# Project Overview

This is has been a massively multidisciplinary project. Not less than the life-science demands of botany and horticulture are drainage, road construction, geotechnical engineering, and the skills to build and maintain specialized equipment involving everything from carpentry, plumbing, welding, masonry, electrical and computer skills. Toss in analytical skills, written and graphical communications, and you have a discipline demanding a broad based range of education and manual or technical abilities. Importantly, those skills must be acquired when one is young enough to accomplish something within the span of a project spanning thirty years. Luckily, I was not only an engineer, but had spent my early adulthood restoring antique yachts to pay for college. One picks up quite the array of skills doing that kind of work.

The reality of this kind of work is that the conditions dictate the course of action. When we bought the place it was a fuel bomb, so I started with fuels management. There were 10 acres of broom, there were big eucalyptus trees, and there were stands of acacia trees. Effectively, “weed removal” started as clear-cutting whole stands of exotic trees and brush. It was a twofer, weeds that were fuels! Yet to remove the eucalyptus I had to fix roads, etc. Once that was done or close to it, I had to deal with what comes up after the exotic removals and pushing dirt around, which at first was primarily broom. So from the perspective deriving priorities, the way it started out, while it may have been a big job, it was very simple.

After spraying broom, native grasses started coming up; I thought I was a genius! Then up came the rip gut, the hedge parsley, the bedstraw… worse, in came cat’s ear. Weeds destroyed those grasslands, took over the clear cuts, and spread fast into my thinned out oak forests. Things got desperate. Quickly. Why? I had no certainty on what was native (my weed book said bedstraw was) and the workload was so pressing I had to prioritize, for which I paid dearly later. I chose to deal with cat’s ear and focus the rest of my attention on learning to identify the weeds.

The probably confusing graphic (to come) really is meant to help you understand the priorities amid these many demands. It shows each respective aspect with regard to its output (such as acreage or time required) against competing demands over the relative time available on a seasonal basis (depending upon whether I was working a career or writing a book). Later in this book, some of the timelines are broken down into sub-project lines to give a sense of the change in emphasis within that particular project OR the way that development projects or experiments fit together conducted in parallel.

“Comprehensive management” was a better way to organize the work once spot spraying and hand weeding became the dominant control processes, but it was certainly more complex. I had learned enough about the place that I knew the spatial distinctions as regards solar exposure, temperature band, typical native cohorts, and soil moisture and composition. I could then apply that knowledge to weigh the respective attributes with which to develop weed control strategies for each location, and then, depending upon the weather forecast, stitch the locations together into an overall plan, *each day*. The property and its control boundary fractured into over 100 distinct areas, each with a name and a “plan.” When I say “plan” I want to be clear: There was no time over a period of almost ten years during which weed control was not an all-out dawn-to-dusk effort for at least six months. It didn’t have to be so enormously expensive, but that’s development work.

# More Overview

Variations on the graph (next page) will occur throughout this presentation. It is not quantitative in nature but meant to show my management priorities amid the usual constraints of time and resources. The point is to both impart something of how I arrived at various decisions and how physical reality governed those choices. For example, when all one has is an overgrown forest of various types, one has little option but to concentrate on forestry. But when a stand is comprised only of exotic trees, (with but one very minor exception) I simply clear-cut them. Once you have a clear-cut, exotic, brush removed, or an area that was graded for drainage purposes etc., it is logical to deal with the weeds that come up. When those weeds are wind-blown, that ends up being the first thing to go. When the forest understory responds to thinning with a fast-growing weed with an enormous and enduring seed bank, its control becomes a priority. I learned that it is wise for the soil to go through the usual successional sequence, whatever that turned out to be. An oft expressed phrase at that time was that I wanted to 'let it show me what it wants to be.' I learned over the longer run that "it" can get confused because of the site history, but post disturbance observations remain a critical input to my decision-making.

The fat colored vertical bars forming the background represent the context of other commitments influencing tactical choices. Actual time spent on any one project is constrained by the "commitment" line at the bottom governing each line (engineers call the combined result a "convolution" :-). The pink bars on that line represent the seasonal contributions of my two daughters, who for several years weeded in the spring instead of getting a summer vacation. They were educated here. Obviously, one can only devote parts of weekends or vacation time to this kind of work when one is an engineering R&D project manager with responsibilities on multiple continents. Included in those responsibilities were the usual time commitments to commuting, daycare, and childrearing. Effectively, the first decade of our time here was devoted to those commitments: forestry and infrastructure, broom, and the writing of my first book (*Natural Process*), which was an enormous effort.

