

PERTURBING MYSTERY



June 2002

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So, THIS was the Wildergarten? People do like “before” pictures, but unfortunately, most of it was so thick that it was virtually impossible to photograph. This is what our land *used* to look like, except that ours was worse. Like this, most of it was overgrown oak/madrone forest infested with French Broom being invaded by conifers. Yet in addition to these problems are those one cannot see. What were the original native uses of the area such that one knows which plant communities are likely to develop and which successional processes are likely to develop after disturbance? What were the historic uses with which to guess which weeds are lying dormant in the soil? What minerals were lost from the topsoil? Why does the winter runoff take the path it does? How much forest was once grassland or chaparral and where? The site history informs us of how the land got to the condition one is facing.

WILDERGARTEN 4.0

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There is a reason for this. This is a dynamic work that will be updated over time. I have no intention of defending conditions that no longer exist or explanations that have since been relieved of unintentional ambiguity or error.

Please, use a link. Thank you.

Revision History 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.

[1.0](#) [2.0](#) [3.0](#) [3.1](#) [3.2](#) [3.3](#) [3.4](#) [3.5](#) [4.0](#)

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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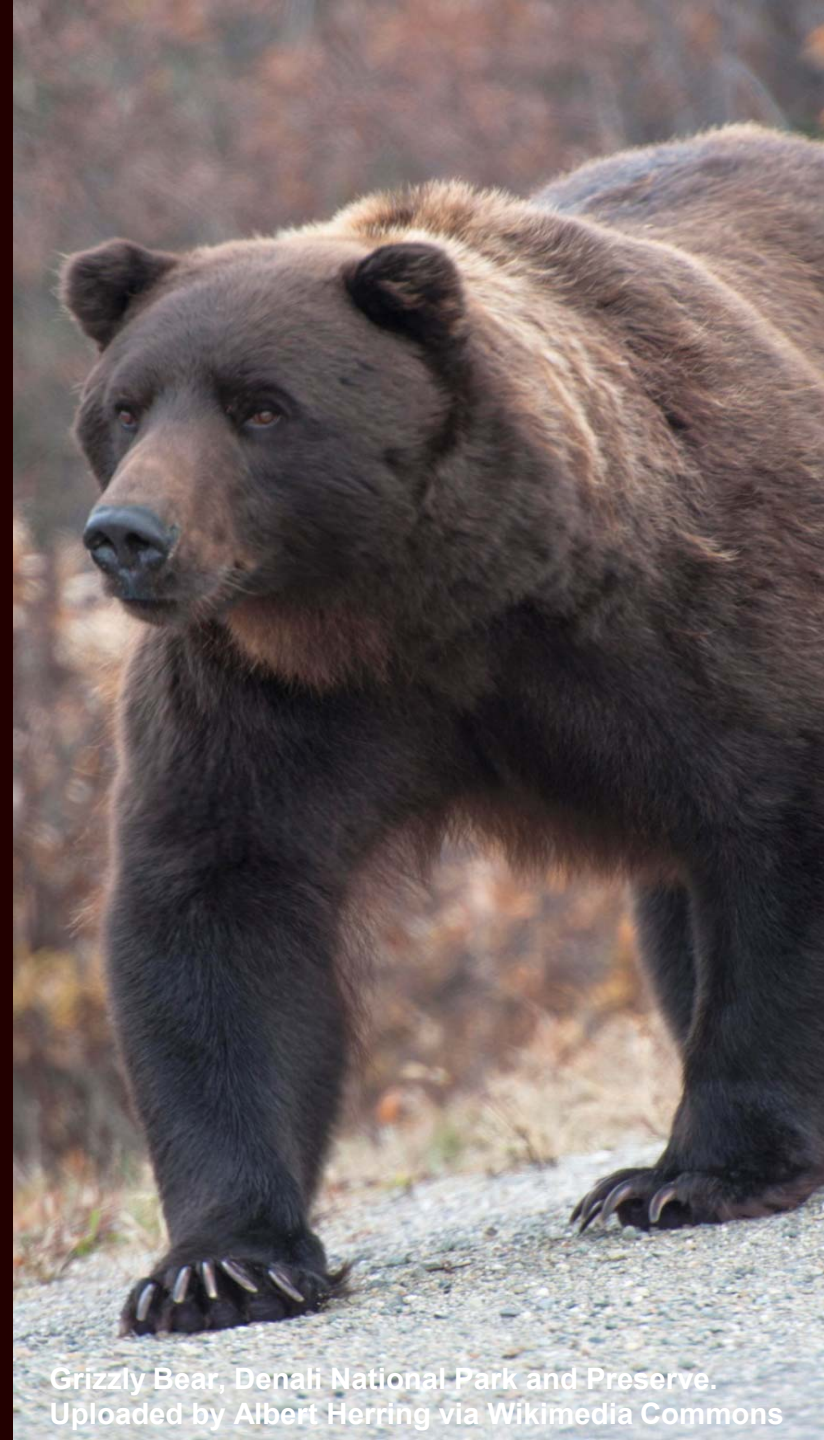
One would think we should begin a site history with 'how things were before the white man came.' Yet there are errant presumptions underlying most people's beliefs about that time, arising from "Enlightened" ideas about what constitutes "Natural."

One such myth is the belief that Indians "lived lightly upon the land" exerting little influence upon its conditions. It makes a nice story, but it is not even close to true. Asians invaded a late-Pleistocene North America that was largely barren where the glaciers had retreated. The new arrivals were proficient hunters, extirpating some 31 of the 44 large-bodied animal species they encountered, including some with domestic potential, to their own great detriment later on (a horse, a mastodon, an ox, and a camel). Indians were such good hunters that the early white explorers such as Lewis & Clark, Fremont, Leonard, and Bidwell **all** describe a landscape nearly bereft of game, that is, until they came to coastal California.

California Indians were every bit the proficient hunters as elsewhere in America, but unlike the rest of the country they had a social, intractable, intelligent, and powerful competitor: the Grizzly Bear. Yes, grizzlies once roamed over most of North America, but where winters are cold, bears hibernate, making them far easier for Indians to kill, especially denning females giving birth to young cubs. Yet even then, it wasn't easy to kill a grizzly. The following account is from Ishi, the last surviving Yahi Indian from northeastern, CA:

A grizzly bear is not game that a lone man armed with only bow and arrow seeks out. The Yahi hunted a grizzly if it was hibernating and only if there were several men together, enough to surround it with a circle of burning brush before it was fully awake... They shot into the open mouth if possible... to induce hemorrhaging. If a bear charged, a man tried to defend himself with a firebrand while his companions closed in with bows and arrows.

It was still not easy to kill a grizzly, but it was *much* easier to kill one while hibernating. To take on a group of bears would be suicidal. The early Spanish explorers reported groups of up to 20 grizzlies together between the most densely populated villages to be found on the California coast (probably foraging for clams). Living with grizzlies was an uneasy co-existence that over thousands of years had profound effects upon the land.



Grizzly Bear, Denali National Park and Preserve.
Uploaded by Albert Herring via Wikimedia Commons

One explanation for the large game numbers in California, popular among students of archaeology and ecology, is that infectious European crowd diseases such as smallpox, influenza, and measles took down Indian populations so rapidly and to such an extent that their numbers were greatly depleted before European settlers actually made contact with them. The theory holds that by the time the Spanish arrived in California over 200 years after Columbus, there had been a recovery in the numbers of game animals and Indians, although to a lesser degree. Though this model appears reasonable in most of temperate North America, this hypothesis suggests that it may not apply in the coastal climate zone of California, for ecological, cultural, epidemiological, agricultural, linguistic, and historic reasons, possibly having much to do with the behavioral biology of grizzly bears.

The first extended observations of California by Juan Cabrillo in 1542 were of Chumash people in the Channel Islands off Santa Barbara. The Chumash were one of the most powerful and “urban” tribes in California, and were thus more susceptible to contagious European crowd diseases. Smallpox, measles, influenza have short incubation periods followed by intense, disabling, and usually fatal fevers. Yet Cabrillo described these tribes as healthy and prosperous along the entire coast, hardly depleted by disease. It is doubtful that these diseases could have spread 1,800 miles north across a desert, killed off large numbers of Indians and then the tribe recover demographically only 20 years after Cortez had made his conquests in central Mexico. Cabrillo stayed with the Chumash for almost three months, so it is almost impossible for the Spanish not to have noticed such familiar plagues transmitted to the Indians, but such was never noted in the record.

