Repeating Myself

The previous chapters covered a few applicable principles I'd like to summarize before we move on:

1. A history is a record of what produced the conditions we encounter with which to anticipate how a system may respond to an input.

2. Indian management processes over 12,000 years (primarily fire, hunting, and harvesting) selected plant adaptations, to which the rest of the life systems responded.

3. Anthropogenic introductions were a significant component of pre-colonial native systems. These species were selected, in part, for a *lack* of dominance. They may or may not survive or reproduce well without the management processes aboriginal humans once employed.

4. Change or eliminate those Indian management processes and one abets invasion and succession to progress uninhibited.

5. Exotics are usually dominant after a disturbance, and often become more so after subsequent disturbance cycles. They must be killed and/or removed to allow natives to breed.

6. It has been so long since post-disturbance native plants have reproduced that their dormant seed in the soil is going bad. Their insect and fungal cohorts can disappear with them.

7. That means somebody has to DO something to regenerate the components of these systems, an idea to which the entire cultural paradigm of "Nature" as self-optimizing is philosophically unsuited.

8. How a property responds to human doings is subject to the above ground conditions. This is most easily observed by comparison of periodic repeat photography (this chapter).

Now, let's look at some repeat photos to see how the Wildergarten responded to treatments!

Wildergarten 5.2

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 4.2 4.6 4.7 5.2

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

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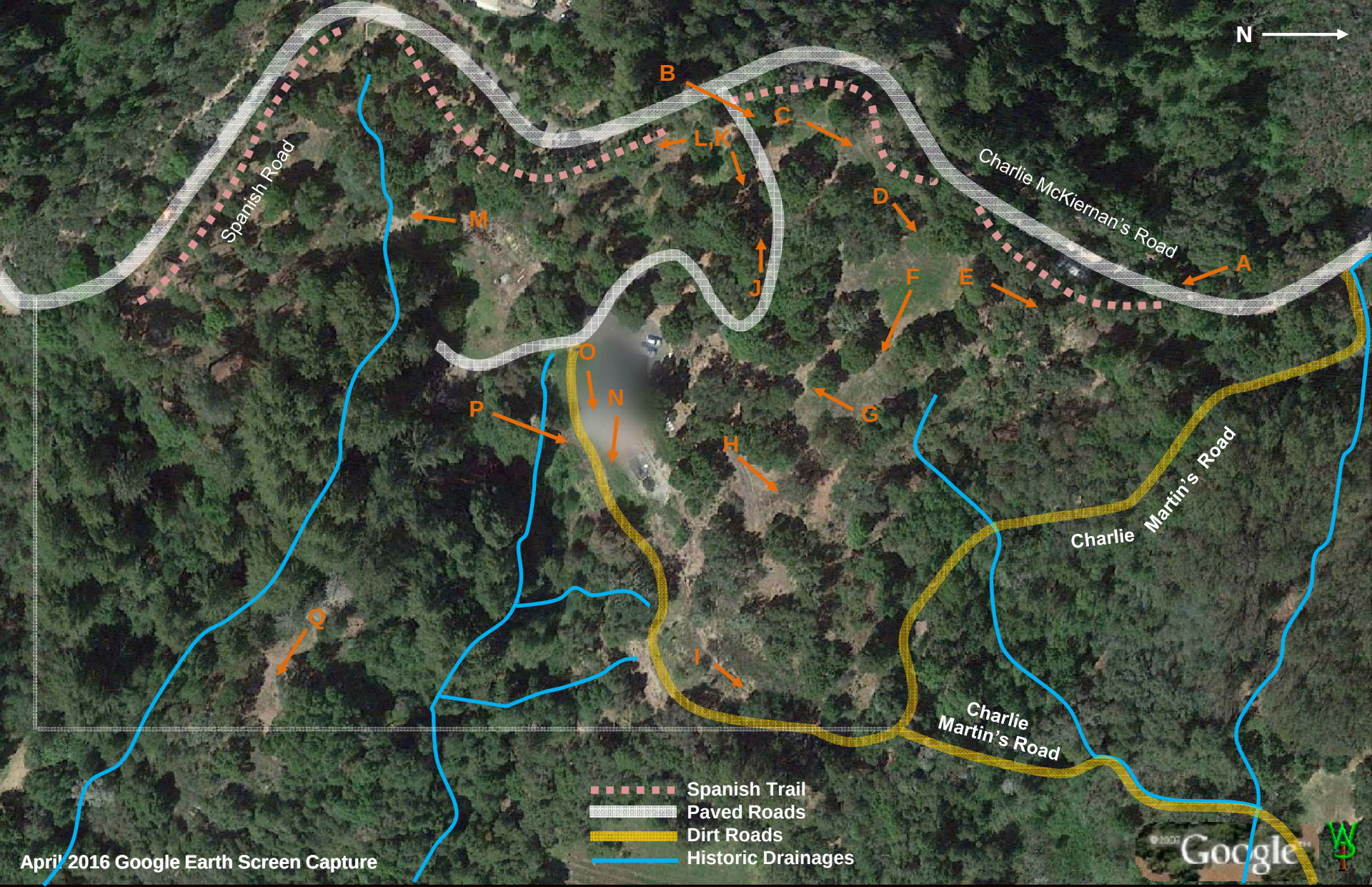
In 1988, a young man speculating in real estate bought our place and cleared the broom off the hilltop near the road for a “house site.” The following November he showed it to us. This is from the north looking toward that hilltop that day. Note that other than along the road, the groundcovers disappear from the surface. It was too dark under that forest to support groundcover vegetation.

