

# WILDERGARTEN

*The thing that differentiates scientists is a purely artistic ability to discern what is a good idea, what is a beautiful idea, what is worth spending time on, and most importantly, what is a problem that is sufficiently interesting yet sufficiently difficult that it hasn't yet been solved, and yet, the time for solving it has come.*

Savas Dimopoulos

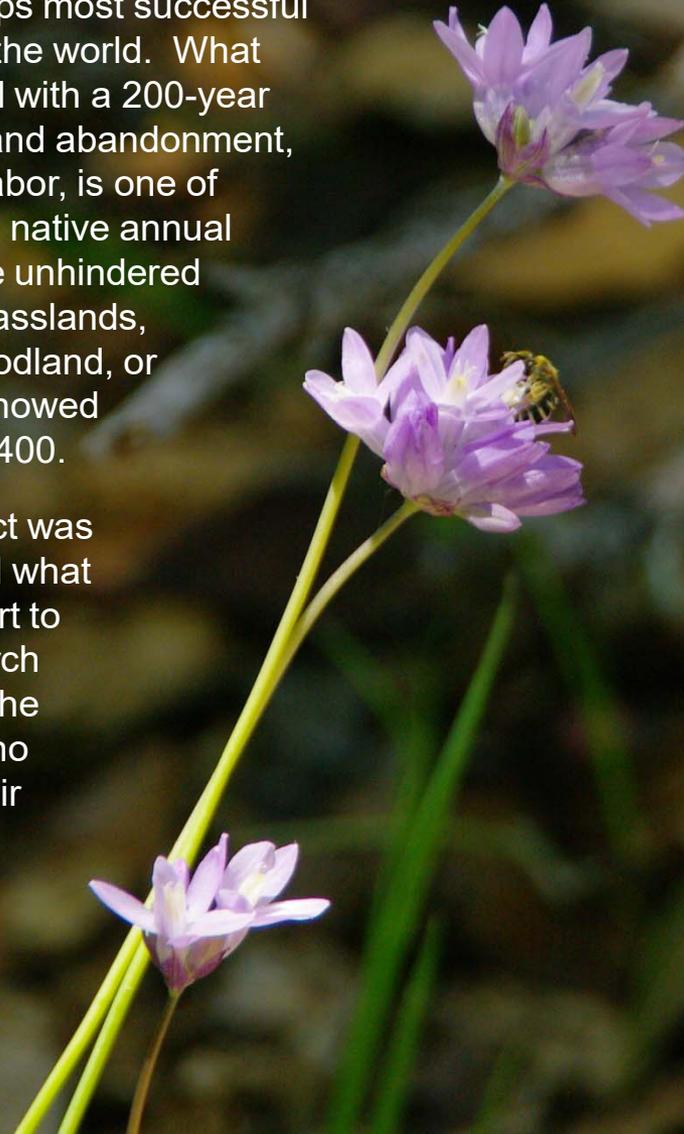


# WILDERGARTEN

This picture book of over 1,800 pages in 31 separate files consists primarily of photographs. It documents an ambitious, detailed, and perhaps most successful native plant restoration project in the world. What began as a badly damaged parcel with a 200-year history of weed invasion, abuse, and abandonment, today, after 34 years of arduous labor, is one of the few places in California where native annual plants can express and reproduce unhindered by invasive exotics, whether in grasslands, sand hills, conifer forests, oak woodland, or chaparral. A property that once showed only 60 plant species, now nears 400.

Here you will learn why this project was begun, how it grew over time, and what was learned. This book is an effort to capture and share process research and development information for the inspiration and benefit of those who love the land enough to invest their own time and money to bring the land back to expressing its native variety, vitality, and beauty.

It really is possible.



# WILDERGARTEN 6.4

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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 found in my second book CD, *Shemitta: for the Land Is Mine*. Major revisions are for complete rewrites. Decimal revisions are for revised chapters or navigational changes and are not archived. Directories for back rev chapters are viewable at 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](#) [4.3](#) [4.4](#) [4.5](#) [4.6](#) [4.7](#) [5.2](#) [5.3](#) [5.4](#) [5.8](#) [6.0](#) [6.1](#) [6.2](#) [6.3](#)  
[6.4](#)

Revision Date: October, 2023

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, DOI: 10.13140/RG.2.1.1926.2809

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



# PEOPLE WHO HELPED

## PEOPLE WHO TAUGHT ME SOMETHING

Dr. Grey Hayes, Elkhorn Slough Native Plant Reserve, who did more than anyone else in teaching me how to identify the plants we have here; Randy Morgan and Dylan Neubauer, botanists extraordinaire; Barrie Coate, Certified Arborist; Mark Hylkema, Archaeologist, California State Parks; Steve Rich, Rangeland Restoration Academy; Josh Fodor, Ecological Concerns, Inc.; Dr. Charles Kay, Utah State University (a hunter and generalist in Native American archaeology, and wildlife biology); Al Keuter, oak geneticist; Christian Schwarz, fungus wizard, Fred Emery introduced me to Dr. Karl Butzer's ecological archaeology; Mike Duguay and Jerry Cone Registered Professional Foresters; Dr. Rich Zollinger, North Dakota State University weed science, and Natalie Vande Pol, one of my two daughters, who once shared what she was learning and dug up papers for me.

## PEOPLE WHO ENCOURAGED ME (IN ADDITION TO THE ABOVE)

Robert Alverts, President, Society of American Foresters, Steve Staub, RPF; Pat Regan, (then Rana Creek Habitat Restoration); John Fund, *The Wall Street Journal*; Dr. Kat Anderson, UC Davis Ethnobotanist; Brett Hall, UC Santa Cruz Arboretum; Craig Dremann, Redwood City Seed Company; Dr. John Menke, Professor Emeritus Rangeland Ecology, UC Davis; Karl Duff, People for the USA; Dr. Vic Kaczynski, Consulting Fisheries Biologist; Jim Hanson & David Amme, California Native Grasslands Association; Jeffrey Caldwell, grasslands consultant; Henry Lamb, *Eco-Logic Magazine*; Dr. Kevin Rice, Grasslands Ecology and Dr. Sharon Strauss, Restoration Ecology, both at UC Davis; Jan Jacobsen, Director, Everglades Institute, who offered a willing and educated ear and constant encouragement.

## PEOPLE WHO WORKED THEIR TAILS OFF

My two daughters Natalie & Katherine, both of whom have become outstanding researchers now as graduate students for PhD degrees. For 3-4 years they did much detailed weeding in spring in lieu of a summer vacation. Roger Wicht (RIP), an artist with a bulldozer and the guy who did more than anyone to get me involved and thence find my purpose of life. David Wicht, ditto with a backhoe. Steve Liebenberg, chainsaw genius; Howard Liebenberg, maker of magic with base-rock and oil; Dick Rose, the man who made our house possible.

## THE LADY WHO PAID FOR IT

My Dear Sweet Wife, Diane, who had the faith in me to tell me to go for it, with no idea what that would entail.



# WILDERGARTEN

For 34 years, starting out of what could only be called sentimentality (or extreme hubris), our family has been converting our mere 14 acres back to native plant habitat (*Wildergarten* was the name on the plot plan when we applied for a building permit in 1990).

When we began this project, I was not what any rational person would call an expert in restoration ecology, but then neither was anyone else. The first formal college classes in the subject were offered not long after we began. As things are now, experts in the field have brought their students here to witness what can be accomplished, and yet we have no intention of ever being “done.”

Habitat restoration is a life commitment, a physically, mentally, and financially demanding profession, sometimes as much engineering as it is biology. Most of what little has been attempted has been confined to expensive government or corporate-funded projects, most showing debatable results or worse (including total failure).

How expensive? **Since the year 2000, California taxpayers have bought over \$28 billion in bonds for “protecting habitat.”** Yet after all that, there is only one (1) place that has returned long-infested grasslands to **99.6% or better native purity** including small annuals, and it hasn't cost you a dime.

That place is the *Wildergarten*.





April 2015 – Annuals mature amid perennial grasses; I like to call the effect “fall color.”



When we started, perhaps 60 plant species remained visible, mostly trees and exotic French broom shrubs by area which then dominated what became grasslands. Today, the Wildergarten hosts **392 plant species**, of which 253 are native. I was later to learn that our weed battle was against a 200-year history of intensive weed introductions and that “preserving” an overcrowded forest was perpetrating a biological catastrophe. Altogether, according to the botanical record for this immediate area, **over 80% of the native species they found were no longer reproducing**. They were well into the process of going extinct here.