Sir Francis Drake’s 1579 landing 37 years after Cabrillo was in what is now Point Reyes National Seashore across the Golden Gate, 400 miles to the north of Santa Barbara. He and his men stayed with (probably) the Olemalogue Miwok for about five weeks, barely long enough for a full blown plague to get started, but likely noticeable to a perceptive observer. In this case, it is possible to infer from the description of Indian behavior found in the log that there *might* have been just such an incipient plague:

“And now, as the time of our departure was perceiued by them to draw nigh, so did the sorrowes and miseries of this people, seeme to themselues to increase vpon them; and the more certaine they were of our going away, the more doubtfull they shewed themselues, what they might doe; so that we might easily iudge that that ioy (being exceeding great) wherewith they receiued vs at our first arriuall, was cleane drowned in their excessiue sorrow for our departing: For they did not onely loose on a sudden all mirth, ioy, glad countenance, pleasant speeches, agility of body, familiar reioycing one with another, and all pleasure what euer flesh and bloud might bee delighted in, but with sighes and sorrowings, with heauy hearts and grieued minds, they powred out wofull complaints and moanes, with bitter teares and wringing of their hands, tormenting themselues.” [\(Source link\)](#)

That’s all you get. Importantly, the log also notes the presence of super-abundant game: *“infinite was the company of very large and fat Deere* (probably elk), *which there we sawe by thousands.”* Yet when the Indians made offerings to the English, which were ample, **there was no red meat**. The Indians gave them artifacts, fish, intricate decorated baskets, bread, and roots, but no elk meat, dried or otherwise, and nothing made of elk-skin. The Indian king’s robe was made of the skins of small animals (possibly mink); his seconds wore robes of feathers. It is quite cool and windy in Point Reyes, even in summer, yet most of the men were naked and the women wore rushes. If these Indians were such successful hunters with *‘thousands of deere’* around, why were they not wearing skins? Materials from such an abundant resources should have been ubiquitous.

Jaques Le Moyne, illustrating cultural practices of Florida Indians, Engraving, 1562



It is also known that despite favorable growing conditions, California Indians west of the Sierra Nevada did not practice agriculture as did Paiutes in desert county east of those mountains or the Yuma to the southeast. No satisfactory explanation exists. Anthropologists and archaeologists have posited everything from ample game, sufficient acorns to make farming unnecessary, to laziness as the reason; none of which make demographic sense. Winters are cold in the Great Basin desert; grizzly bears would have to hibernate.



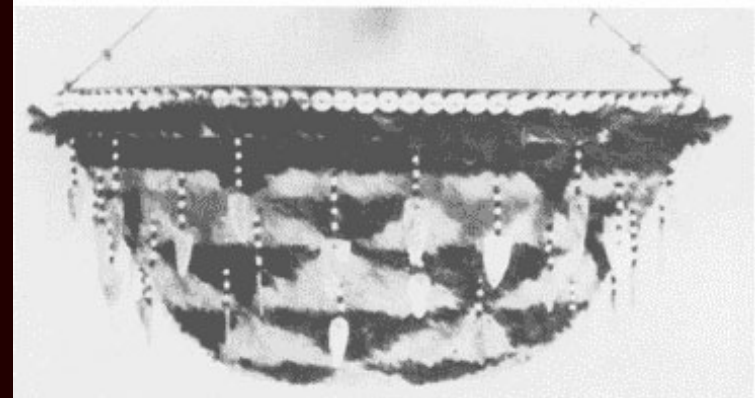
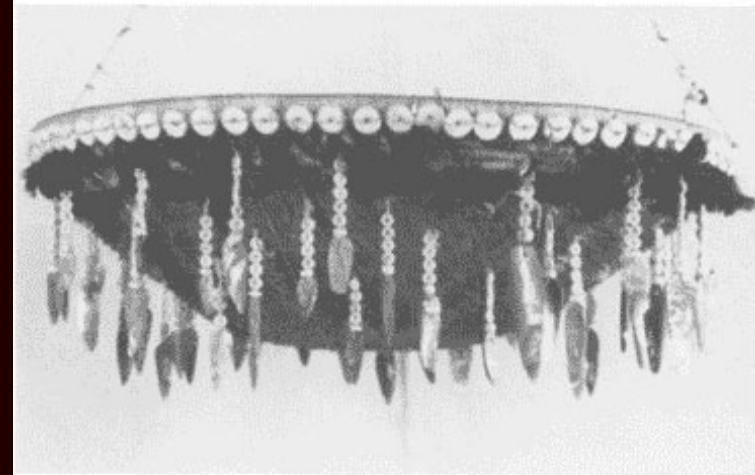
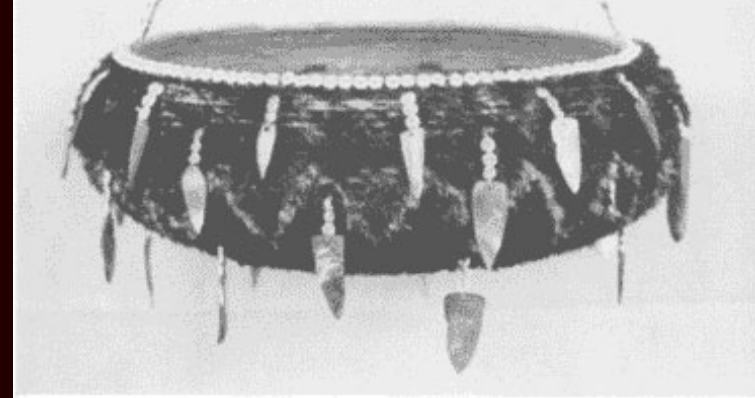
See note in reference section

Grizzly bears are sympatric with humans, that is, the two species rely upon the same foods: roots, berries, bulbs, acorns, seeds (such as sunflowers), quail, rabbits, and occasionally larger game. So just imagine tilling, seeding, and tending a crop for a season with your family's life depending upon the harvest to stay alive. A troop of bears saunters in and takes up residence, gorging on the crop, napping... and willing to kill anything that threatens *their* food! As long as there is some other way to get by, at that point, why bother with agriculture? Turning the entire landscape into a food resource might keep the bears elsewhere and still produce sufficient food.

The diaries of Crespi, Costansó, and Fages document the first Spanish land expedition of Gaspar de Portolá 190 years after Cabrillo. They report most California tribes as still numerous and prosperous, and more concerned about wars than survival. The Indians received the Spanish gratefully (possibly as potential allies), offering them gruel and pies made from seed, and massive quantities of fish (along the coast), with but one (1) offer of red meat (deer) on the entire journey. Game never goes unmarked in explorers' diaries, as it was a critical source of food for their travels. The Spanish diaries also report large herds of elk, deer, and antelope. **Yet this dearth of red meat in Indian offerings repeats in ALL of the early Spanish accounts all the way up the coast.** The lack of meat became so serious the Spanish were forced to slaughter mules on the return trip, despite the ample game. Why?

A Spanish "escopeta" musket shoves a .69 caliber ball out a smooth bore, exiting with the unpredictable trajectory of a knuckle-ball. It has a lot of knock-down power, but it is so slow and so inaccurate that it was not much use at more than 50 yards. The Spanish were apparently unable to hunt the ungulates because they were sufficiently wary of people as to stay out of range. But if game was so plentiful, why weren't the Indians hunting animals down to minimal numbers, just as they were everywhere else in North America?

In California, all of the Spanish diaries recount incidents with bears that together indicate a pattern. "Many bears" were in "Bear Valley" above San Luis Rey, (San Diego County), the San Gabriel Valley, along the Santa Barbara coast, the Los Osos ("the bears") Valley, the Salinas **Valley**, the Coyote **Valley**, the San Andreas **VALLEY**, and from Oakland into Richmond (also boggy). In all of those places, wherever there were bears, there was other game. In the few spots with people proximate to bears, they had no meat but offered the Spanish decoys... for shooting geese? The diaries relate that the bears showed no fear of humans, attacking soldiers on horseback, and even entered a camp of 64 men and 189 mules at night, more than once... then requiring **seven or eight** of said "lot of knock-down power" .69 caliber musket balls at close range. You can bet news of that feat of Spanish arms traveled faster than Spanish pack mules, especially nursing so many men with scurvy. In every subsequent meeting with the tribes, the visitors were greeted with either blind fear (at Pajaro) or open arms. As it turned out, besides geese, bears were the only game upon which the Spanish believed they could rely for the return trip. They were easy to hunt with a gun on horseback because they showed no fear of anything.



Pomo Indian feathered baskets with clamshell disk beads and abalone pendants. The Project Gutenberg eBook of Francis Drake and the California Indians, 1579, by Robert F. Heizer.



The diaries describe multiple troops of 16-20 bears in Chumash territory, tracks all over the State, and bear scat along San Francisco Bay while camped next to the “Palo Alto” (“high tree”- left) along San Francisquito Creek, where lived the largest concentration of Indians on the San Francisco Peninsula. Only once did the expedition encounter Indians hunting at all and it was a very large band. Although some Indian women did wear skirts of skin, the diaries describe the tribes going naked and wearing woven grasses while expressing great desire for clothing. Coastal explorers only noted Indians offering meat and wearing skins (including bear) north of Cape Mendocino. One has reason to suspect fear of bears involved in a food and material economy obviously based on vegetation.

Separation between areas controlled by people versus those controlled by grizzly bears would have a profound effect upon the distribution of vegetation (which is why you are getting this hypothesis), both because of burning patterns and the foraging and rooting by bears. Hold on for a bit, and you will start to see just how complex, subtle, and impressive the cumulative effects may have been over thousands of years. It is our beliefs that distort what we see.