Obviously, I cut a LOT of trees, in here probably twenty to thirty. I have entered this area to thin it three times now. Yet I don't think anybody would argue that this is no longer a forest. As you can see, those trees that remain are very slender with long trunks. This works fine to reduce fire hazards but they are more unstable. The goal is to grow young trees that have a chance at decent structure. There are power lines overhead under which I prefer to grow larger shrubs. From here we will go down the road to the south.



This is a map of all the roads and drainages on this property. Each orange letter on this and the other aerial images in this chapter corresponds to where they were taken on this property (some with an arrow indicating the direction). If you wish to keep track while reading, there is a separate file consisting of the aerial photos from this chapter which you can then keep open in another window as you read. My purpose in documenting them this carefully is for future repeat photos for the reference purpose of finding these spots again as I continue to make major changes in vegetation, particularly trees, as younger replacements mature to functional stature.

This is about ¼ mile to the south at what is now the main entry. We will follow the cleared path toward that same hilltop. Even though it was a cloudy day with low contrast, it was impossible to photograph the impacted forest at right (too dark), so thick with brush and scraggly trees I had to crawl through it, leaving survey tape tied to branches to find my way. I got lost within 20 feet of the County road, finally realizing where I was when I heard a car. It was a disaster. It was for sale. The moment we saw it, we were in love.

This is what love had done by 2010. I've thinned the stand on the left three times, slowly removing another 20 trees to keep them away from the County road (for erosion, biodiversity, and forestry reasons). I added the black oak *(*center-right; *Quercus kelloggii)*. There are now a few good young trees ready to replace their larger and misshapen cohorts in the coming years. It is a long and slow process. The meadow up the center is heavy with small native forbs, now being invaded by native grasses.

When we started clearing, the seller had bush-whacked the hilltop bulldozed in 1983 and immediately below it. The rest of the place was almost entirely forested and impacted with French broom. There were virtually no groundcovers left except for a little blackberry. The poison oak and honeysuckle had long since taken to the trees. I have no idea where this is for a repeat photo.