**I had removed some bay trees that were about to pry out of this steep, crumbly sandstone wall. Had they fallen, they could have destabilized the whole slope. They were also a terrible fire hazard and suppressed groundcovers beneath them. Removing the trees brought a blast of weeds that came from dormant seed, principally bedstraw, crane's bill, and rip-gut brome grass. It is vertical in places here, but that does not stop rodents from spreading weeds.**

**I am not recommending that you try this.**

**Yes, there is a rope. No, it is not climbing gear.**

This is a love story about our little piece of heaven. It tells the history of our project and the discoveries it has wrought. It contrasts it with the surrounding area and details the threats to its continuity, threats largely due to popular environmental policies and beliefs.

This book is not the usual green alarmism, although it does reveal facts that are alarming. It is not a call for more government control, conservancies, land trusts, conservation easements, parks, or wilderness. I am not advocating mandates, rules, subsidies, permits, or regulations; indeed, quite the opposite, because only a wealthy economy can afford such expensive work.

In 2002, when the nativity of all ecotypes represented here became the goal, the principal aspects were three:

1. To be an example of what private land management can do,
2. To develop, test, and sustain several types of native plant systems under various management methods and conditions, and
3. To perfect processes, tools, and methods to bring 99.9%+ native cover (including annuals) within reach of a middle class landowner within 5 years.

This has been a sustained effort to learn-by-doing, to undo the damage of ignorance and neglect, and to restore functional, productive, and varied plant, soil, and insect habitats, to learn how the world around us really works. Learn from this walk how things look in our back yard, so that you can be more successful in yours!

This book has **31 chapters in separate Adobe reader files**. The 7 introductory chapters cover background history, rationale, how it went, results, and project organization. Some get technical, so you might not be interested in them all. Each chapter has a Table of Content page accessible by clicking any  logo.

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

These are LARGE files; they do take time to load

Please offer suggestions and comments [HERE](#)

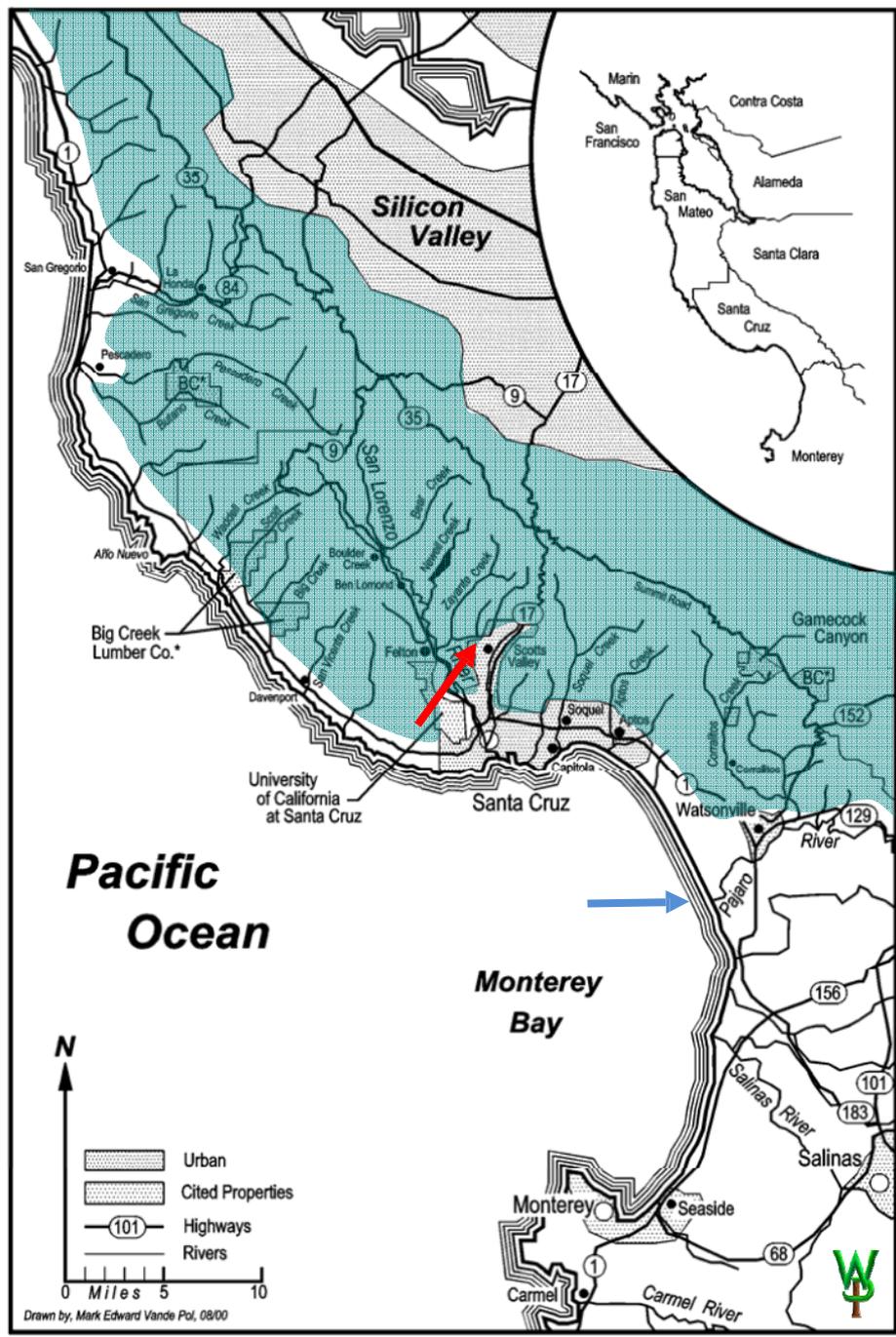
References are [HERE](#)

More [Picture Books](#)

Other [Writings](#)

Wildergarten [HOME](#)





The setting for this story is in the Santa Cruz Mountains of California (**shaded area**), a range of steep and densely-faulted marine uplift hills extending parallel to the Pacific coastline from San Francisco south to the Pajaro River (**arrow at left**). It is a rugged, highly erosive, and geologically active system producing a complex array of soil types which vary frequently from crumbly sandstone, to clay, to shale, and occasionally decomposed granite. Most stream beds are deeply incised. Steep canyon walls receive a wide range of sun and shade conditions depending upon orientation.

The climate is coastal Mediterranean. Summers are almost entirely dry with temperatures sometimes varying 50°F the same day. The coastal hills complicate onshore winds inducing inland summer temperatures on ridges that often rise to over 100°, while canyons 200 feet below can have a marine climate 15° cooler. The winters can produce anything from 8.5 to 125 inches of rain in five months (20-50 inches being “usual”).

This region is one of the great biodiversity reservoirs of the world. The North Coast redwood ecotype ends at the southern tip of the range overlapping the Central Coast ecotype which extends north to San Francisco. There is even an island of Sierra Nevada foothill species in **Scotts Valley!** These three genetic overlays produce unique combinations of plants that, because of the terrain and weather, can change completely in a few feet. Habitats include grasslands, chaparral, forests, rivers, and coastal beaches, dunes, cliffs, tide pools, and estuaries.

Favorable weather conditions and a turbulent history of mining, timbering, farming, abandonment, and development have resulted in long-established and still spreading infestations of exotic species in very damaged soils. Our property alone once hosted over 120 exotic plant species. Fire-suppression has allowed forest to cover over much of that exotic seed bank, making the situation for native post-disturbance annuals particularly dire. It is a biological system **much more damaged than is commonly understood** and it is rapidly getting worse.



February 1990 – Our house site, with bales of exotic canary grass (*Phalaris minor*) for erosion control; I'm STILL finding it. Left alone, the French Broom seedlings around Diane would be 6 feet tall within a year.



Our project grew out of simply building a house on abandoned land to start a family. The place was so overgrown that the first ten years was merely an effort to do something about the horrific fuel bomb surrounding our new home. 10 acres of it was exotic French broom, (*Genista monspessulana*), exotic Eucalyptus and Acacia trees, and a dying oak woodland being invaded by Douglas fir. Jobs, raising kids, fixing roads and drainage, putting in fruit trees and a garden... It was busy. I had no idea what we would later attempt.