When salmon and steelhead spawning season arrived, seals, bears, and people, coveted those fish. Yet with the exception of Drake and only in passing, nowhere in this area did these explorers’ accounts mention seals or “sea wolves.” With grizzlies and humans competing for food, clearly pinnipeds were few in all but inaccessible locations.

This apparent spatial competition between sympatric “apex predators” (humans and bears) both for prey and for plant foods suggests why the vegetation was distributed as described. The tribes sited their villages near running water with, a defensible perimeter, and adequate sight-lines, just as other seasonal habitations are often found near stone appropriate for mortars. The Spanish explorers recorded areas that were obviously burned at least annually just after the grass harvest, particularly around villages. Such would serve agricultural purposes to foster harvestable seed but would also create a defensive perimeter burned clean so that one could see either bears or any other enemy attempting an undetected approach. In boggy areas between villages, fire was apparently less frequent, with the Spanish describing “lush” brush and tree cover. These possible “bear zones” between villages might have been avoided by Indians unless in a larger hunting, harvesting, or trading party. These were the places where the Spanish described both bears and other large game repeatedly.

El Palo Alto, 1883

Source: Stanford ALL Image Exchange (SALLIE)

There were six linguistic super-families among North American tribes, each differing *more* than Romance languages from say, Hindi or Chinese. Of those, five were found in California, out of which diverged 78 mutually unintelligible languages, one third of the total found in all of North America and more along the coast than inland. In the Costanoan nation (near us), there were 41 separate “tribelets,” many speaking mutually unintelligible dialects. Outside that coastal region and north of Cape Blanco in southern Oregon, that spatial linguistic diversity ceases. No accepted explanation exists for why the density of Indian language differences along the California coast exceeded that of any other region in North America.

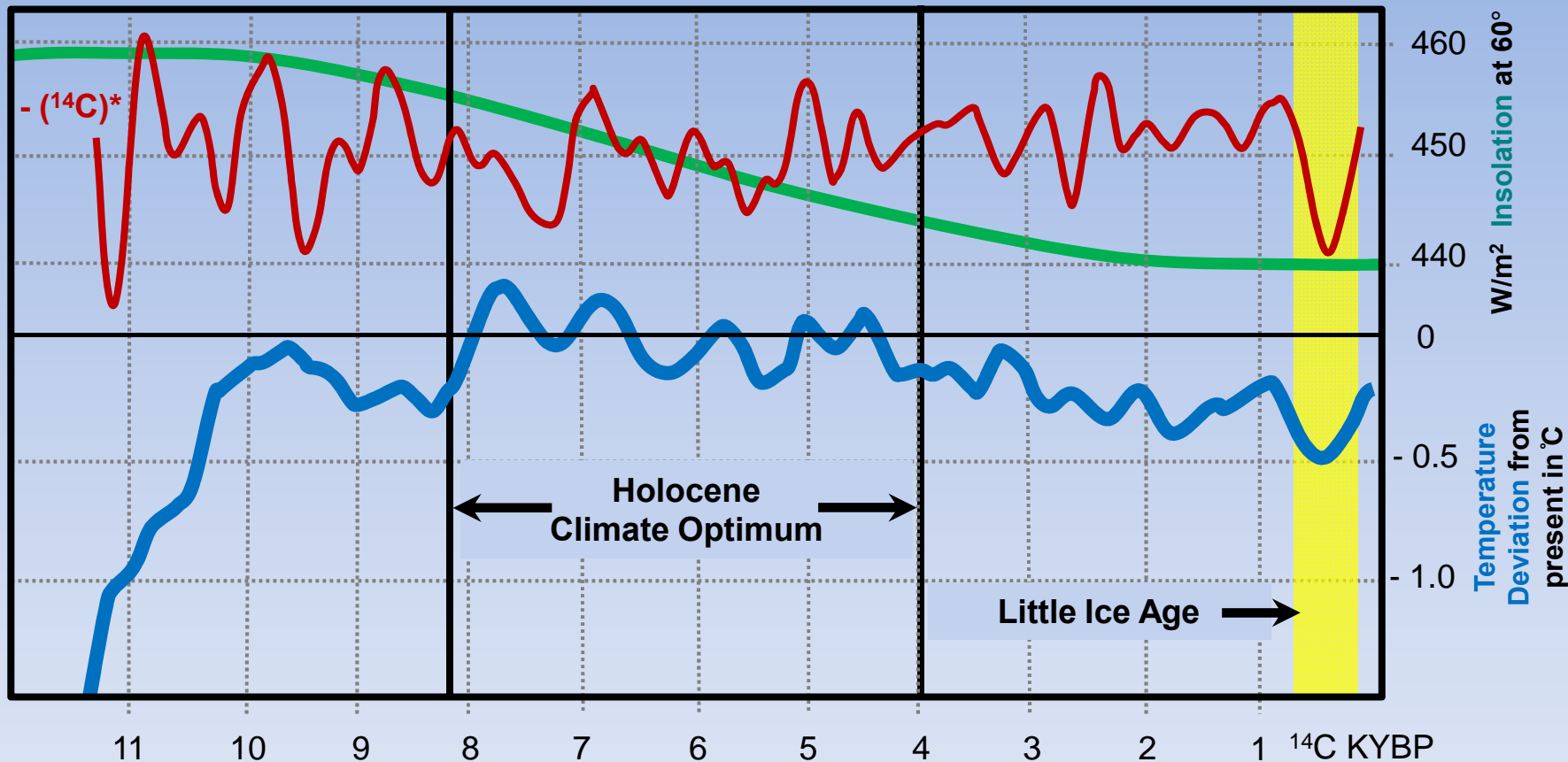
It takes time for speech to differentiate among adjacent groups. Hence, these large and numerous differences suggest either that the tribes had remained stable for longer than elsewhere or had less interaction among them. That observation is reinforced by the diaries’ reports of major differences in appearance among even adjacent tribes, some fair skinned, some darker, different hair color, stature, some with beards...

Increased isolation accelerates the rate of linguistic and genetic drift. Two major physical factors inhibit tribal interchange: first, plentiful materials all year long making trade less necessary and second, hazards associated with trade. Grizzly bears would certainly add to the potential hazards of travel and exchange (as would wars, which were frequent in California). However, wars disrupt spatial stability. Larger group interchanges, although safer, are less frequent because they require more preparation. Sometimes a whole village would go for a festival, which would make sense if a large group meant that too few would be left at home to defend themselves against either bears or other tribes.

Infrequent intertribal contact would explain why there is so little sign of highly contagious diseases with short incubation periods in California compared to elsewhere in North America. In effect, the grizzly bear may have saved coastal California tribes from the first wave of highly contagious European crowd diseases.



A linguistic map of California language sub-families drawn in 1962 by [Victor Golla](#). Click Image for more information.