This is the slope up to the hilltop. The green plants on the ground are French Broom seedlings; there was little other groundcover. Note how the trees lean into the opening for light. About ten years earlier, this was a “future driveway” to the hilltop, which had been graded off to try to sell the place. There were rotting piles of French broom 60’ long the bulldozer had shoved to the side off the hilltop.

Here it is in 2010. No broom, native grasses, deer-weed (on the left), lotuses, clovers, sedges, iris, grand mountain dandelions…

From in front of where the water tank is in the prior photo. In six months, these broom seedlings were 3 feet tall. Some were 4 feet.

The hilltop was graded for an emergency evacuation helipad that was never used because the government doubled the size of the helicopters so that the pad became too small. They have since changed their minds again so it's back on the list.

From the hilltop looking north (to the left of the prior image), note how the forest totally lacks groundcover. In the foreground the green is cut broom, which remains standing in the understory in the right-background. The downed tree to the right is an acacia. Note also the fir trunk in the center. Conifers were invading the entire top half of the property. On this ridge, they were the third thing to go.

The forest on both sides of this ridge were thinned for the third time in the fall of 2013. The foreground cover is native needle grasses.

From the hilltop looking east. The green “groundcover” is French broom. Within four months it was far denser and 2-3 feet tall (3-4 feet in six months when I whacked it). Note the higher density around the edges of the burn spot in the foreground, a typical fire response for French broom. Please imagine what it would look like a year later, with the broom 6-10 feet tall. That is what weeds can do, explaining in part why I became such a zealot for removing them. The process of getting control of broom took a decade, and the weeds that followed it took another. Sometimes it is hard to recognize the same spot after 20 years, but this is an easy one. Sort of.

I had already removed a few trees in the background, but one couldn't tell that from this photo. Instead of broom, the foreground is primarily Spanish lotus *(L. purshianus)* and needle grass *(Stipas pulchra and lepida)* from planted plugs. The grass was harvested, and the straw with seed still on it was spread on top of a patch of small-flowered lotus *(Acmispon parviflorus)* in the mid-ground.

One of the things that happens when you do repeat photography is that you notice how much things have changed. Seeing that my grassland was disappearing before my eyes I chose to take action, taking two or three trees on the right and doing a substantial thinning on the slope to the left (for several reasons we'll get to later). The flags in the foreground are part of an experiment we'll also discuss later. Removal of those trees resulted in a predictable irruption of weeds, even after 20 years, starting with broom.

Looking south from down the ridge, the groundcover was all French broom. By February, with the addition of new seedlings, the broom had made an 18” carpet over the tops of our feet. By May, that carpet was a blanket, three feet tall. This spot was hard to find again for a repeat photograph, but for the fact that I such strong memories of that little branch. Over 21 years, things had changed a bit.

I had done something “clever” when I removed that branch by leaving it there. It had bugged me for a long time as typical of the kind of horrible pruning done the guy who cleared the land before me and the guilt that I had not got there to fix it. Year after year, I’d see it, while whacking or spraying broom, but I didn’t have a saw at the moment and it wasn’t an urgent matter. It had taken me so long to get a chainsaw up there that when I finally did the job the cut was tricky because the “wound-wood” was in so deep. When finally I got it out, it was a ***very*** pleasurable moment. So I left it there as a memento, the kind of thing that would mean nothing to anyone else.

Without that branch I was honestly unsure it was the same tree, even though it was seemingly in an obvious location.
The tree had grown and the area had changed so much that for the first three major revisions of this book, I didn't notice that I had the scan of the original negative backwards!

When we first moved onto the property, there were perhaps 60 active plant species. However, that total understates the problem. If one had counted only those with a substantial presence (as opposed to isolated individuals), the total number falls to about 20, mostly trees, broom, and a few native shrubs. Once the broom was removed, there wasn't much else. This became our sand hill. If you look carefully, there is evidence from the breaks at the top and bottom of the slope on the left that this spot was once a sand quarry.