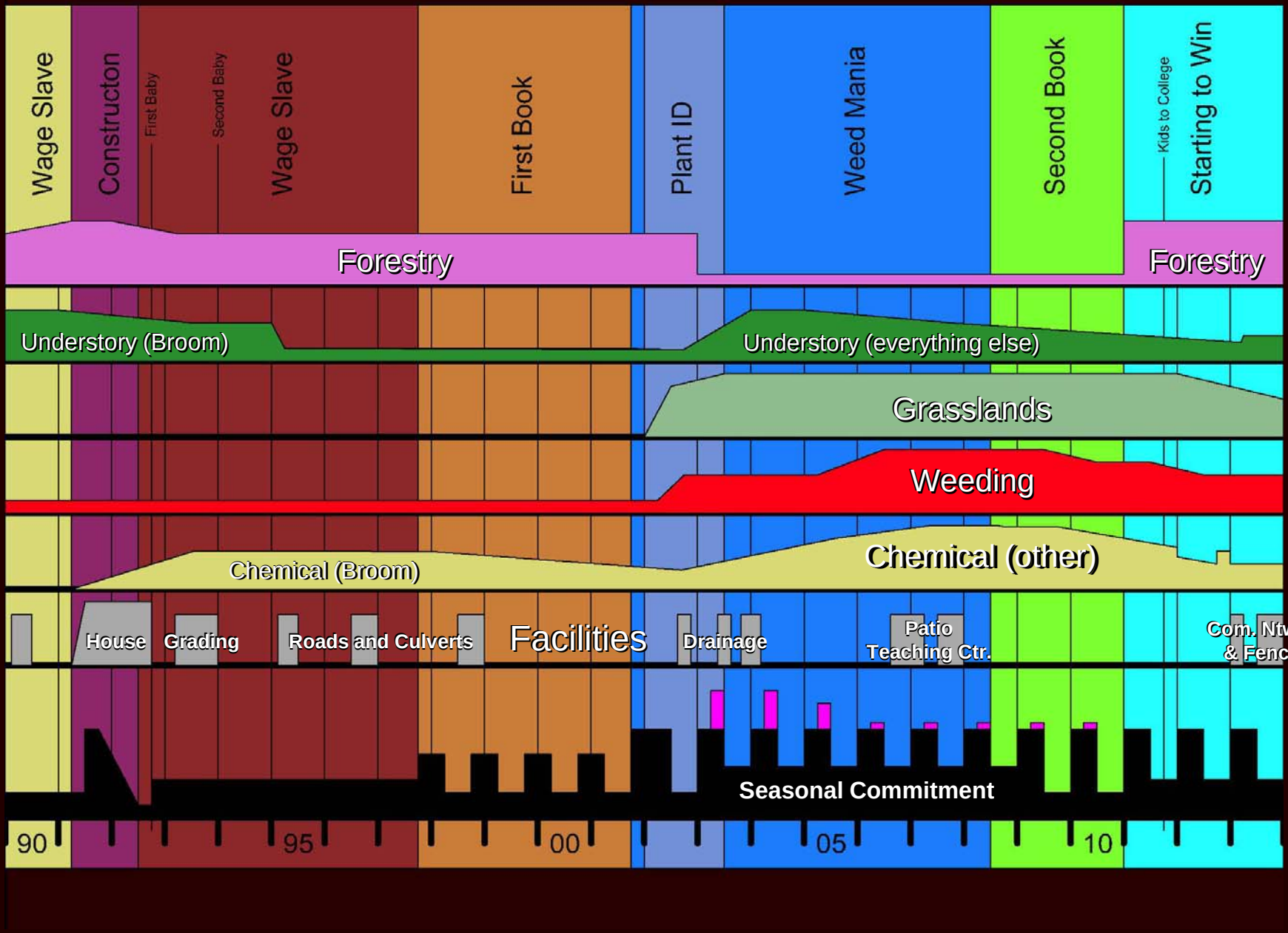
The decision to focus on grasslands was a fundamental one discussed among the slides. Between the horror of our experience with cat's ear and the commitment I had made in *Natural Process*, I realized what I had to do. As that process came to fruition and I learned that no one had ever got this far, I realized that I had a responsibility to discharge upon having acquired unique research experience. Along with various grassland experiments, forestry came back to the fore.