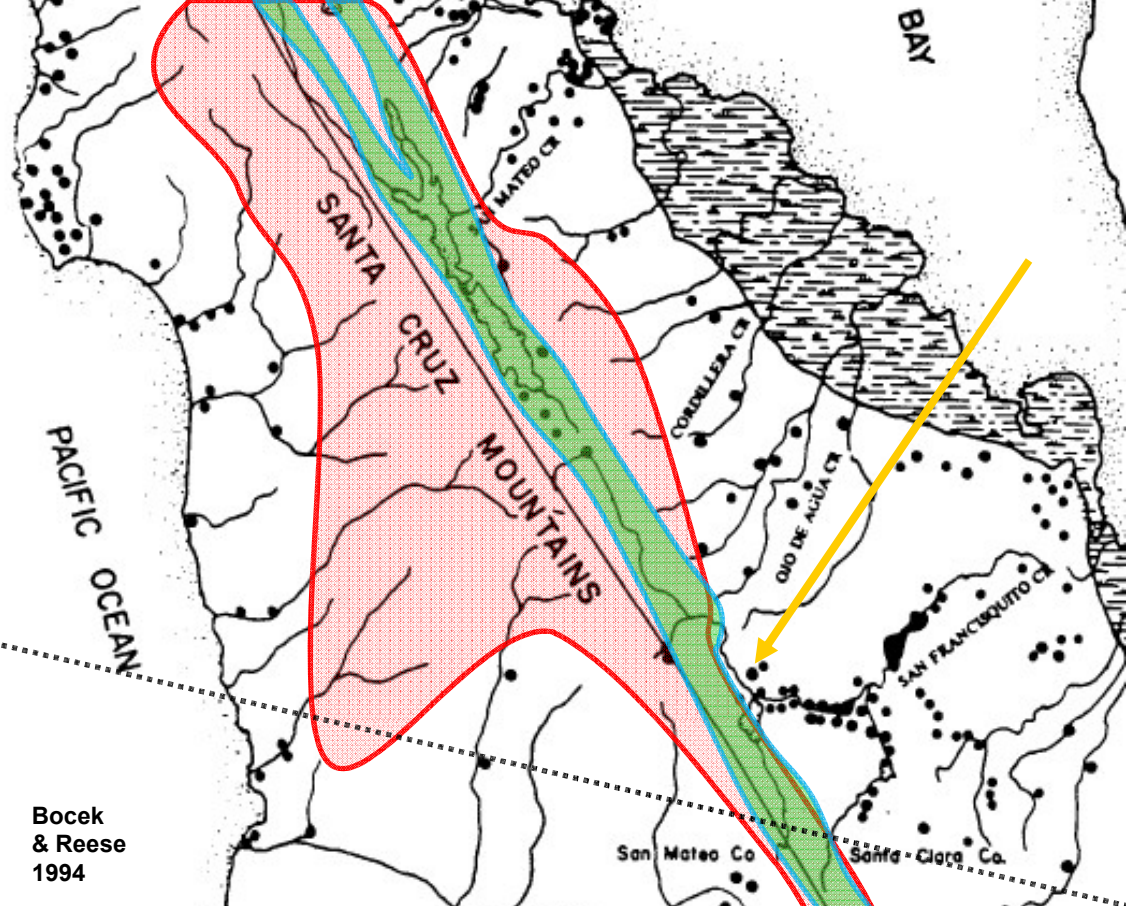
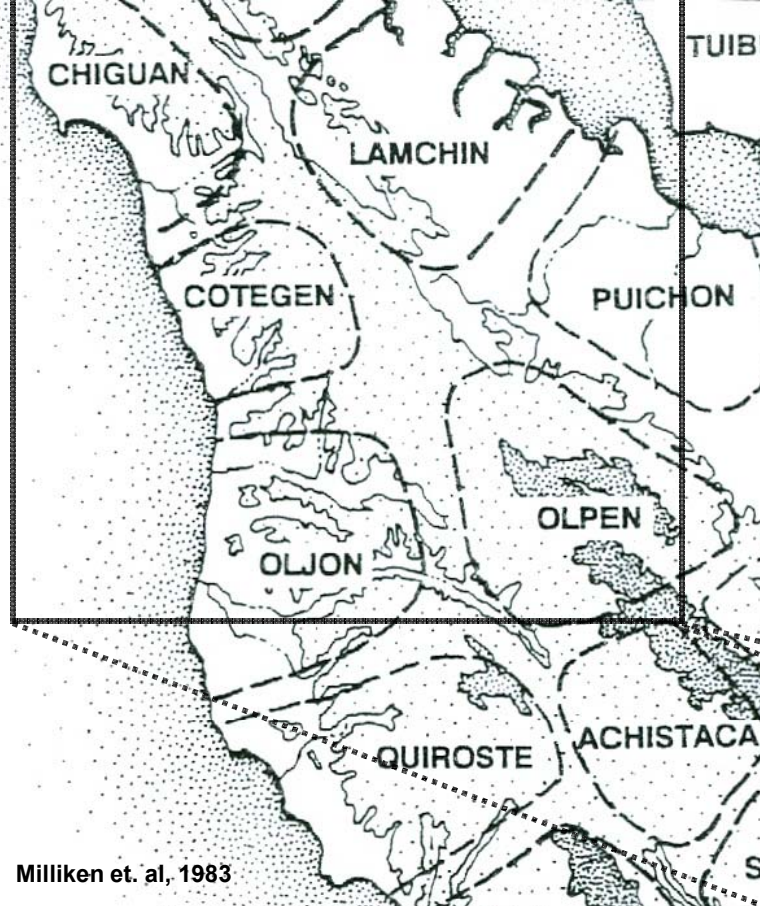


Holocene Temperature Variation with Solar Insolation and ¹⁴C Production*

*Production of ¹⁴C is inversely related to solar intensity, so I inverted and reversed Bond's (2001) ¹⁴C graph to show the correlation between solar minima and "temperatures" derived from ice cores.

Some archaeologists cite an increase of large game in Indian middens in the late 15th Century as indication that smallpox had wrecked havoc among California tribes. This hypothesis offers another explanation for that change: Colder winters during the Little Ice Age (yellow bar) meant that grizzlies may have been forced to hibernate over much of the region because snow and extended hard freezing reduce significantly the amount of available food which in turn allowed increased Indian hunting pressure on large game.

Crespi recorded the Indians in the San Antonio River valley (elevation 780') near Paso Robles, CA telling him about snow accumulations of 2-1/2 FEET while Costansó notes snow covering the mountains above San Diego in April. Similarly, the northern limit of this coastal zone of language density is approximately Cape Blanco, Oregon, not far from the northern the range limits of coastal redwood. Redwood cannot tolerate hard freezing. It might be possible to discern bear hibernation boundaries over time from pollen studies, also to be correlated with the content of middens. While there are counter-indications of a pandemic in the explorers observations, there is no doubt of lower winter temperatures during the pre-colonial period.



Closer to home, the map at left depicts a rough outline of linguistic tribal territories at the time of European intrusion. Unrecognizably different dialects at this spatial frequency would be totally unworkable with the distances people travel today, an inverse “proof” that for them to be so different and so close indicates relatively little intertribal travel for a period so long that languages from the same parent group (in this case Costanoan) could drift apart to that degree. Historically, this has been assumed to be primarily cultural, in that the tribes are well-documented to have considerable antipathy for their neighboring tribes as ‘wicked and dangerous people.’

The map at right shows the distribution of archaeological sites spanning a very long period (including long droughts and other climate variations) with the area in pink showing relatively few archaeological sites similar in shape to the unoccupied area at left. Along San Francisquito Creek, note that the dense population ends abruptly where the stream penetrates a range of hills (gold arrow) that define the eastern side of a San Andreas Valley that was too boggy to burn (green). From what I can tell, parts of the San Andreas Valley possibly constituted a seasonal “bear zone,” in a sense, functioning analogous to a geophysical feature rendering the area at least seasonably uninhabitable. The mountains above may have also been hostile to humans but for different reasons in that the grades are very steep and less suitable for either agriculture or acorns, also having scarce water resources in the East Bay below the Hayward fault. And what do you know but there were areas described with bears having only seasonal streams in the East Bay below the Hayward fault.



Mid June 2015

Another correlation with these hypothesized grizzly bear refugia for herbivorous animals is found in the attributes of California plants, which have a higher incidence of plant adaptations to and defenses against grazing: toxicity, concentrated smells in late season, and mechanical features (such as spines) that make them unpalatable. For example, the needle grass above (*Stipa lepida*) shows itself adapted to grazing in that it recovers strongly when mowed to the ground after seeding in late May while its analogue in the Great Basin does not. We have skunkweeds, spine-flowers, vinegar weed, scads of mints and sages, water hemlock, and lots of cacti. Most native California grasses are relatively unpalatable to grazers, having tough sharp seeds or an abrasive texture.

**POMO BEAR DOCTOR'S SUIT
MODEL IN PEABODY MUSEUM**
from *Pomo Bear Doctors*,
by S.A. Barrett,
Plate 7, p443.



Yet another indicator of this “grizzly hypothesis” is spiritual. In many if not most tribes, to eat bear meat was forbidden, a rule that showed up across extended “national” language boundaries (such as Uzo-Aztecán, to Hókán, to Algic...), whereas stark differences existed among religious narratives even between adjacent “tribelets” (such as among Luiseños). One grizzly could have fed a small village for a week and make a dandy blanket, so why the taboo? Simultaneously, it was a privilege to wear bear claws around the neck all over the State, so this is clearly not a prohibition against killing bears or using their body parts, but against taking their spiritual substance within one’s body. It was considered akin to cannibalism.

Also among many tribes spanning linguistic boundaries there was a special class of shamans known as “bear doctors.” These men secretly dressed in bear suits in which to kill Indians who had not acquired protection. These were bad people.

Concurrently, many of these tribes held that there was an afterlife. For good Indians, there was a paradise of plentiful food, beautiful weather, lots of meat to eat, and also meat that’s sweet. Bad Indians became demons. REALLY bad people returned to this world embodied as... grizzly bears. Readings of tribal ethnographies and discussions with both a distinguished Indian linguist and various archaeologists report that Indians did fear leaving their villages for three reasons: “bad people,” followed by demons, and then grizzly bears. Could it be that grizzly bears embodied all three?

Essentially, the proscription against bear meat may have been a way of avoiding taking into one’s body the evil spirits of REALLY bad people, perhaps to avoid becoming one. Might they also have been those ‘wicked and dangerous people’ of ‘that other tribe’?



John Peabody Harrington was a genius, astonishingly-dedicated, yet also clearly paranoid. He published little, while hiding his notes from his peers. Yet unlike other anthropologists of his day, Harrington not only archived over 150 languages, but replicated subsistence crafts from boatbuilding to botany, from fishing to religion. Scholars are still digging through his massive trove, over a million pages of notes, photographs, and recordings, most of which remained undiscovered until his recent death. Photo courtesy of the Smithsonian Institution.