The Sand Hill Road I added (red line) was not optional; it was backup drainage for the driveway in case a culvert plugged, and to protect repairs below that would be subject to slope failure without it. I also needed the fill material. Today, I wouldn't call it picturesque but it is one of the most species-rich and complex parts of the property, supporting many plants that one would prefer not to have elsewhere.

This was the site of an old cabin, reportedly burned down by careless hippies in 1979. The fire started the eucalyptus and acacia, exotics increasing their dominance after disturbance. Half a dozen of the eucalyptus were 4 foot diameter monsters (not shown here). The timbers on the right cover an old 30' dug well that still produces water most of the summer. I may put a hand pump on it someday.

The channel cut into the left side transits water that comes down from our “Sand Hill Road” thus avoiding an eroding road cut I filled in that once ran up to this house site. Although I have had to dig out the sediment every 20 years, it has required no other maintenance beyond weeding. The native groundcovers started as stonecrop and have succeeded to *Navarretia spp*, *Calandrinia ciliata*, and *Trichostema lanceolatum.* Now the grasses are coming in. There are many weed threats in a sunny spot like this.

The first order of business was reducing that potentially fatal fuel load before it blew up into a total catastrophe. Just clearing the house site and thinning 2 acres thereabout generated 35 cords of firewood and the equivalent of thirty dump trucks worth of tree tops. **Note that there is no groundcover here other than French broom sprouts.** We gave away the firewood and burned most of the trimmings in some truly spectacular piles (one of which took a week for the coals to burn out). The fire captains of that time were more tolerant of such behavior; thank you Hank Epling, Steve Beechman, and Mike Biddle (all since retired).

I had to move for this repeat because of the road. Note the concrete drain; the driveway needed a hard drain channel because it is just a skin of extra fine chips on base-rock sealed with oil (oil works well here on a hard base, if one maintains it). The County road, although of poor original construction, has been there for 150 years, paved for the last 40 with but ¾" of oil and screens on bare dirt.

The areas outlined in red were burn piles. We cleared this draw in the winter. We had some monster fires in here. The one in the foreground was a pile 60' long that a bulldozer had made out of broom 8-10 years prior. The hillside behind is all broom sprouts because it had been cleared the prior summer and the seeds had germinated in the fall.

I moved back and to the right for this repeat to show more of the change in vegetation and less driveway. This is a mix of about 15-20 different groundcovers, about 25% of them annual. Some of the best soil on the property is down the middle of this draw.

This is from roughly the same spot panning to the right. This is what I will call a “Phase 1 thinning” in which I am simply making the area passable. It was still too dark to support groundcovers. This stand had encroaching conifers and very few decent oaks left. The fir tree had a split top some 40 feet in length with a rotting crotch immediately adjacent to high voltage power transmission lines.

The third time I thinned here was 2013, removing the last conifers. Here you see recovering groundcovers and shrubs along with a young oak I'm trying to save suffering from "sun scald" due to thinning. Deciduous oak seedlings have been planted in baskets.

Here you see what is as close to a natural opening as we had on the property when we got here. Why there were so few trees and brush here I do not know, but it might be fungal. I had hopes for the oak noted on the left but it died, possibly because of competition with the redwood, (the soil went untouched for 30'. There is no groundcover farther under the trees, although there were a few dead manzanita and LOTS of impenetrable *Ceanothus cuneatis*. There was broom here in the foreground, but it was barely getting started.

This is a decade later. We have native groundcovers recovering from my having killed hedge parsley that came up when I thinned the canopy and chopped the Ceanothus. The red dashed line indicates what I once called a “dark barrier” between the opening in the foreground and one I had made behind it. I also graded a road that had once crossed the drainage but washed out. In doing so, I knew that the oak in the foreground would get root rot and die, but it was already old and we were able to enjoy it for many years.

I have no idea why the oak indicated on the left died. You can see that I have taken some of the conifers out with the rest about to go. This photo was taken just before thinning our the stand in the background and killing the sprouting redwood stumps. By this time the oak in the foreground had a large *Tramete* at its foot.