← This tree...  
See page 28



May 1997 – After broom was under control, this cover was entirely an exotic brome grass sown to County specifications to **prevent erosion**

When we started, perhaps 60 plant species remained visible, by area mostly native trees and exotic French broom shrubs which then dominated what became grasslands. Thinning the forest had helped in some respects, but at first things got worse because we didn't have much of a native seed bank left; we had an exotic "weed bank," made worse because my ignorance allowed it to breed before I understood the consequences. I was later to learn that this represented a 200 year history of weed introductions in this area.





← The first black oak  
(*Q. kelloggii*) I planted

← The first *Ceanothus papillosus* to reappear

4 7 '01

April 2001 – The trees and shrubs are native, the groundcovers are all exotic.

For the first ten years I was an R&D project engineer with international responsibilities, carpooling with the wife and two small kids in daycare. I had a lifelong love of nature, but was no botanist. I wanted native plants, but “knew” the practical limits. I had killed 10 acres of French broom until it was easily controllable. Then rip gut brome came up and was mowed that into submission. We even had a small patch of native small flowered needle grass that I cherished. By all standards at the time, I had done a “good job.”



June 2006 Smooth cat's ear (*Hypochoeris glabra*)



Then I made the “mistake” of “getting involved,” trying to convince environmental activists, who thought everything “natural” was best left alone, that thinning an impacted forest could generate money to take out exotic brush and fix neglected roads, but they didn’t want anybody doing anything about the mess. After learning about the hidden agenda of their financiers and their compliant bureaucracies, the next four years were spent writing [a book proposing a market architecture with which free enterprise could do a better job](#). Writing a book is an exhaustive commitment. I was “too busy” to notice when cat’s ear first blew in (above).



May 2008  
This is but ONE hairy cat's ear  
(*Hypochoeris radicata*)  
About 50 seeds per head. I have  
counted 70 heads on one plant.



Cat's ear is "the dandelion from hell." It sprouts so densely that when it heads out, the ground looks like dirty snow. Our grasslands were paved with it within only 3 years. The tiny specimen on the prior page is an annual. The one above is a perennial.



May 2008  
(*Hypochoeris glabra*)  
Along the County road



Cat's ear is not physically exclusive; its roots exude chemicals that suppress or kill off other plants attempting to germinate. It is toxic enough to cause Stringhalt's disease in horses. I killed it, simultaneously realizing that, while I *could* kill everything, I didn't know what was native well enough to spare it. Two years later, once I did know which was what, then it was rip gut, then hedge parsley, then bedstraw, then chick weeds... I realized then that there wasn't much left of the native seed bank. It was a weed bank.

ENVIRONMENT / POLITICAL ECONOMY \$29.95

# Natural Process

Environmental Management  
With an Insured Guarantee

About the Cover:

Is it a stump, or a tree?  
The story is on p 209.

This book introduces a motivational regulatory system that eliminates the need for reliance upon permits and policing. It is capable of pricing ecosystem assets and is extendable to global scale. It can improve ecosystem function, in harmony with an advanced economy. Included are several example programs, and an effective legal strategy for further implementation.

**There really is a better way to care for the environment.**

A fresh perspective and most welcome. The writing style makes for a very good "read." It is incisive and well directed. The proposed solutions are creative and deserve to be tried.

Dean Cromwell, Former Executive Officer of the California State Board of Forestry

Clear, concise, and forward thinking in a manner seldom seen in the current literature on this topic. The vision of resource management presented and the sea change of consciousness, necessary for the implementation of sound policies, deserve a broad readership.

Jennifer Nielsen, Ph.D., Fisheries Geneticist, USGS, BRD

Powerful. Comprehensive. A must read for those with serious interest in our environment. It will change the way you think about solving our environmental issues and the role for government and responsible private citizens in providing solutions. Vande Pol suggests a creative approach which deserves discussion, development and trial. Compelling insights document current failures and political ramifications.

Douglas Leisz, Associate Chief, USFS (Retired)

Finally! A path to retire inordinate suspicion and fear! A whole new industry, just waiting to be given birth! Every public official, regardless of level or branch of government, should read this book. It is a plausible blueprint for returning "Nature Care" from the ridiculous, to the sublime, through a "good-natured" and simple concept.

Walt Shultz, Supervisor, El Dorado County, CA (1995-1999)

It's a marvelous book! I could comment favorably on every section, and every page! VERY impressive!!

J. Gordon Edwards, Ph.D. Entomologist, San Jose State University

This book will change the way you see environmental management. It has significant and original supporting data. It is loaded with insights that continue to develop after multiple readings.

Tom McDonnell, Director, Natural Resources and Policy, American Sheep Industry Association

This book is an important contribution to a growing new environmental movement. Its ideas appear sound, and lay the groundwork for a coordinated, private sector approach to environmental management that may prove to be an effective alternative to failed government practices.

Marty Moore, Ph.D. Land Use Planning, Executive Director EECO, Eastern Arizona Counties Organization

Yup. That's my shoe. I work this land and it responds to care. I know it like no one else. I belong here too.