Late 19th to early 20th Century linguists of aboriginal languages were in a great hurry to find the last few “speakers” of their dying tongues before they were lost forever. Unfortunately, as an academic fad, this emphasis upon language was at the expense of a more tragic loss of what the Indians knew about managing the land they loved. The academics of that time were trained to capture pronunciations and translate word-for-word what they were told. Few ever got as deep as to fathom idiom. They were academics, not hunters, gardeners, or shamans.

Indians might well have had names for all three types of bear attacks wrapped in mysticism as a way of offsetting the fear of being eaten alive with the more tolerable idea of murder. In the case of grizzlies, this potential conflation of idiomatic terms would represent a very reasonable coping mechanism in a tough situation. Similar treatments and taboos existed for rattlesnakes and mountain lions. There were “rattlesnake doctors” as well.

For Indians struggling to survive in day-to-day life, such risks *could* not be avoided. It is very hard to appreciate today what it would be like to compete with grizzlies for food because modern weapons and agricultural practices have changed bear behavior. Grizzlies no longer see humans as competitors for food.

In all my research, I never saw signs of weaponry with the power to kill a grizzly easily, neither nets nor strong snares, and few signs of long spears. Nor would anything less than a fatal blow deter a grizzly. Even if the shot was lucky enough to penetrate the heart (and it’s a long way in past very sturdy ribs), the bear still has 20 seconds to live. The effective range of a sinew bow or atlatl was no more than 50 yards. A grizzly can cover that distance in three seconds. Unless they could distract the animal sufficiently that it would die before reaching the attacker, said “brave” would earn his title. Yes, they could have used dogs or fire to distract the bear, but it is still an awful risk. It is undisputed that Indians did kill bears in California, but the combined evidences indicate that the lack of hibernation made managing grizzlies less successful here than elsewhere in North America.

So the model suggests that we had a bifurcated landscape: areas where humans burned annually in which Crespi reports “not a tree or shrub was to be seen” and areas with at most seasonal visitation, with less fire frequency, and more woody vegetation. There the Spanish saw lakes, aquatic birds, fruit bearing shrubs, and game, but rarely Indians. Burning around village sites for thousands of years would mean that there were no leafy perennials except along streams because fire kills seedlings. Fire-scars on conifers show forest burning was less frequent than around villages. There were probably also areas that were under either dominion on a seasonal basis, such as the hazelnut or acorn harvests when Indians went in groups to gather.

It’s a model, reality surely being more complex. If bears did provide ungulates refuge from Indians, it would explain why Indian meat consumption was usually small game despite large animals nearby in substantial herds, thus indicative of predatory pressure. Apparently ungulates preferred to take their chances with bears and mountain lions rather than the Indians, which fits with the lack of game elsewhere on the continent where Indians could more easily attack hibernating female bears and were thus uncontested apex predators.

Crespi also reported higher coastal stream flows at the end of the dry season than what we see today in areas with virtually no industrial or agricultural use (right). Particularly important is that this was during a near century-long drought during the Little Ice Age! Today, without burning or grazing, vegetative competition for moisture renders most of those streams dry in late season. Burning ironically reduces vegetative water competition such that late season riparian vegetation might well be “lush” as described. These would be areas that could function as animal refugia from Indian hunting fires, places that would not burn in all but unusually dry conditions and only with sufficient fuel loads (hence redwood forests).



June 2002, near Davenport, CA





© Anne Thierman

Part of a Mural in the UC Santa Cruz Ethnic Studies Building (Courtesy of Anne Thierman). It depicts the Quiroste village (map prior page) as described by Juan Crespi in his diary entry from the 23rd of October, 1769. Click anywhere for a pdf of the full image.



These fruit trees were irrigated

(dry) Blue Curls

Pink Cudweed

Verbena

Blue Curls

Sedges

Blue Curls

Verbena

September 2014



It is possible to grow large “lush” annual plants well into dry late-summer California. Here at the Wildergarten, we have lush blue curls (*Trichostema lanceolatum*) and pink cudweed (*Pseudognaphalium ramosissimum*) in September (the dry ground-cover is perennial *Verbena lasiostachys*). The blue curls are 1-2 feet high, while the cudweed reaches over four feet. Neither has received any water in five months, and this was a drought year. Neither germinates well in competition with grasses. (The piles are for composting weeds.)



Mission Santa Cruz, by Léon Trousset, oil on canvas, 1876

The Franciscans enticed the Indians with food and clothing in return for labor to build the mission, housing them in close quarters, occasionally mixed with the dregs of soldiers from the nearby Presidio at Branciforte. Indian escapees carried European diseases back to their tribes, notably syphilis and tuberculosis. The Franciscans did their best to both “elevate” the Indians and grow the mission program with what little they had or knew about the land. They introduced more productive crop plants they eventually learned how to manage here, especially once they channeled irrigation water. Cattle hides were to be their main cash export. With the cattle and horses came “slender oat” (*Avena barbata*) and other weeds. The animals traveled and fed wherever they wanted, sowing their “wild oats” wherever they went. The Spanish also banned Indian burning to maintain more dry season forage. After eighty years of unrestricted grazing and fire exclusion, the landscape changed completely, transforming the soil in the process.

Nobody knew what was going to happen, as the rapid introduction of alien plant species was a relatively new thing in the world. Reverend T. Starr King, an itinerant preacher from the American East, recorded his impressions of the Bay Area in 1859. They are quoted here in full so that you can get a sense of a landscape in change, how change has progressed since that time, and what that portends for the future. After this quote, I will discuss some technical conclusions from Reverend King's observations and then get back to pictures covering what has since transpired. I wish I could offer a photo to show you how things might have looked to Reverend King back then, but sadly, I know of no place where this is possible. His words, I think, are adequate.

"AROUND THE BAY" IN THE SEASON OF FLOWERS ([source link](#))

In the early part of May, a week after my arrival in California, I was invited by a very intelligent gentleman in San Francisco, to take a seat in his carriage for a "drive around the bay." This means around the Bay of San Francisco, which extends southerly about fifty miles from the Golden Gate, where the tides of the Pacific force their way inland. The bay is, therefore, a large salt-water lake, about eight miles broad and six times as long. It is dotted with islands, and lies placid in the embrace of some of the richest lands of California. In making the tour around it, we drive down along the narrow county of San Mateo, whose hills divide the dreamy bay from the billows of the Pacific, then across the county of Santa Clara, and up, on the eastern side, through Alameda county to Oakland, where the ferry-boat returns us to the metropolis of wind and fog, whoso climate in summer is exhaustively stated in the phrase, "gust and dust" [at that time, much of what now comprises San Francisco was then open sand dunes – ed.].

*Early in May is the true time to make this excursion, for then the country is at the height of its brief bloom. California has often been compared with Palestine and Syria for scenery. The passages in the Psalms and the New Testament which describe the fleeting beauty of the flowers and the grass, are certainly applicable here. "For the sun is no sooner risen with a burning heat, than it withereth the grass, and the flower thereof falleth, and the grace of the fashion of it perisheth" [James 1:10-11]. Indeed, **there is no grass**, properly speaking, native to the landscape. **The green of early May on the uncultivated plains and slopes is mostly that of the wild oats.** As the summer sun rises, and the rains cease, they ripen into a golden tinge, which, at a distance, is the hue of sand, and their seed drops into the parched and crackling ground for new crops when the rain returns. By the middle of June all the wild fields that are destitute of trees, look sandy with this harvest of indigenous and self-sowed grain; and it is only in May that the plains and hill-sides which the plowshare has not broken are clad in their vesture of embroidered green [this is how much of California looks to this day, indicating how early, rapid, and complete was the change wrought by the early Spanish introduction of exotic wild oats].*

But the beauty is as captivating as it is evanescent. Some travelers have written of the marvelous effect of the air of California on the spirits. Bayard Taylor tells us that, on this very drive, he felt in breathing the air like Julius Caesar, Milo of Crotona and General Jackson rolled into one. I cannot honestly say that the vivifying quality was any greater than I have experienced in the Pinkham woods, or the forests of Mount Adams, or on the heights of Randolph. Oxygen is oxygen, and will General Jacksonize a man as quickly in Coos county, New Hampshire, as when it blows over the coast range of



California, fresh from the Pacific. But there was a great exhilaration in the first acquaintance with the scenery of a strange land, especially when made in a luxurious carriage and with the accompaniment of pleasant companions and a very spirited team.

The first thing that arrested attention after leaving the sandy shores of San Francisco was the flowers. Early in May, in New England, people hunt for flowers. A bunch of violets, or a sprig or two of brilliant color, intermixed with green, is a sufficient trophy of a tramp that chills you, damps your feet, and possibly leaves the seed of consumption. Here they have flowers in May, not shy, but rampant, as if nothing else had the right to be; flowers by the acre, flowers by the square mile, flowers as the visible carpet of an immense mountain wall. You can gather them in clumps, a dozen varieties at one pull. You can fill a bushel-basket in five minutes. You can reap them into mounds. And the colors are as charming as the numbers are profuse. Yellow, purple, violet, pink and pied, are spread around you, now in separate level masses, now two or three combined in a swelling knoll, now intermixed in gorgeous confusion. Imagine yourself looking across a hundred acres of wild meadow, stretching to the base of hills nearly two thousand feet high the whole expanse swarming with little straw-colored wild sun-flowers, orange poppies, squadrons of purple beauties, battalions of pink and then the mountain, unbroken by a tree or a rock, glowing with the investiture of all these hues, softened and kneaded by distance. This is what I saw on the road to San Mateo.