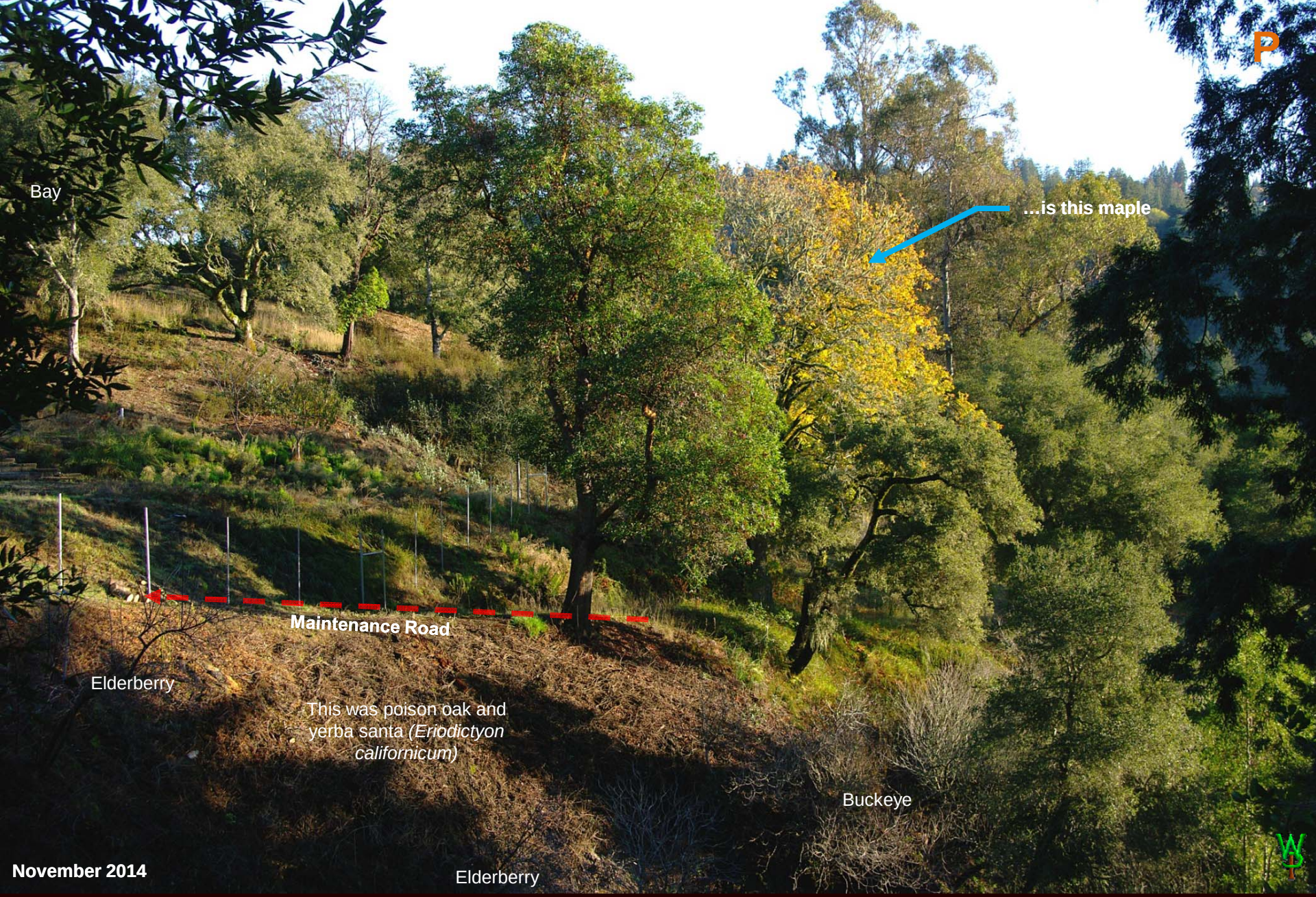
Sometimes you get lucky, as I didn't plan this series at all. The groundcover response to this thinning should be tremendous. This is the fifth time I have entered the area at right to thin (the second in the far background), first to make it passable, second to get some groundcovers going, third to remove the fir, then I thinned to the upper right, and now this. I left a few more in the background to reduce the shock of a sudden increase in sunlight. I will thin again to make room for thinning the redwood to the left.