Wildergarten Press

San Jose, CA 95110  
<http://www.Wildergarten.com>



Natural Process

Mark Edward Vande Pol



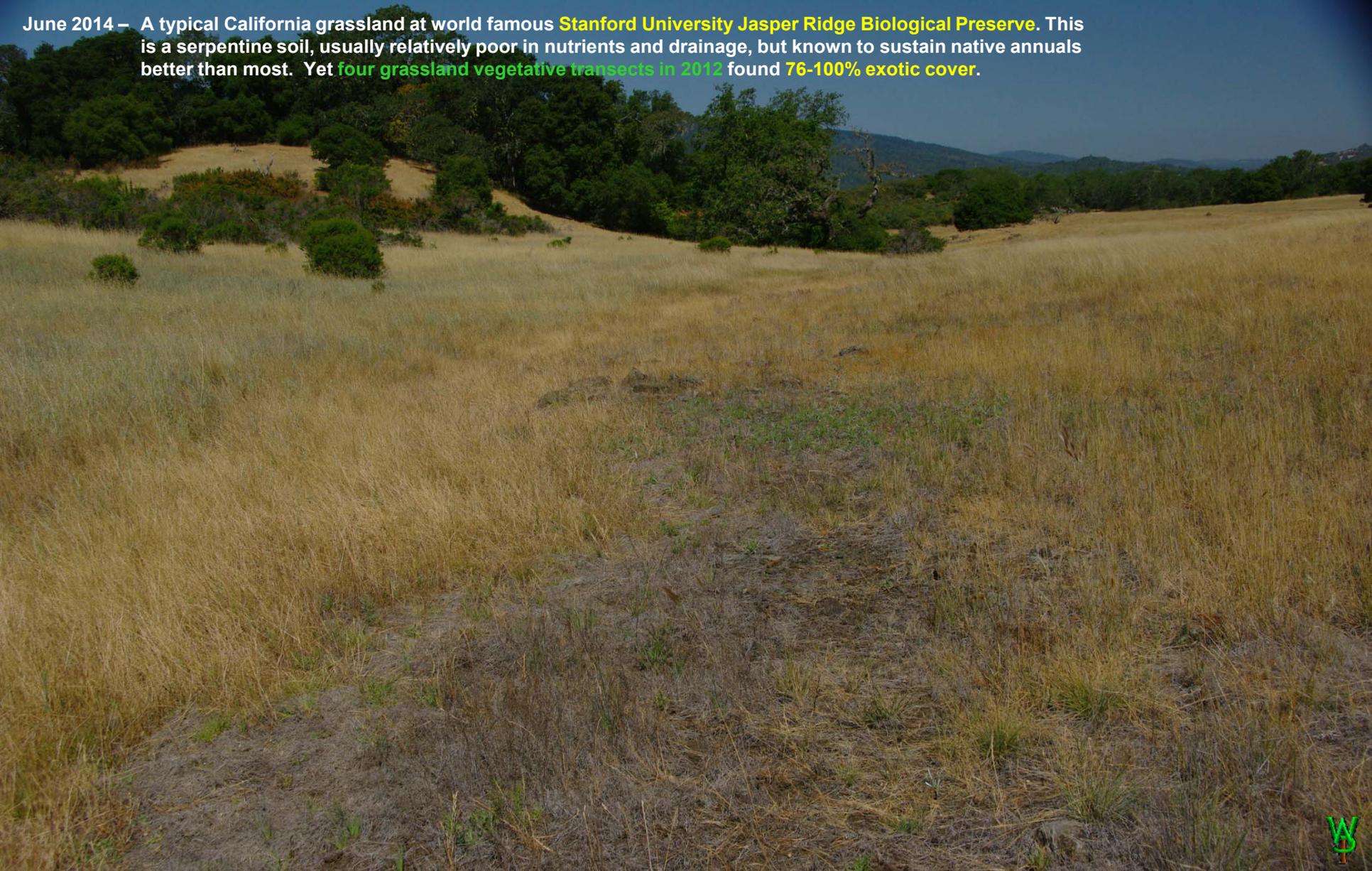
# Natural Process

That Environmental Laws May Serve  
the Laws of Nature

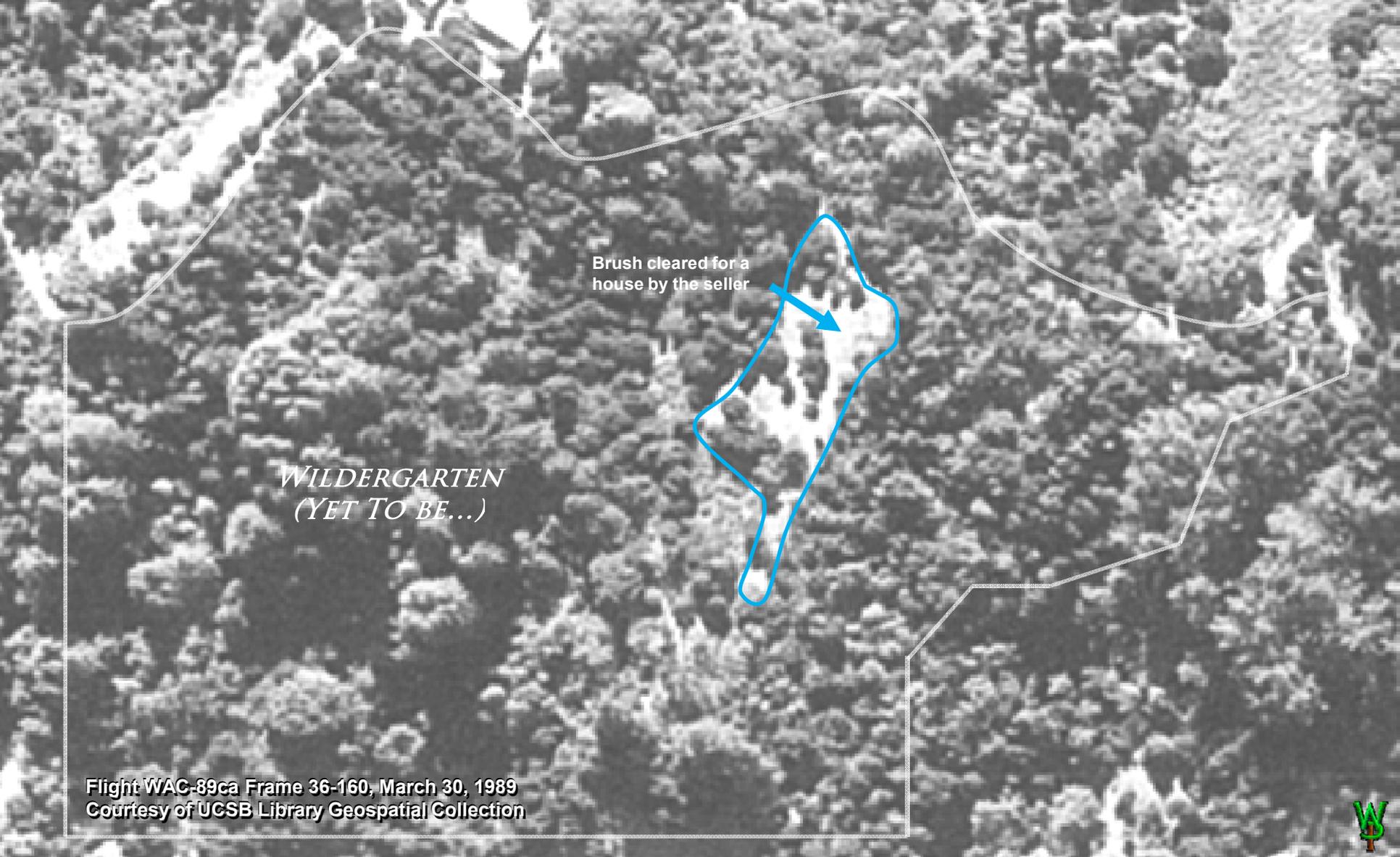
Mark Edward  
Vande Pol

Having written a book and **patented the resulting business method** for how private ownership could do a better job of caring for the environment than our growing cabal of tax-exempt corporate-financed collusion between activist lawyers, academics, and bureaucrats, I knew that for anyone to take seriously what I was proposing, I couldn't be seen as a hypocrite. Our land had to be a paragon as a moral obligation. Even then, I had no idea that nobody had done it before. With hundreds of billions environmental protection was costing the economy, it was inconceivable to me that nobody with big money posturing "protection" had cared enough to return *their* land back to 100% native plants across the entire successional spectrum. It couldn't be that hard! Could it?

June 2014 – A typical California grassland at world famous **Stanford University Jasper Ridge Biological Preserve**. This is a serpentine soil, usually relatively poor in nutrients and drainage, but known to sustain native annuals better than most. Yet **four grassland vegetative transects in 2012** found **76-100% exotic cover**.



It was another decade before the real challenge became apparent, but only after researching the local botanical record and thousands of pages of Spanish diaries and Indian ethnographies: Before our arrival, **80% of the native flora was unable to reproduce**. **For 200 years**, a slow mass-extinction event had been in progress, sight unseen, similar by varying degree to every advanced economy in the world. The primary causes here were invasive exotics and vegetative succession pursuant to a policy preference for “environmental preservation.” Government/corporate/academic/activist policies were making things worse.

