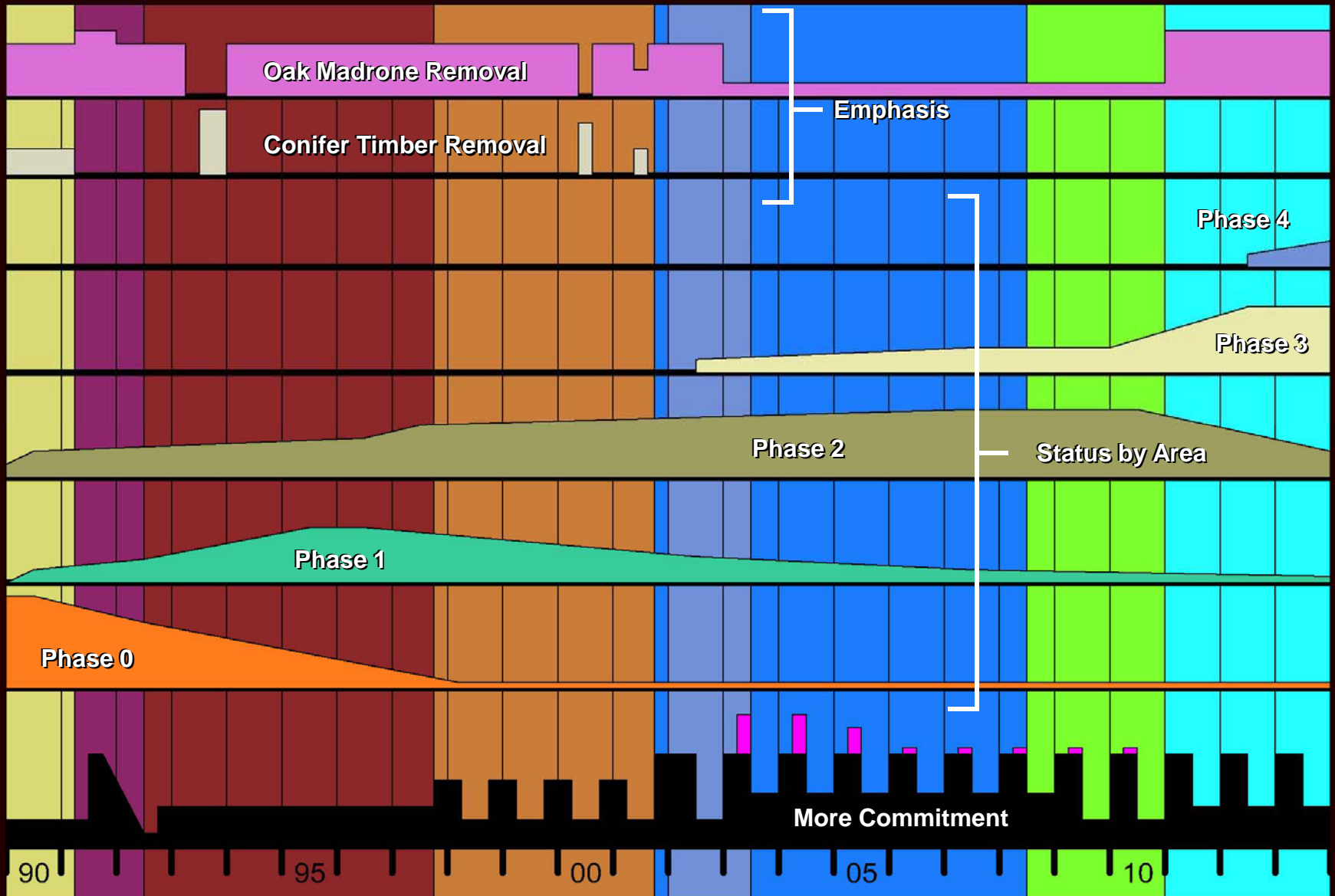


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These are LARGE files; they do take time to load

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