The orange and purple seemed to predominate in the mountain robe. But on the lower slopes, and reaching midway its height, was a strange sprinkling of blue, gathered here and there into intenser stripes, and running now and then into sharp points, as if over the general basis of purple, orange and yellow, there had fallen a violet snow, which lay tenderly around the base, but in a few places on the side had been blown into drifts and points.

The wild poppy of California, in May, is the most fascinating of all the flowers. It does not have a striped or spotty leaf, but is stained with a color which is a compromise between a tea-rose and an orange, and is as delicately flushed and graduated in hue as a perfect rose. I never tire in studying their color, in masses or singly. While driving to San Mateo, we came upon little clumps of them, springing out of the rocks on the edge of the road that overhangs the bay, and their vivid orange, upheld on graceful stems, and contrasted with the grey stones and the blue of the bay, gave me a joy which comes up as fresh while I write as when I saw it first. Another piece of cheer intrudes itself between my eyes and the paper, and insists that a pote shall be made of it. I mean a California blackbird, perched on a mustard stalk ten feet high. The wild mustard [also introduced] grows luxuriantly on the lands at the foot of the bay. It is a great trouble to the farmers, for if the cows eat even a little of it and they seem to like it for seasoning it gives a pungent flavor to the milk and makes the butter bite. But a field of it in brilliant yellow is decidedly a pleasing condiment to the general feast of colors. And when a blackbird with a large spot of scarlet on each wing flutters over a tall spear of it and then alights with a cheery twitter, one has a picture before him which gives two-fold delight by making him repeat the couplet of Holmes:

*The crack-brained bobolink courts his crazy mate,
Poised on a bulrush tipsy with his weight.*



If I quote wrongly, may the genial and always accurate Professor forgive me. I repeat from memory, and must wait till the Mameluke arrives from Boston with my books, before I can verify a dozen passages of his, which the Californian scenery sets to music again in my brain.

And yet the old Californians, " forty-niners," sigh when you speak in praise of the May-luxuriance around the bay. They say that the glory is over now. "Ichabod" is written on the landscape. They rode over the same districts when there were no roads, or ranches, or fences, between San Francisco and San Jose, and when the horses wallowed and galloped through an ocean of floral splendor [already covered in oat grasses as described above]. The visitor cannot help noticing, when he leaves the base of the mountains, and comes to the farms, how civilization has tamed the land. The barley and wheat, and bearded sweeps of simple green, look cool and unromantic in contrast with the natural coat of many colors which the unploughed districts wear. The brindled leopard has taken the hue of the cat. It is only when, here and there, we come upon a garden, and see the blaze of roses which bloom the year through, that we see how superior art is to nature.

OK, anyone familiar with the current appearance of northern California should be seriously circumspect, in that the lands "our" open space districts, parks, and conservancies are currently "protecting" bear no botanical resemblance whatsoever to what was "Natural" when white explorers first beheld the Bay Area. So if this was May and these were seed crops, the "sunflowers" were probably tarweeds (*Madia spp.*) and mule's ears (*Wyethia spp.*), the purple and blue maybe *Gilia*, lupine, or bulbs such as *Brodiaea elegans*, *Tritelaea laxa*, and *Dichelostemma capitatum*. The pink and white might be buckwheats (*Eriogonum spp.*)...

King's account of these post-disturbance annual plants suggests that the populated area around the Bay had been burned at least annually, similar to what Crespi and the other Spanish diarists had noted. Accordingly, this was NOT a "Natural" landscape, but a relic garden, regularly and heavily impacted by between 15,000 to 30,000 Indians, people who lived here and depended upon it for food, building materials, and craft goods. Most of these plants produce very small seed. Hence, the burned flatlands and low hills had to be dominated by flowering plants harvested for seed to make a usable amount of food. My experience here suggests that without fire, native perennial grasses (which bear very poor grain) would have taken over wildflowers even if the oats had not been introduced. So why it was still in flowers when King saw it 60 years after the Spanish burn ban is a mystery. Perhaps it was simply a lack of seed where it had been burned for so long. Many of those hills are too steep to graze.

We cannot go back to what it was. We cannot burn the landscape annually. We do not harvest tiny seeds as staples. We do not dig bulbs for food. **Yet we still have the responsibility to keep *all* of the genetic constituents of this system reproducing;** else they will go extinct. We will then lack means with which to increase production of those plants and insects should that become economically and technically achievable or desired. *Wildergarten* is the first project, ever, to achieve a substantial fraction of that initial goal, proving that restoring a native plant landscape is at least technically possible, one with meadows including large numbers of native annuals but still dominated by grasses. We are maintaining reproducing cohorts of post-disturbance annual plant systems and we are cleansing the seed bank such that, in many locations if it does burn the plants come up native. We do not have all the plants that once grew here, nor are they distributed as they probably once were. So now that we have proven that restoration is at least technically possible, we are improving our processes to render such results financially affordable.





Photo courtesy of Tejon Ranch Company

Remnants of what King described can still be found, although degraded from their original magnitude and variety. Like regular Indian burning around San Francisco Bay, this landscape in Tejon Ranch in southern California is maintained in an early successional stage by regular disturbance: periodic cattle grazing. Hopefully, a way can be found to maintain these unbroken views under the financial pressure to seek more profitable alternative land uses; i.e., development. Either way, the weeds will win unless somebody cares for it.



June 2014

“As the summer sun rises, and the rains cease, they [the oats, M] ripen into a golden tinge, which, at a distance, is the hue of sand, and their seed drops into the parched and crackling ground.” This is what most of that invasion in King’s description looks like today. These are “wild oats” (*Avena barbata*) and not much else. The Journal of Zenas Leonard reports that “oats” (what a Euro American would recognize as such) were dominant in the San Joaquin Valley by 1833, only 60 years after the Portola expedition. Horses multiply so fast the Spanish managed them as a commons. They also dig the ground. Horse herds grew to the point that the Spanish were running them off cliffs to reduce the damage to the range. With oats and overgrazing, the land quickly changed beyond recognition.

IF WE KNEW WHAT WE *WERE* DOING...

The previous discussion suggests how little we know when it comes to the goals of “restoration” in the contemporary sense of a particular arrangement or successional state. Hence, with our project, once the fuels were reduced below criticality the first attainment target was to develop working processes among cohorts of early successional native plants. Nobody knows how these native annual plants worked together as systems, nor is anybody going to know unless we develop numerous sites, each fully populated purely with native plants and then run trials over a wide range of soil and micro-climate conditions over a considerable time under a variety of treatments. Our project is still in preliminary phases of asking the questions to develop those methods and tools while stirring things up and observing how these systems work as the natives return. Then we move on to their symbiotes, parasites, etc. with a focus upon maintaining the post-disturbance successional system. Simply learning what it takes to create functional native plant habitat is useful knowledge. Another goal is to provide a refuge for producing native seed, because the stock of remaining viable native annual seeds is so severely depleted. In parallel with that is learning more about how to integrate people into the system to enhance the lives of both people and the land.

Observations here suggest that Indians once governed the land not under direct cultivation by frequent disturbance, usually fire, intentionally or otherwise. If the patch was something the Indians liked, they'd tend and extend as appropriate to what they wanted to harvest. There may have been successive crops taken from the same patches (what I call “layered harvesting”), such as bulbs first, then grasses, burn, tarweeds after a second fall burn, and then acorns. After harvesting, whatever first successfully colonized went through a primary succession process until the next disturbance. Fires farther from settlements (such as “bear zones”) were patchy mosaics (thus complicating fire archaeology).

In these mountains, generally speaking, meadows were more common on ridges and wet bottomland, with chaparral on the top slopes succeeding downhill to oak woodland and then redwood in the gullies (or below wherever there was a spring, of which these mountains have many, even on ridges). The meadows and chaparral were probably patchy too because they'd burn off when a hot enough fire met a sufficient fuel load. It's almost impossible to kill a mature redwood except by hard freezing, but seedlings are susceptible to fire. Burn annually for thousands of years and there would be no trees.

Neither the Spanish journals, Indian middens, nor ethnographic records suggest that California Indians depended heavily upon large game. A few do mention them wearing skins but most noted that they were from small animals such as rabbits. There are LOTS of shells in middens from snails and bivalves. My guess is that because of the grizzly hazard, hunting large game was communal and infrequent despite plentiful animals, with the harvest being distributed as soon as possible. Such practices are not unusual among hunter gatherers today with great prestige and better mates going to generous providers.