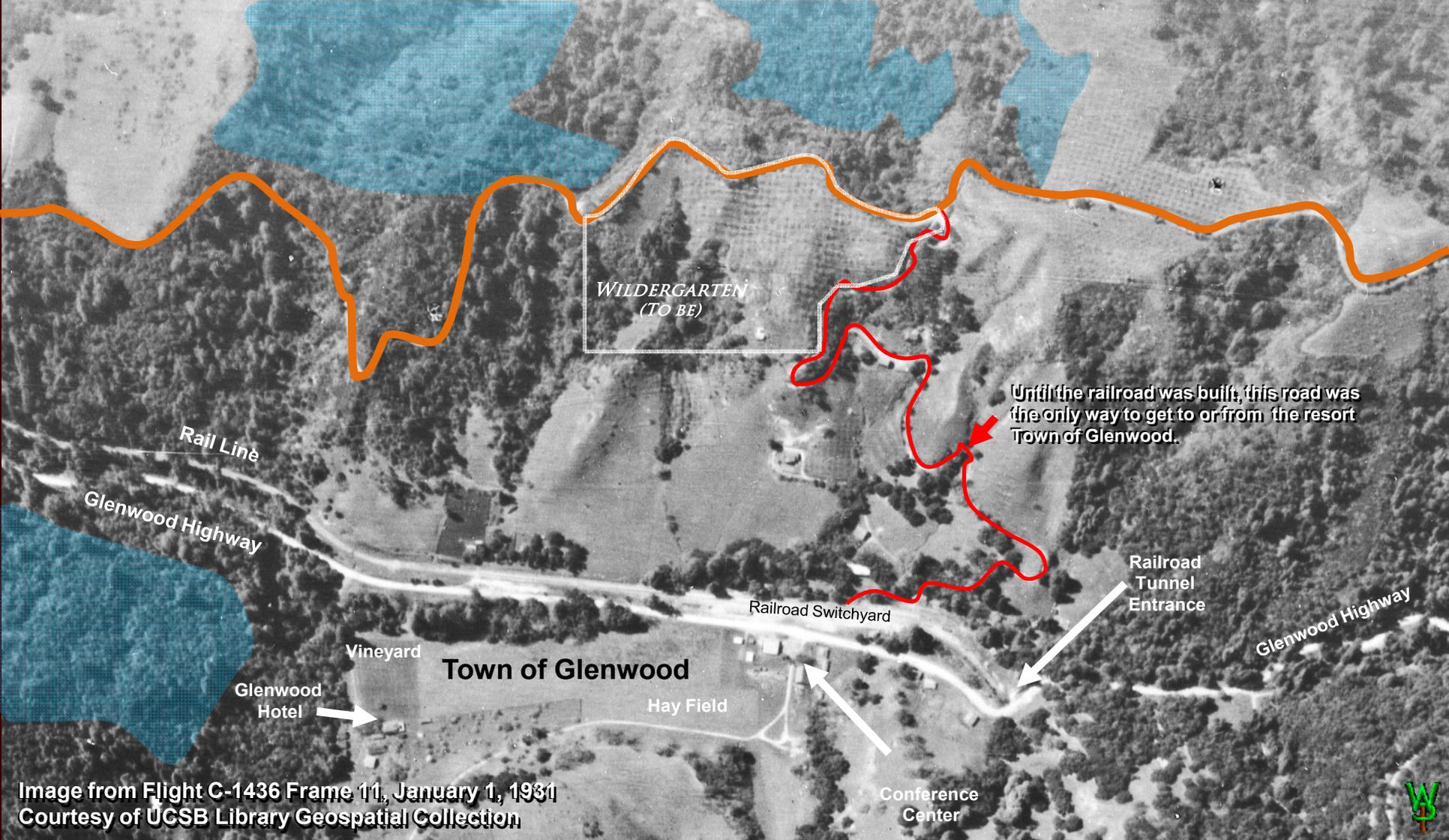


Brush cleared for a house by the seller

*WILDERGARTEN  
(YET TO BE...)*

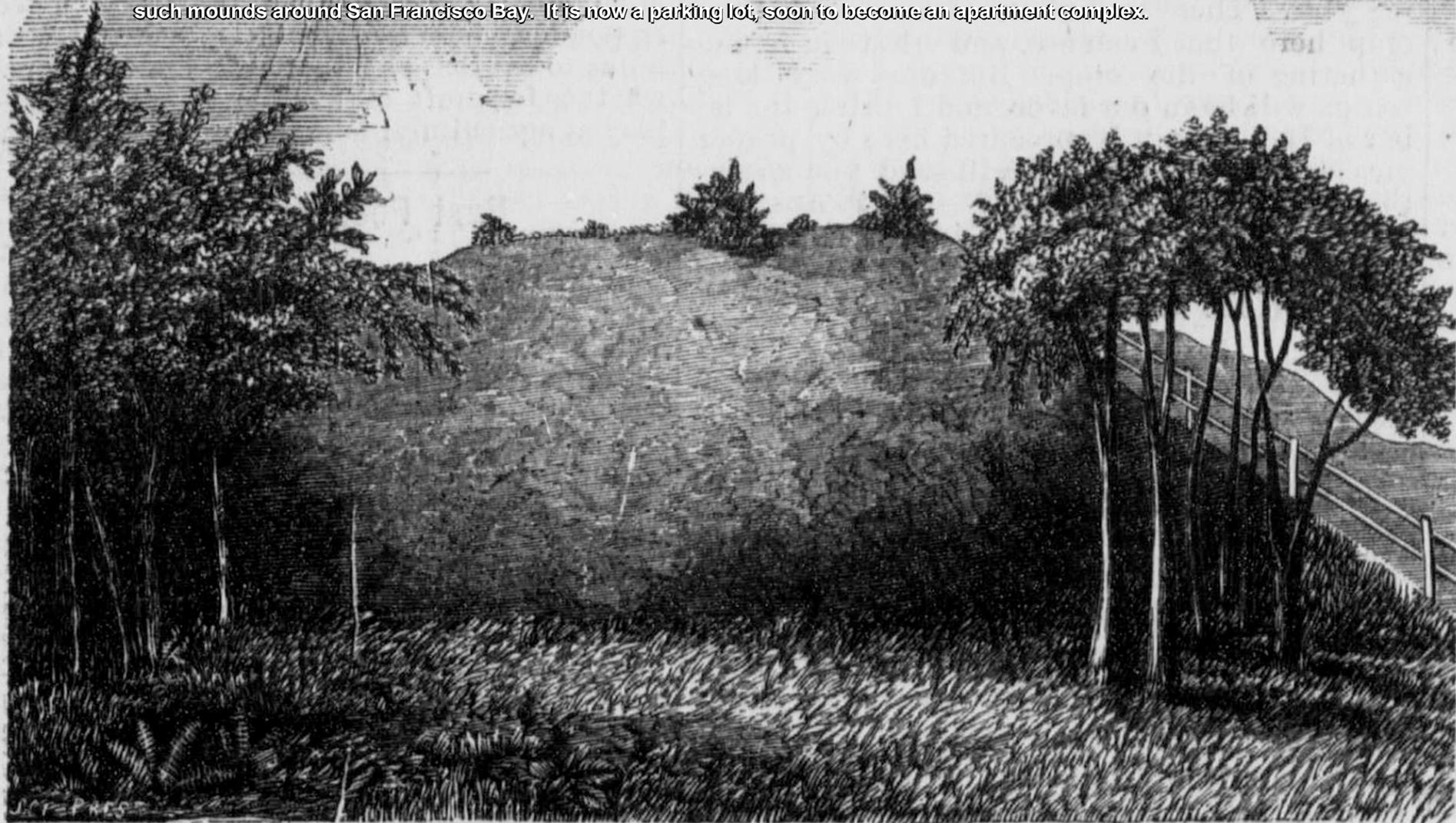
Flight WAC-89ca Frame 36-160, March 30, 1989  
Courtesy of UCSB Library Geospatial Collection

While invasive species are a proven cause of extinctions, what is this point about forest cover? Wasn't this land always forested until white guys cut down all the trees? Numerous observations in the Spanish diaries of the first explorations of California obliterate that myth. As you will see in the chapters on aerial photography and vegetative succession, as long as there is seed in the area, these mountains can go from bare ground to a forest too dense for anything else to survive on the ground, in but 30 years. So why no forest? Proactive management by regular fire. For over 10,000 years, the people who lived here had made sure that wouldn't happen, in order to grow more food for wildlife. But it does take study to see the process and detect that history. We do that work.



This site was neither pristine nor undisturbed; in fact it had been an apple orchard (above). In 1791, the Spanish cut a road along a tribal trail route to supply Mission Santa Cruz. Weeds came in with animals packing supplies. The Spanish ended Indian burning such that weeds could spread downhill unconstrained, with brush and forest moving up from gullies to the ridge. Americans improved the road in 1851 adding another road for a resort town in the valley. For 100 years, the road had remained the ONLY transportation route through these mountains, making orchard land valuable to supply fruit to urban markets. Nobody could have afforded clearing forest up here just to grow fruit. In 1879 the railroad came into the valley with the Glenwood Highway to follow in 1915 making orchards elsewhere profitable. By 1931 (above), some orchards on the ridge had been abandoned for thirty years due to higher transportation costs and inferior yields. Forest overwhelmed the abandoned orchards. That happened fast too. "Fast" doesn't stop.

June 2014 – This is the famed Emeryville Shell Mound, of which we were all told as children. At one time there were 450 such mounds around San Francisco Bay. It is now a parking lot, soon to become an apartment complex.



SHELL MOUND, OAKLAND.

Most aboriginal tribes in California congregated around fish and shellfish, the latter in such quantity that they moved down the food chain into snails. Why then would they maintain landscapes to supply wildlife when the Spanish diaries report a landscape crawling with animals yet the archaeological record shows that they ate very little red meat? California Indians didn't farm either. Not one tribe. Why were Indian languages more distinct than anywhere else? There is but one simple answer for all those questions, you'll never guess. So if you want to understand why, the implications of the [site history chapter](#) in this "picture book" are simply mind-blowing because **that same reason had everything to do with how this State's landscapes were configured at the time of first European contact.**

July 2010 – Red cedar continues to invade The Nature Conservancy Niobrara Preserve. Weeds, fire suppression, and inadequate animal impact have combined here to constitute a permanent change to this landscape, because the work to be done to reverse it at this point is unaffordable.