Due to succession and fire suppression, there were quite a few medium and a few large Douglas firs. We removed them on steep slopes, in oak forest, and on higher ridges. We kept them on the edges of redwood stands. At least three of the larger fir trees were adjacent to power lines *and* had trunks split double, all over 30 feet long (the power company does not trim more than ten feet away from wires). "Forked top" trees eventually break and the tops could then fall on the lines (disastrous in summer). This area doesn't look terribly steep, does it? Keep that in mind noting how dense that vegetation is on the right, as you look at the next photo.

Yes, this is the same area! The prior photo axis is the big red arrow. The dense cover you saw was just below the “maintenance road.” The slopes to the left average 15-25% (rise over run). About 6’ to the right of the road, it drops off at well over 100% (1:1, or 45°). Our house precludes repeating this photo. The burn piles in the background were the third or fourth round that winter.

It gets just a bit steeper as you move down the slope (this photo was taken from about a 100' to the right of the one prior). That dense vegetation (mostly fir and acacia) went all the way down, all of it over 45°. Some of it is a vertical sandstone wall about 18-20' tall. Imagine the kind of fire that would have come up this slope with that much fuel (I don't want to). The 160 foot tall eucalyptus just to the right of the text is now gone, as you will see in a few more slides. We lived in the trailer before beginning the house.

There are so many sapling trees and shrubs on the ridge from which this was taken that I had to thin it again to get a better retake. The remaining eucalyptus, are on our neighbor's land, planted to hold up the road. Note the buckeye that moved in (in flower at the bottom). They store water in their tissue, lack fuel value, shade out grasses, and allow broadleaved groundcovers.



So I thinned the many sapling trees and shrubs on this ridge and chopped just about everything on the slope opposite (I would have to remove the bay on the left to get the original angle, which is in the plan). You will learn more about how this kind of programmatic disturbance and species selection may stabilize this system later in the book.

A few words on clearing in principle are necessary. A lot of people believe forests should remain unbroken. Others argue that wildlife benefits from "edge effects," with chaparral cover near openings containing forbs as a source of food. I belong to a different camp, preferring a forest/savannah of variable and continuous edges, so to speak. There are a couple of related points I want to make about clearing this place, one of which is subtle to some people.

First, some of this forest was composed of exotic trees that had to be removed. You don't get your choice as to where those "clear cut" clearings will be.

Second, every system needs its full compliment of plant and insect constituents or it loses those species which historically responded to events, whether fire, flood, decadal drought, cataclysmic events (super-volcanoes, asteroid collisions…). Periodic clearings maintain the viability of those constituents by reproducing fresh seed.

Third, given this history of this site, the fuel all around it, and the weeds present, both surrounding it and in the seed bank, if anybody wants an original compliment of plant and insect life to continue to express itself, SOMEBODY familiar with it must disturb small areas periodically and weed them or those plants and insects will eventually go extinct. Guaranteed.

Thus, there is no "end" to this tree selection and weeding process, as is illustrated here.