Yet even if we did know how things once were, there is still a more important question as regards “sustainability”: **Is what the Indians did the best that *could* have been done?** I doubt it, at least around here. The tribes didn't have easily manageable animals with which to build deep organic soils. They burned so often that on steep ground like ours, most



...WE WOULDN'T NEED RE-SEARCH

nutrients would wash off in heavy rains. The plants they used for food required VERY time and energy intensive harvesting and processing techniques. Having extirpated so many large bodied animal species after the Pleistocene, the tribes had a very limited array of options compared to an agro-urban society.

That doesn't mean Europeans have done such a hot job. We have yet to deal with the legacy of resource extraction, exotic introductions (witless and otherwise), topsoil losses, abandonment of marginal sites (such as ours), and subsequent neglect. We do have better tools. Indians would have killed for a chainsaw or a good shovel, never mind a D8 cat, herds of horses, cows (bison), sheep (bighorn), and goats (antelope - each animal in parentheses being a controllable domesticated variety of the former). Tools facilitate vegetation management, which once played a significant role in shaping these mountains and should consciously do so once again, instead of pretending this will all will fix itself. Then there is the not insignificant matter of keeping it all going under the continuing onslaught of new exotic introductions, about which virtually nothing is done.

Native post-disturbance forbs are critical to insect life upon which birds and pollination depend. They are a critical source of protein in the animal food chain. We cannot simply ignore their lack, install native perennials, and call it 'restoration.' Yes, it is difficult to reestablish native post-disturbance annual cover, but it must be done or we will lose the foundation of the successional system, particularly insofar as soil microbiota, fungi, nematodes, and insects are concerned.

I believe that the best we can do for now as an attainable goal is to develop an array of small properties developing remnant cohorts of locally adapted plants with which to produce fresh seed, learn how those systems work, and learn what might be done with them. In my opinion, "preserving" huge landscapes for large predators, popular with environmental groups, is a disastrous policy of ill-informed and wishful thinking. Besides the policy's obvious potential for unrestricted contagion, no animal survives without food. For the food system to work it needs a foundation, the base of the biological food pyramid upon which predators depend too. That starts with bacterial and fungal relationships in soil among post-disturbance forbs, herbivores, and insect life. Large predators such as bears and wolves come later, **after you have a food chain that works.** Meanwhile, there is little a predator can do that hunters will not **pay** to do. Large predators make the job of restoration unnecessarily hazardous, both for people and for the animals that can help pay for the work. Yes, predators can be useful, particularly in rugged and remote locations where anthropogenic animal management is more costly. Yet from crows eating sage grouse eggs, bull frogs eating endangered red-legged frogs, sea lions snarling down endangered salmon, coyotes and mountain lions hammering big horned sheep, striped bass eating Delta Smelt, and goodness knows how many other similar cases, it is predation run amok under the watchful eye of complicit government agencies that has driven many endangered species to the brink, possibly more so than destruction of habitat by human development. All it takes to understand that is to look down next time you fly over the American West to see how little of it has been developed, even in California. As you will see next in this chapter, many areas currently thought to be undeveloped were once under intensive use and have since been abandoned. We've been had, deliberately misinformed by those with everything to gain.



DISTURBING HISTORY



Our property adjoins a trade route originally at the margins of the Awaswas Sayante Indian “tribelet” between what are now Scotts Valley to the south and Los Gatos in the Santa Clara Valley to the north. The area is beautiful, but has always been steep, dry, and erosive with very poor soil, making temporary survival along this ridge a challenge, even for aboriginal traders.

In 1791, the Spanish Franciscans at Mission Santa Clara conscripted 500 Indians to improve the trail to supply a new mission in Santa Cruz. That August, they brought oxen, sheep, horses, and cattle over the trail, and the weeds came with them. For over 60 years, that Spanish road remained the principal commercial transport route between Santa Clara and Santa Cruz. Since that time, the region has endured a tumultuous botanical history.

The rate of change accelerated in 1850 when Charles McKiernan homesteaded here. He blasted and graded the trail into a road, once traveled by James Brewer of the US Geological Survey in 1861. Brewer rhapsodized about it in his diary *Up and Down California* as “the most picturesque road we have yet driven.” He went on at some length about the scenery, which was quite different than what we see today.

Development sprang up alongside the road, both to facilitate transportation and to take advantage of it. Our place was used for harness repair, manufacturing redwood moldings, even an apple orchard (the eroded terraces and trashed equipment are still visible). There are also signs of sand quarrying. Lacking a trash pickup and to slow erosion, they tossed their trash into the gullies (including a car). It was logged and burned some time around 1900. It even sheltered hippies growing marijuana nearby, during which time the cabin on the property burned down in 1979.





April 2012 – The background in this area has since been thinned

It is much easier to learn to recognize evidences of botanical history by emulating the disturbance processes under which the area was once managed, along with intensive weeding. Indians burned frequently along this trail. I have long used fire-response as a diagnostic tool indicating what once grew in each spot (applicable only to areas like this that were neither tilled nor graded). The results can be surprising, particularly in an area this small as held in different successional stages. The fire responses suggest that this area supported at least four Indian crop patches (green arrows 1-4), the first being the clover at #1 (“Burn Spot A” in the photo). I have used “Burn Spot A” 2-3 times and it only comes up in clover and lotus. Two other burn spots (red arrows B&C) behind trees or outside this image (to come) are less than fifty feet from Spot A. The trick then is to figure out why the tribes grew these plants here.



February 2015

This is the clover on Burn Spot A, almost all of which is *Trifolium microdon*. What is indicative of cultivation here is that there is very little lotus (either *Acmispon americanus* or *A. parviflorus*), which is unusual on this property, as the lotus is usually more dominant.



October 2013

At Burn Spot B, just to the southeast of Spot A, we get *Ceanothus papillosus* in profusion. *Ceanothus* is a fire follower and its seed can remain viable for many years. That it has *never* shown itself at any of the other burn spots is significant. It indicates that the latter locations on this slope which did *not* have a *Ceanothus* response must have had a very stable vegetative configuration with no succession from forbs to chaparral for many years, indicating a history of regular disturbance for a very, very long time.



February 2015

W

In patch #2 adjacent to Burn Spot B up came “death camas” (*Toxicoscordion fremontii*; was *Zigadenus fremontii*). Note that here too death camas grows in a tight patch that just stops on the left with no residual signs of native brush (although at one time there was a ton of broom here). But if these patches were agricultural with which to supply a trade route, why would Indians grow a plant so poisonous that it kills herbivores tougher than we are in serum concentrations of 5 parts per million of body weight? I have scoped this region well beyond our property and the only place where death camas is commonly found is along the old trail. If I am correct about the threat of grizzly bears, this route was not used frequently but it was likely to be burned clean so as to see threats along the way, two of which were grizzly bears and mountain lions. The local archaeologists inform me that the local tribes did not use poisoned arrows and this toxin is too slow acting to be useful for that anyway. Most carnivores (not including bears) cannot digest vegetable matter efficiently, so they get that part of their diet partially digested for them by eating the guts of herbivores. Hence, one way to deal with the threat of being eaten would be simply to load the stomach of an occasional carcass with the mashed pulp of these poisonous bulbs.