Yet despite all this research into how Indians maintained these landscapes, I am NOT trying to reproduce pre-colonial conditions here. The reasons for that are very simple: We don't have the animals to eat all that vegetation. We can't just light the place on fire every year. We don't harvest acorns, bulbs, and herbs to eat. We don't make our shelters out of reeds. AND there is no way I could weed 14 acres of grassland every few days just to get **all** the weeds. No way. The goal here is learning how to recover the full array of diverse native plant systems here to learn how they work so that they don't go extinct within the economic means of a middle class family. That is the **ONLY** way this country can afford to recover its aboriginal plant and wildlife systems at larger scale.



April 2015 – Our native grasslands are about more than just grass.  
Forbs such as these lotuses (*Acmispon americana*) are what provides protein to grazing animals.



Whether a remnant native seed germinates depends strongly upon the nature of precipitation and temperature profiles both within a particular year and in successive years, not to mention what else may be there. Hence, the likelihood that a remnant germinating seed will germinate, mature, and reproduce is very low if exotics are present or under native perennial competition. How that declining trend was reversed here was directly opposite to the popular “Nature preserve” thesis. Effectively, one must be there almost daily to witness, document, foster, protect, harvest, and propagate what few returning natives come up for those plants to have a chance to establish a colony. Repeated disturbance coupled with intensive weed treatments brings up yet more weeds to be removed so as to *cleanse* the weed seed bank while providing natives places to spread. If that sounds tough to do, you bet it is.



These two landscapes are 90 yards apart



What comes up after removing exotics depends radically upon micro-local conditions: light (how much tree cover had been retained or how much sun it gets and when), slope, drainage, competing plants, and the history of that particular spot. We have over 100 named places on only 14 acres of property distinguished by differences in boundary conditions, types of vegetation, and how they behave. Then there is what I am trying to learn from these differences, that induces experiments that create yet more differences.



May 2010



At the early successional extreme, we have “sand hills,” spread with a quilt of clover and strange little annuals with names like *Filago*, fairy mist, *Navarretia*, *Claytonia*, *Cammissonia*, miniature lupines, and tiny *Madia*... In an area like this there are over 50 plant species! If the groundcovers look “yellow” to you, it is real. Most of the soil here is fine sand, which has very poor capacity for nitrate retention.



May 2010



Yet one hasn't seen the intense biodiversity of a sand hill until one gets closer to the ground...



1"

April 2012



...really close.



April 2009



Grasslands are intensely varietal places too, although this one contains a number of species also found in sand hills.



April 2015 – Turkey hen munching on miners' lettuce (*Claytonia perfoliata*)

But to many animals, it is leafy annual forbs that provide protein, seed, or feed bugs.  
To them these plants are more important than grasses.



April 2015 – Lupine (*L. bicolor*) in needle grass (*Stipa lepida*)

After 34 years of arduous labor, our grasslands have tested 99%+ native for 9 years running, including small annuals (the hard part). Several grasslands experts have told me that our focus on annuals is unique. One, with 35 years' experience all over the American West said that he had *never* seen such an intense mix of perennials and annual forbs, calling it the “Best native grassland restoration in North America so far” ([source](#)). Here, as spring progresses, the forbs dry off and drop seed, bringing their own kind of “fall color.”



May 2015 – *Trifolium wildenovii*, *Madia exigua*, *Madia gracilis*, *Psilocarphus tenellus*, *Bromus carinatus*, *Acmispon americana*, *Carkia rubicunda*..

“Fall color” in spring can get intense. Back-lit in the afternoon sun, I call it, “stained grass.”  
My bet is that you’ve never seen anything like this before. Perhaps you see why, when early settlers first saw it, they cried with joy .



April 2015 – Chalcedon Checkerspot (*Euphydryas chalcedona v. chalcedona*) on *Dichelostemma capitatum* with *Sanicula crassicaulis* in back

Yes, there is “spring color” too, as the wildflowers are making a comeback, and with them, their friends come to dine... and lay eggs.



April 2009

Thinning forests and removing weeds has allowed evidences of Indian proto-agriculture to reappear! Here we have dense patches of “death camas” (*Toxicoscordion fremontii*) that had not spread or diffused on the property in the over 200 years since the Sayante tribe managed this area. A survey of our species list for aboriginal crop plants suggests that at least 10-20% of the plant species found here probably occur here only because of aboriginal influences. Hunter gatherers were once a significant source of “Native” biodiversity.



← ...is this tree  
(from page 11)

End of May 2017 – Native *Calamagrostis rubescens* holds soil better than the “erosion control” grasses the County specifies



This oak woodland above bears little resemblance to anything you would see in this area. Today, native grassland annuals are invading this forest, effectively to make it an oak savannah. This type of cover is more fire resistant, and better forage for wildlife. The challenge is keeping brush and tree seedlings from taking over.



April 2015 – One year after logging the heck out of it

Yet native or not, we cannot manage this place the same way Indians once did, if only because of (1) the weed history, (2) the fact that we can't burn in the summer because of fuel loads surrounding us, (3) the degree to which the landscape has become forested, (4) we eat or use little of what the land produces, and (5) the place is under constant attack by seed originating from properties belonging to careless neighbors. Originally there were no trees here. These oak woodlands had become so dense that there was no groundcover at all. Our forests have since been **thinned in phases** and weeded to develop these intense native groundcovers.



April 2021



As the thinning process continues, there are now occasional openings supporting **more fruit-bearing shrubs** for birds and browsers.



May 2015

We also have stands of redwood, the second-growth trees in the mid-ground being over four feet in diameter and 205 feet tall! Yet as you will read in the [site history](#), the “old growth” trees that were logged here may not have been here when Spanish explorers arrived.



May 2015 – Not far from here

Second growth redwood forests can be so dense that the habitat to support wildlife is greatly reduced from what it once was. The density of redwood sprouts is not only a problem for groundcover biodiversity, untreated they too can become a fire hazard. Monoculture forests are our future unless something interdicts the process.



April 2015 – These redwood crown sprouts are from stumps of trees logged in 2000

This slope once looked much like the prior slide, with no groundcovers at all. I logged this ridiculously steep slope in 2000, which would have been illegal had I sold the logs. I wasn't willing to wait for counterproductive laws to change. Instead, I gave the logs away. Why? In some cases logging *must be done*; else the trees grow to sizes capable of taking out large chunks of the supporting hillside. The scarped grade at left had suffered just such a rotational failure. **The clump in the background** is ready to do likewise.



May 2015 – This is a road; I am growing the fir trees as spars to reduce both yarding costs and logging damage.

Redwood makes wonderful lumber, but felling trees can crunch up the adjacent oak woodland. It is very expensive to get logs out carefully, requiring roads like this one for heavy equipment and maintenance (there are chapters on [roads](#) and [drainage](#) too).





February 2015 – *Thelephora terrestris*... yup, that's a fungal fruiting body, analogous to a mushroom. It's known to be a pine symbiote, but perhaps it gets along with grasses too!



Research here extends beyond plants. Relationships between plants and fungi are observed unhindered by weeds and overgrowth.



These grass-like plants are the blue dicks, a type of lily

February 2015 – The clover is *Trifolium microdon*, a symbiote of the fungus, *Glomus mosseae*

It is only in recent years that science has started to grasp the crucial roles fungi and microbes play in soils as much more than nitrogen and carbon cycles. From digesting geological parent material into usable nutrients, to transporting those nutrients to plants, providing protective coatings, and literally cloud-seeding for rain, the life systems of this planet do not run without bacteria and fungi. The clovers above can feed fungi that exude a hormone known to accelerate germination. In this case that relationship very possibly brought up this patch of blue dicks (*Dichelostemma capitatum*) that once fed Indians. We got that process going here, by thinning and weeding.



April 2015



Here, there are more interactions among plants and insects because there is plenty of habitat. Over 90% of insect-plant relationships are “host-specific” because the larvae can tolerate the toxins of their symbiotic plants. This checkerspot butterfly (*Euphydryas chalcedona*) is using “blue dicks” (*Dichelostemma capitatum*) as a perch to attract a mate.



April 2015 – *Plebejus acmon*

Not to be outdone is this Acmon blue performing its mating dance among these lotuses and tarweeds. The insect base “layer” of the food pyramid largely depends upon native plants, as also do native bees.