Here is that same area in 2010 (from lower down to avoid the tree tops). The groundcovers on this ridge are all new (even more extensive behind the redwood saplings on the right), primarily native blackberry *(Rubus ursinus),* yerba buena *(Satureja douglasiana)*, Torrey's melic grass *(M. torreyana)*, *Melica imperfecta*, and poison oak *(Toxicodendron diversilobum;* it's fine here as long as it stays on the ground), with a single tiny patch of skullcap *(Scuttelaria tuberosa)* to the left that I propagated from tubers at home. The shrubs are occasional ferns, roses, pitcher sage, and hazelnuts, with the toyon and manzanita having large burls, indicating that this was once a site subject to occasional fires. Down the middle are mostly clovers and lotus. Although (now) very clean and seemingly remote, this site requires vigilant weeding because it is so close to our neighbors. If the Ceanothus on the end of this ridge burns, there would be no protection from blowing seed or wandering animals loaded with weedy burs. Note also how the canopy is closing.

This spur serves several purposes: It is a fuel break, a place to turn the truck around, a safe place to burn, and a place to process logs. It is important therefore that it not become overpopulated with trees and the canopy stays open for a minimum width. So, given that we must remove some fir trees dying from beetle attack and fungal diseases, I needed room to fell the trees and process the logs. So I opened it out in 2015. I love this spot, despite that this is some of the worst soil on the whole property.

Our house site, February 1991

As you read this story, you will see the twin requirements for (1) an enormous amount of site-specific knowledge and (2) an equally enormous labor input over a long period of time. Importantly, the number of immediate decisions to be made is way too great for someone in a remote office to manage without making a mess of it, even if the weed seed bank is successfully purged. Efficient remote control is an impossibility. Detailed knowledge can only be acquired and the work done efficiently on by living on site.

As a direct result of that reality, there is one other ecological reason for a small clear-cut, one that occurs to almost no one: ***The people who care for the land need a place to live.*** I could go on and on about how banks and building codes must change to reduce wildland impact (I’ve long dreamed of designing mobile houses for rough terrain), but no matter what, for the foreseeable future, there will remain a need for residential proximity with which to develop that knowledge and respond to numerous and rapidly changing conditions. Then there is the not infinitesimal matter of paying for it all, and it is not cheap.

I am the keystone element on this land (one that, without it, the system fails). Sometimes it feels like a burden, others like a privilege. I hope to record, teach, and impart as much as I can of what I have learned, but the fact remains: If I stop doing this work, things will deteriorate very quickly. The Wildergarten is not and should never have been “Natural” (at least the way we define the term).

I know, your brain is probably pounding with what you think are exceptions, but in my, now long-experienced opinion, it is invariably true.

Repeating Bears Repeating…

This chapter took a traditional, albeit less-than-precise approach to repeat photography, namely, all of the photographs were taken at landscape scale. The problem with the approach is that it cannot at all discern what distinguishes this project. At any more than 50 feet, 'So, he cut some trees and it's all green. What's the big deal? Anybody can do that.'

Clearing trees and killing broom is part of the story here all right, but it is not even close to the majority of the work that was done. The focus of this project is on plants too small to be discernible on a landscape scale. Yet post-disturbance native annual plants (as are typically found in grasslands) are the key to that which underlies all of what happens on the landscape scale for both plants and wildlife**:** microbial life in soil, the foundation underlying the biological food pyramid.

Hence, the central emphasis of this book is about grasslands, forbs, and soil, not forestry, which (hopefully) an increasing focus on microbial and insect life. Forestry and brush removal was necessary to make grasslands and other forest understory groundcovers possible. There were no groundcovers to speak of here when I started.

It is physically impossible to communicate the scale of that detailed challenge with repeat photography because the critical plants to remove or recover are so small. To distinguish them, one must photograph a small area. Yet to document an accomplishment of any note, one must record numerous types of groundcover each covering a substantial area too large to identify them with still photography. The resolution of even the finest cameras can't do it. It might even be impossible with video!

So, the next chapter makes a paltry attempt to communicate detail, being perhaps the most important and least likely to be appreciated chapter in the whole book: Pure Germination of Native Annuals

Such is science, in that to my knowledge nobody else has even attempted to accomplish what you are about to see. If I'm wrong about that, please let me know as I would enjoy the company.

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