Finally, I wish to add this caveat to what you are about to read: This is a report, not a series of recommendations. This is about what I did, what I learned, what I face, and what I am trying to do about it, not what I am suggesting ***you*** do. I am not providing specifications or advocating any particular approach or method, although I will certainly tell you my preferences for what I did. Every situation is unique. The degree to which what we did here is applicable to you and or your situation is your own conclusion and responsibility.

OK, enough of the legal disclaimer. Let's get to the project.

# Project Overview

**Further explanation is on the next slide**



# Discussion of the Graph

The first priority was a fire-safer place to live and fixing roads and drainage to maintain the land while I worked an engineering career. The second was eliminating French broom. The third was exotic trees. As I was writing *Natural Process*, (unknown to me) cat's ear destroyed what native grassland I had. Once I nuked that, I battled the residual seed bank of a series of weeds over a period of most of a decade.

Knowing that I was working from my childhood understanding of "what belongs here," my biggest problem was uncertainty re what was native and what was not. I bought books, took pictures, and studied photographs online (which were pretty sparse back then). Once I had done what I regarded as due diligence, I asked for help and got it from Dr. Grey Hayes of the Elkhorn Slough Coastal Training Program. He came, I pointed, he told me what it was, and I took notes, saying things like "it's dead," or "good, I don't have to worry about that any more." Over the next year, I sent him dozens of photographs by email, bought more botany books, and started to get a real grip on what's what. The species list grew to what it is today.

Then came *Shemitta,* my second book. Yes, it is a Biblical book, but as a whole, it is more linguistics, range and forest management, history, political science, and cultural anthropology than it is spirituality per se. Through that process, I came to realize some observable truths about multidisciplinary biological, social, and geophysical processes that turn scientific heads at major universities. In any event, as valuable as that process was, it was and remains a commitment.

Although I could have kept my mouth shut about that, my point in telling you it is that although this process encompassed 25 years (2014), it was only maxed out for 7-10 months per year for about six years. As the grasslands have come under control and as my processes have become more efficient, I now have more time to get to what I wanted to learn than I had a few years ago (including to write this book). As I introduce more disturbance into the system, that may yet change, but for now, things are clearly getting easier. I now believe that what we accomplished might have been done in half the man-hours I put in. It might even require significantly less than that if the experiments upon which I am now embarked prove out.

Needless to say, that does not mean I believe one could do this in three or four years. The way weeds suppress germination governs how fast one can purge that "weed bank" which, from what I can tell, must be done a "layer "at a time but there may be ways to accelerate that. So what I am saying is that because of these efficiencies, one could do other work, handle more acreage, or some combination of the two, which is the "good news" of this particular book.

The central role played by herbicides should be glaring. Does emphasis mean I sprayed a lot of material? No. It means that it was a big part of the job. Was it necessary? At this point, with regard to broom, grasses, and small forbs, yes it was. Does this mean you should worry that a bunch of people will follow my lead and go out hosing the landscape with chemicals? If that's all they do, then they will fail. **In every case I have always followed spraying with rigorous hand-weeding.** Weeding is so much work and takes so long that you should have no worry at all about large numbers of people following my lead. So I ask that for now you suspend condemnations about chemicals until having seen all of the photographic evidence.

# This Is the End of the Beginning

You have just completed all of Part I, the introductory part of this book.

This picture book suggests two alternative paths:

1. Read this book linearly, going through the remaining 29 chapters, OR
2. Finish the first six chapters of Introductory Part I and then jump to Part V, the Project Context indicated with the “Globe” icon on the next page**:** These are five chapters discussing contextual issues regarding the large-scale damage being done to native habitat by the current public preference for politically-determined “environmental protection.”

This project progressed through time while the book’s chapters are arranged by topic. When possible, the topics in the detailed section are arranged in temporal order because our emphases changed over time according to what was learned. To avoid redundancy, the detailed path presumes that you have read each chapter in order.

## Navigation

1. There is a Table of Content the end of every chapter (next page).
2. Each line in the Table of Content is a link that opens the corresponding chapter in a new file.
3. The Wildergarten Press logo  on any page is a link that takes you to the Table of Content at the end of that chapter.

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# Table of Content

Each line in the TOC is a link that opens the corresponding chapter in a new file.



Next