The weed at the bottom is *Lysmachia arvensis*, which is deadly poisonous to just about any animal species. Yes, I killed it.



April 2015 – *Vanessa virginiensis* munching on *Gamochaeta ustulata*

Insect larvae are often host-specific, because they can tolerate the toxins those plants produce. This Painted Lady larva is lurching on a cudweed, a perennial native plant host that sucks so much nitrate out of the soil that it is toxic to both livestock and surrounding plants. In other words, insects help keep weedy native plants from destroying even native biodiversity. The total mass of insects once exceeded that of all higher order animals by 7 times, essential to the wildlife food pyramid. Yet a recent German study on “preserved” land found a 75% reduction in insect biomass in less than 30 years. Weeds and uninterrupted succession mean fewer bugs. Yet now I’m finding that Indians may have used this plant to form firebreaks and keep trails clear of thorns. There is so much we don’t know.

November 2013 – Band tails do love madrone berries and acorns.  
I just wish they ate more.



Dr. [Douglas Tallamy](#) at the University of Delaware in Newark estimates that 96% of birds are fledged on a diet of caterpillars.

Fewer native plants = fewer bugs => Fewer bugs = fewer birds.

We are raising a landscape to produce food for wildlife. These band-tailed pigeons seem to have got the word.



March 2013, *Aphanes occidentalis* underlying *Acmispon parviflorus*, *A. americanus*, *Trifolium microdon*, *Bromus carinatus*, and *Stipa lepida*

No food, no animals. Food for animals starts with food for plants in soil. At the *Wildergarten*, we can observe tiny nitrogen-fixing plants like this *Aphanes occidentalis* (the fan-shaped leaf), because they aren't overwhelmed by exotic competitors.

Photographed  
the Same Day  
February 2, 2014

Our Place

“Your” Place

Wet Season Conditions

43.4”	Mean annual rainfall *	41.18”
4.6”	1/1-4/30/2013	4.82”
0.2”	5/1-8/31/2013	0.13”
2.5”	9/1/13-2/1/14	2.2”
15	Frost days	25

Dry Season Conditions

15-20	Fog days	100
10-15	100+° days	3-5
50	+90+° days	10
93°	Peak Monthly average high	86°

\* Rainfall data on the right are for the City of Scotts Valley Wastewater Treatment Plant, two miles toward the coast from the image at right.



Establishing diverse native grasslands results in a **drought tolerance** that ought to get your attention. This was photographed near the end of the most disastrous drought in 30 years, in which we'd had but 2.7” of rain in over 9 months. The green grass on our place (left) endures much higher temperatures and lower average humidity than the virtually 100% non-native disaster on the right. Both get about the same amount of rain. Soils are similar too. The dry grassland belongs to The Land Trust of Santa Cruz County. Such conditions are the usual in the dwindling grasslands found in parks, preserves, and open space districts throughout California.



July 2014 – During another drought year in which we received only half the usual rain from April 1 to July 1

Ok, so maybe that comparison wasn't fair, because that was in February in a drought year... This is one of our grasslands in July, 2014. The socialized land in July looks the same as it did in the prior slide (right side): 4-5 months of death, at least, every year.



October 2013 – An Acacia stand; this is on a property adjacent to ours but it similar to one we had

We took this property from a pending inferno of exotic monocultures...



May 2015



...to a virtually 100% native landscape, expressing its variety...



May 2015 – A dense mix of native brome and rye grasses with tar weed (*Madia gracilis*)

...vitality,





May 2013 – *Clarkia rubicunda*, golden yarrow (*Eriophyllum confertiflorum*), and deer weed (*Acmispon glabra*)

... and beauty,





March 2015



...in magnificent detail.



June 2015

Yes, the world is melting down. So why is this screwy project obsessed with native plants in the Santa Cruz Mountains important? Well, let me tell you: The people who designed this social meltdown in the early 1930s and implemented its key elements over the next 25 years believed with all their hearts that controlling human behavior to control population was key to protecting the world's environment. Their ideological scions are, if anything even more dedicated to that delusional principle. What if the one guy who has fixed just such an ecological disaster said that the world needs people and a high tech economy just to keep these systems alive?



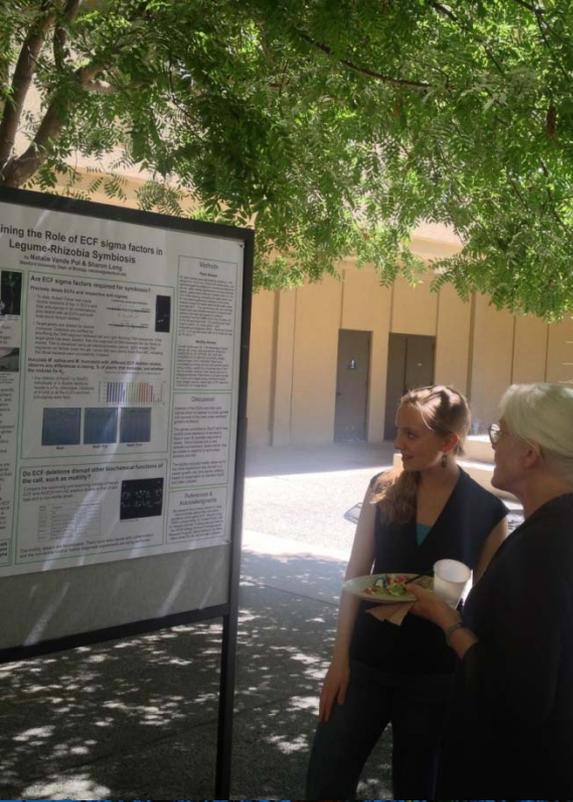
Clearing for an experiment to establish native groundcovers as a way to retard the rate of succession

November 2014 – To get a sense of the slope here, look at **the safety line** to which I am belayed. Below the stump to the left, it gets steeper.

The goal here is to foster a *new* popular culture based upon an ancient principal, focused upon developing new knowledge of the earth **in intimate relationship with it** as a matter of individual responsibility. It might even cure the insanity.







...where PEOPLE, free to take risks and be responsible for the consequences, learn how to find answers and not be the problem.



December 2012 – Weeding exotic grasses among seedlings of *Trichostema lanceolatum*

A world of learning is in need of your hands...





THIS IS  
*WILDERGARTEN*

*Trichostema lanceolatum* breeding and feeding, this is an annual plant, blooming in September



# YOU HAVE REACHED THE END OF THE BEGINNING ...OF THE BEGINNING

You have just completed the first of the seven introductory chapters in Part I (to which there are 3 addenda to follow):

- Chapter 2 – How “preservation” induces uninterrupted succession and weeds, then causing mass extinctions
- Chapter 3 – A Site History of unprecedented depth. The detailed strategy with which people once shaped the land will shock you. Its bibliography demonstrates there is no comparable multidisciplinary academic resource.
- Chapter 4 – *Going Native* Determining what is or isn’t a “native plant” is more complicated than one might think.
- Chapter 5 – *Virtual Tour* travels the property with photographs repeated over the over 30 years we’ve been here.
- Chapter 6 – *Scene and Unseen* is a demonstration of nearly pure germination of native annuals, a unique achievement in habitat restoration projects, worldwide
- Chapter 7 – An overview of how this project has been directed toward its increasingly demanding technical goals.

Accordingly, this picture book suggests two alternative paths:

1. Read this book linearly, going through the remaining 30 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  in the “Table of Content” three pages hence). These five closing chapters discuss how our project survives when inundated with weeds resulting from the large-scale damage being done to native habitat by the current public preference for politically or (failing that) legally-determined “environmental protection.”

This project continues to progress over time while the book’s chapters are arranged by topic. When possible, the detailed chapters are arranged in temporal order because our emphases changed over time, both because conditions improved and because of 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.
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.

Try it! → 

# WHAT DO I MEAN BY 99.6% NATIVE PURITY?

The first such measurement was performed in July 2011 by a third party who taught me the “toe-point-transect”: Take a step, record what plant is closest to your big toe 100 times. His was 100% native. He was giddy; in 35 years, he’d never seen more than 90%, anywhere. I repeated that test four times elsewhere on the property that year. That is how I got to three significant figures. It keeps getting better. At this point the difference between 99.9% and 100% is a matter of where and when one samples and how one does the test. I have objections to this technique, because with very small or interlaced plants one has their choice about which is “closest” to the toe, which means that it would be hard *not* to skew the test. More importantly, this distinction of “cover” is deceptive with a multi-layered groundcover, not to mention that it understates the damage that can be done by very small weeds that suppress the germination of a great many native plants. Hence, until I come up with a way to characterize native germination quickly over substantial area, the “toe point transect” is what I use because other people understand it.

In 2014, Randy Morgan (RIP, the best field botanist in the area with a special knowledge of bugs) confirmed my long-held suspicions that a common, spreading, and annoying plant here widely believed to be *Cardamine oligosperma* (native) was in fact an exotic. He identified it as *C. hirsuta*. Both are known as “bitter cress.” The 1993 Jepson showed the exotic in Siskiyou County only, 500 miles north, with the 2012 Jepson showing it only along the coast. Since 2007, **there have been two reports of its presence in the County**. Yet I am now certain it has long been ubiquitous and the botanists had made a mistake of inattention to a seemingly innocuous weed simply because other weeds suppress it. It is not innocuous at all; it is serious pest in the nursery business. When Randy (who hated “pop-weed” as much as I do) raised the question, I took a look with a magnifying glass because the definitive means to distinguish the two species is the number of pollen anthers on the flowers. For management purposes, this is a useless key: this plant can go from flower to seeding in a week (imagine weeding acres of tiny plants, magnifying glass in hand). So I developed a vegetative key (the shape of the second pair of leaflets) by which to make the distinction earlier in the process. Not a single native so far.

Bitter cress is an annoying plant (it flicks seed in your face as you crawl along) so I have long culled it but not as an exotic (a strategy I call “resistance”). So, the plant never became a disaster because I just didn’t like it and acted accordingly. Without competition from other weeds, it does spread like wildfire. It is therefore an enormously difficult opponent as it can germinate and seed when only a fraction of an inch tall with almost no leaves in only six weeks. Chances are that **nobody** visiting the property would know the difference, but I would know while leading them about, and I’m not going to let a nagging annoyance like that dilute the importance of what I am seeking to teach here. Pop-weed was a raging battle for 6 years and I now have the upper hand but there was collateral damage to other natives. In 2015 I did better than break even. In 2016 I effected what I call a “take-down,” or a property-wide multi-strategy attack on a single species. As of this writing (10-23) it does look like I have won and the natives are recovering. Nobody is perfect and certainly not me, but I try (oh hell do I ever try) because it’s better than giving up. How long it will take to attain full recovery is a matter of weather and disturbance, but I’m winning.



# A WORD ON CITATIONS

This book is an adjunct to several other books that refer to an overlapping set of sources. Accordingly, and given that this book changes constantly, I have chosen to maintain a [single bibliography](#) (with the exception of the site history). No, I don't have an aversion to citations (the bibliography in my current book in process goes on for 33 pages); the problem is that this "picture book" format makes citations problematic. Often a single character adds a new line, then necessitating a smaller photograph. So, footnotes and even endnotes were out because it would have otherwise been too destructive to the visual content. Even on pages of references only, adding a single reference can take a half-hour because in PowerPoint can't roll over text from page to page. With some ideas referring to multiple sources, links sufficient to meet an academic standard would have been similarly complicating. Worse, too many links makes reading disjointed because it interrupts the larger flow of ideas. I may put invisible links in some day, but only if interest or controversy warrants and time permits. I do have another and even more monstrous book to finish first.

Most units are English, because that is what most people reading this will grasp viscerally.

There are occasional links (in [green](#)) that open a new tab in your browser. I am not guaranteeing that they will be maintained but please do let me know if you find an invalid destination. There is a contact page at the [Wildergarten.com](#) web site if you seek reference to something that either you cannot find or I have failed to substantiate.

Finally (and unfortunately), many academic source documents are closed to most readers without paying very stiff "fees." I wish more scientific publications were open source (especially because they are usually at least subsidized by tax-payer supported government grants) for I could then simply offer direct links to academic sources. The good news for you is that the best kind of evidence will be before your eyes. This work represents my opinion and experience, which you can judge for yourself by the photographic evidence. Given that the photographs are the main confirmation of what I am saying and making them bigger helps with communicating detail, I have endeavored to maintain the text as brief as possible having only critical links to keep them from becoming a distraction.

As should be obvious, I would be delighted to see someone repeat these experiments and methods. That is the best truly valid scientific confirmation anyway. It is when we identify and characterize the exceptions to the rule that questions arise. This is how we grow knowledge.

The process of writing "picture books" began well before 1080p was taking hold. Back then I still had a CRT monitor, so [these books](#) were constructed and formatted for 7.5"X10" PowerPoint slides so that people could easily print pages onto 8.5"X11" paper. Were I to do it over it would be 16:9. Sorry, that's another of those, "if time permits," sort of changes.



# HOW TO HELP

This has been an unrelenting, very expensive, and physically arduous process. I started in early middle age, and now I'm getting old. Anybody who wants to learn would be welcome to help. You would definitely learn a great deal beyond what is in the 1,800 pages of this book.

As to money, I ask for support of the work, not me. No, we don't have a lot of money; it's just how things must be for now in a world of seething mistrust. I have no time for (or interest in) managing the books for either the IRS or competing interests within non-profit corporations. I certainly don't have time for begging for money. I will gladly accept directed and anonymous assistance (accounts for laboratory services and library subscriptions would be especially helpful). I cannot and will not accept corporate, foundation, or government grants, because our family wishes to retain a reputation for **total** independence and integrity. I would rather do research than deal with being famous.

I do love to teach, and would be delighted to have students working here on their projects. We have many needs for many hands, both on the land and in producing the communications to come. My hands are wearing out.

I do speak publicly upon occasion and will travel to do so if it doesn't inhibit managing the property.

As to professional help, we do have new and innovative ideas in the works, the most important of which is developing an engineering infrastructure to facilitate low-impact mobile communities dedicated to restoring the vitality of the world's "wildlands." Anything you can do to facilitate these projects would be appreciated as they do present some very interesting technical and logistical challenges (as well as solve epochal economic problems). There are also product ideas that are probably patentable that I have no time to develop and document fully. I certainly can't afford to defend them. Any assistance with video documentation is greatly desired.

If you do wish to help or have constructive critical comments, please contact me at [Wildergarten Press](#). Kudos, warm fuzzies, and criticisms are welcome, but please be polite. Qualified visitors are welcome by appointment only but please be advised: Unless you possess a statutory trespass easement, **if I catch you within our property lines without permission, then you will be arrested and prosecuted to the fullest extent of the law.** Sorry, but that had to be said; I have caught people representing the granddaddy of all real estate rackets trespassing here already (The Nature Conservancy, a tool of the major stockholders of British Petroleum) and have caught others seeking to establish a trespass easement. Both were tracking in exotic seed on their contaminated boots.

Please, respect the work of art this landscape represents. If you do wish to see it, for now, you have only to ask.

So, now that the necessary formalisms are done, let's get started!

Thank you.



# OTHER BOOKS BY MARK EDWARD VANDE POL

## Quick Read Picture Books

### Range Management

Zion National Park

Canyonlands National Park

Deseret Ranch

### Fuels Management, Succession Run Amok

The Cone Fire (the benefits of active forestry)

The Warm Fire (what happens without it)

Fire Aftermath: Mesa Verde National Park (weeds)

The Croy and Summit Fires (the wildland urban interface)

### Socio-Ecological Paradigms

#### Environmental Consequences

Meadow Encroachment in Yosemite Valley

Why we can't accept how the original forest as it once was got that way

Living Sheepishly

Why we need a culture of animal husbandry

Sustained Development

Cities as concentration camps

Katrina: What Did You Expect?

Environmental bureaucracy can be deadly

## Not at All Quick Read Bigger Books

*Natural Process: That Environmental Laws May Serve the Laws of Nature*, ©Wildergarten Press, 2001, 454pp, ISBN: 0-9711793-0-1, LOC Control #2001092201. <http://www.naturalprocess.net>

*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. <http://www.shemitta.com>

Articles at Wildergarten Press: collected writings on Constitutional history and regulatory racketeering by tax-exempt "charitable" foundations. [http://www.wildergarten.com/wp\\_pages/articles.html](http://www.wildergarten.com/wp_pages/articles.html)



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These are LARGE files; they do take time to load

Please offer suggestions and comments [HERE](#)

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