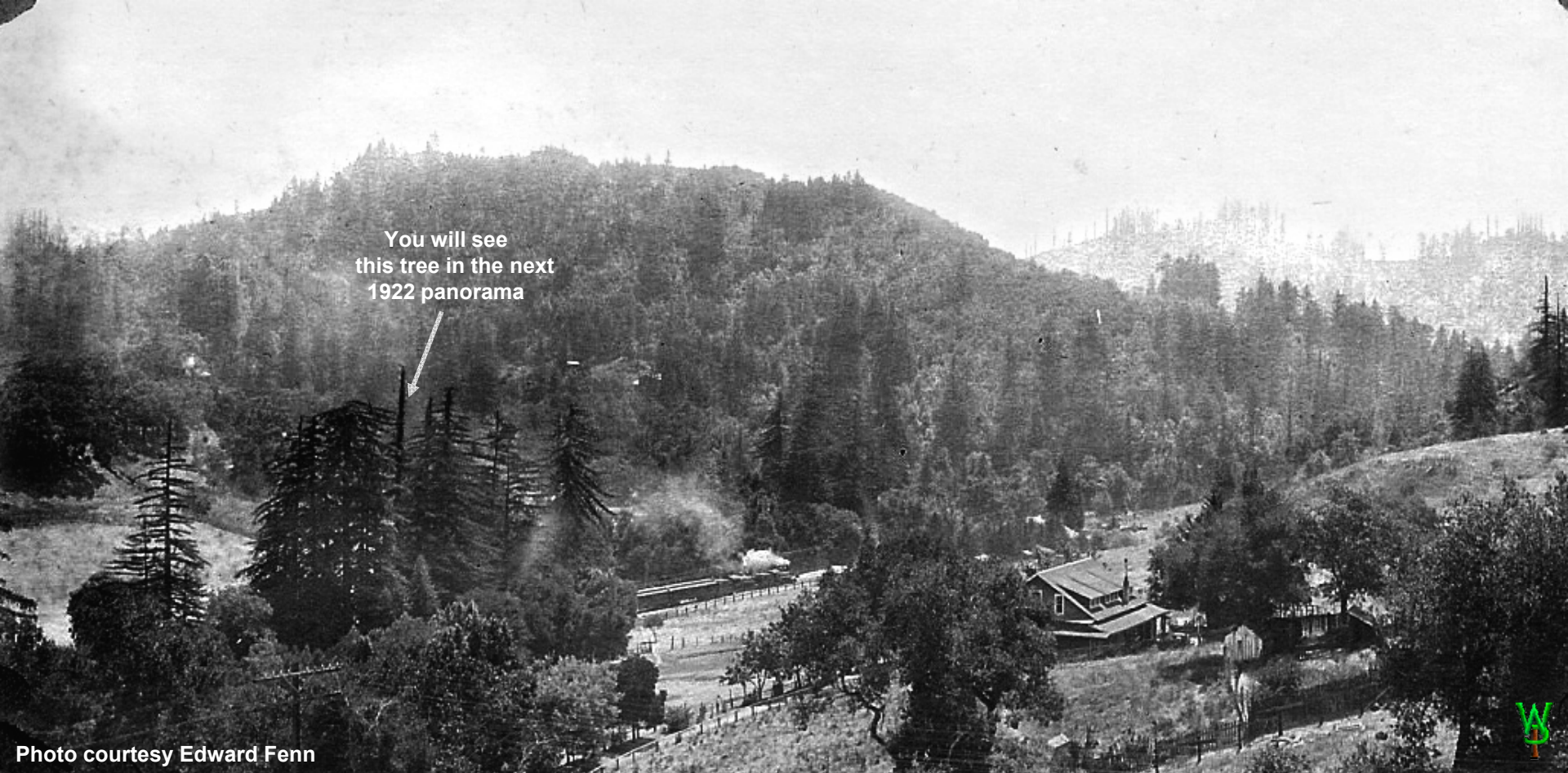
February 2013

Patch #3 is Burn Spot C. In this location once we removed the weeds (the girls worked hard here), and a few years later up came “blue dicks” (*Dichelostemma capitatum*). This was the first instance in which I recognized possible evidence of aboriginal agriculture. Here there has *never* been a sprout from any shrub, soap lily, or death camas in 10 years since we got rid of the weeds here, suggesting that succession to chaparral has probably not happened here for a very long time. These four-year-old sprouts from seed have yet to mature sufficiently to flower. In this soil, it took two more years and warm rains.



February 2015

Patch #4 just below the blue dicks consists of soap lilies (*Chlorogalum pomerindianum*). This was a staple of the Indian diet, albeit the bulbs required roasting for some 18 hours to be edible. Interestingly, we have other areas on the property where there are blue dicks atop the slope and soap lilies immediately below, also with little intermixing. The pattern appears too repeatable to anything but an anthropogenic arrangement. The point of this little detour into ethnobotany is that much of what we see is a result of the site history. From that one learns more about how it was once managed with which to posit what might work here now. So, back to history.



You will see
this tree in the next
1922 panorama

Photo courtesy Edward Fenn

In 1853, Charlie Martin homesteaded the valley below the road. He founded what became the **town** of Glenwood (yes, “**TOWN**” for the benefit of those thinking development in these mountains is “threatening an undisturbed Natural landscape”). Here was a train station (there is a train in the picture), a rail yard with over a half mile of track, and a turntable to send engines back down to Felton. There were three hotels, a lumber mill, a winery, a general store, a dance hall, a post office, stables, a campground, and over 20 cabins to house visitors. This photo was taken in 1922. By then there had been labor camps for the Chinese workers who built the tunnels through the adjacent ridges for the rail line along with animal handlers, craftsmen, cleaning women, cooks, and other workers that lived here. There was also electrical power and telephone service (note the pole in the left foreground). I have enhanced the sharpness and contrast of this image so that you can see individual trees. The pointed tops of the redwoods in the background, indicate that they are growing rapidly and therefore younger than the old trees in the left foreground. Individual trees with pointed tops are indication of successional invasion. The relatively few clumps with pointed tops had probably been logged (in 30 years, crown-sprouted redwoods would be over 60 feet tall) demonstrating that, although they did log up the draws, both Charlies, Martin and McKiernan, retained their finest specimens for their customers to enjoy. How do I know? Well, their advertising says so.

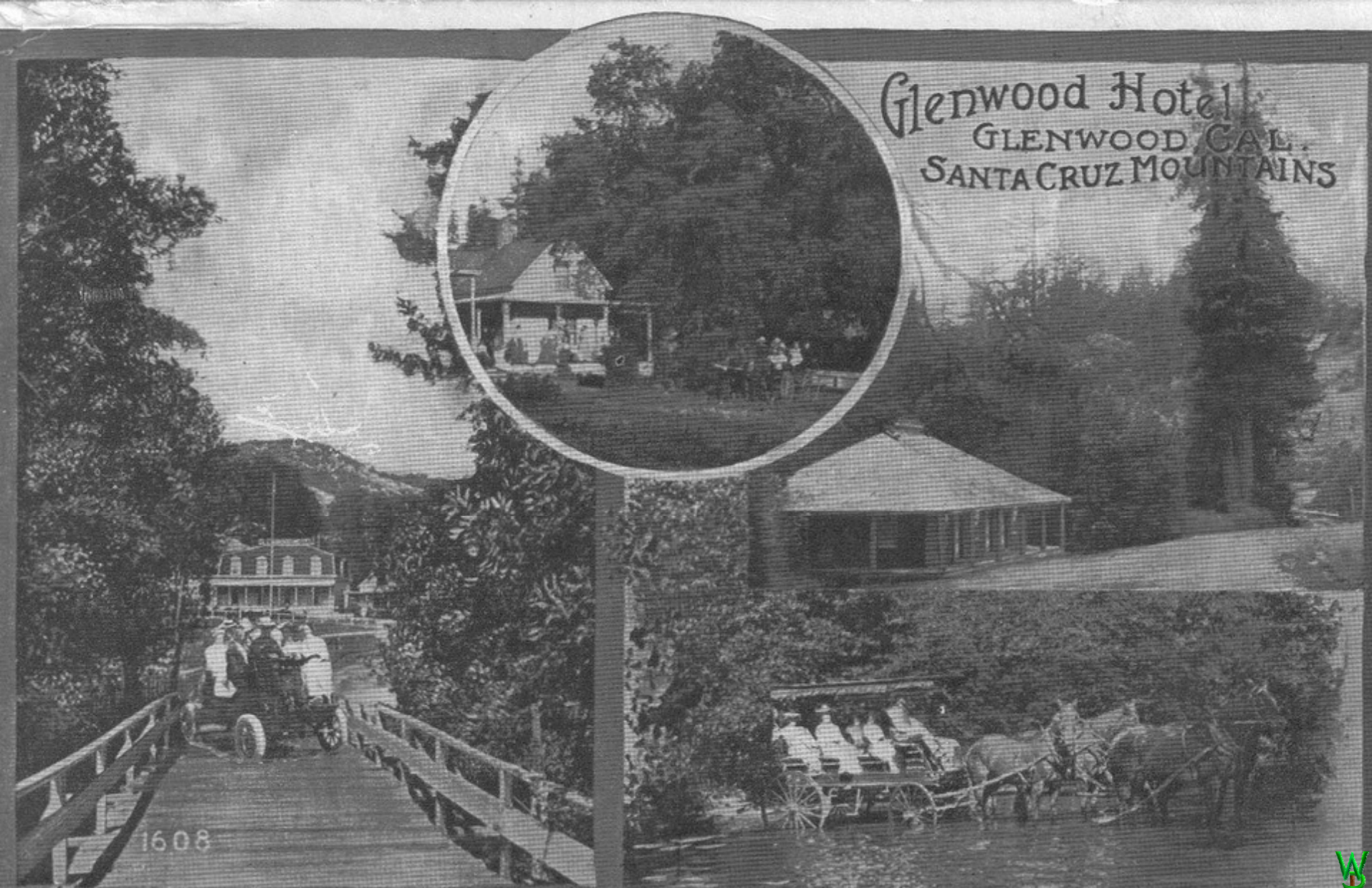


Image courtesy Edward Fenn, Source unknown. I suspect that the car at least was "cut and pasted" into the image, a PhotoShop job of its day.

This was Charlie Martin's idea of a private "park." An ad in the San Francisco Call, July 1909 read, "**GLENWOOD HOTEL**, *Among the redwoods* of Santa Cruz Mts. On the new short line, 2 hours from S. F. (just try making the trip that fast in a car today). Write for circular. WM. MARTIN, Glenwood. Santa Cruz county, Cal." Another resort near the hotel (Glenwood Magnetic Springs) hosted a campground, cabins, picnic facilities, and a swimming pool. It was quite the attraction in its day.





The town added a dance hall, a bowling alley, a billiard room, a smoking room, and a conference center capable of serving 250 guests, and yes, there was even electric lighting! This was a busy community built around the Glenwood Hotel which soon had a pair of competitors. The town's permanent population reached 500 residents. This was a product of grand ambition, vision, love of place, and an enormous amount of hard work.

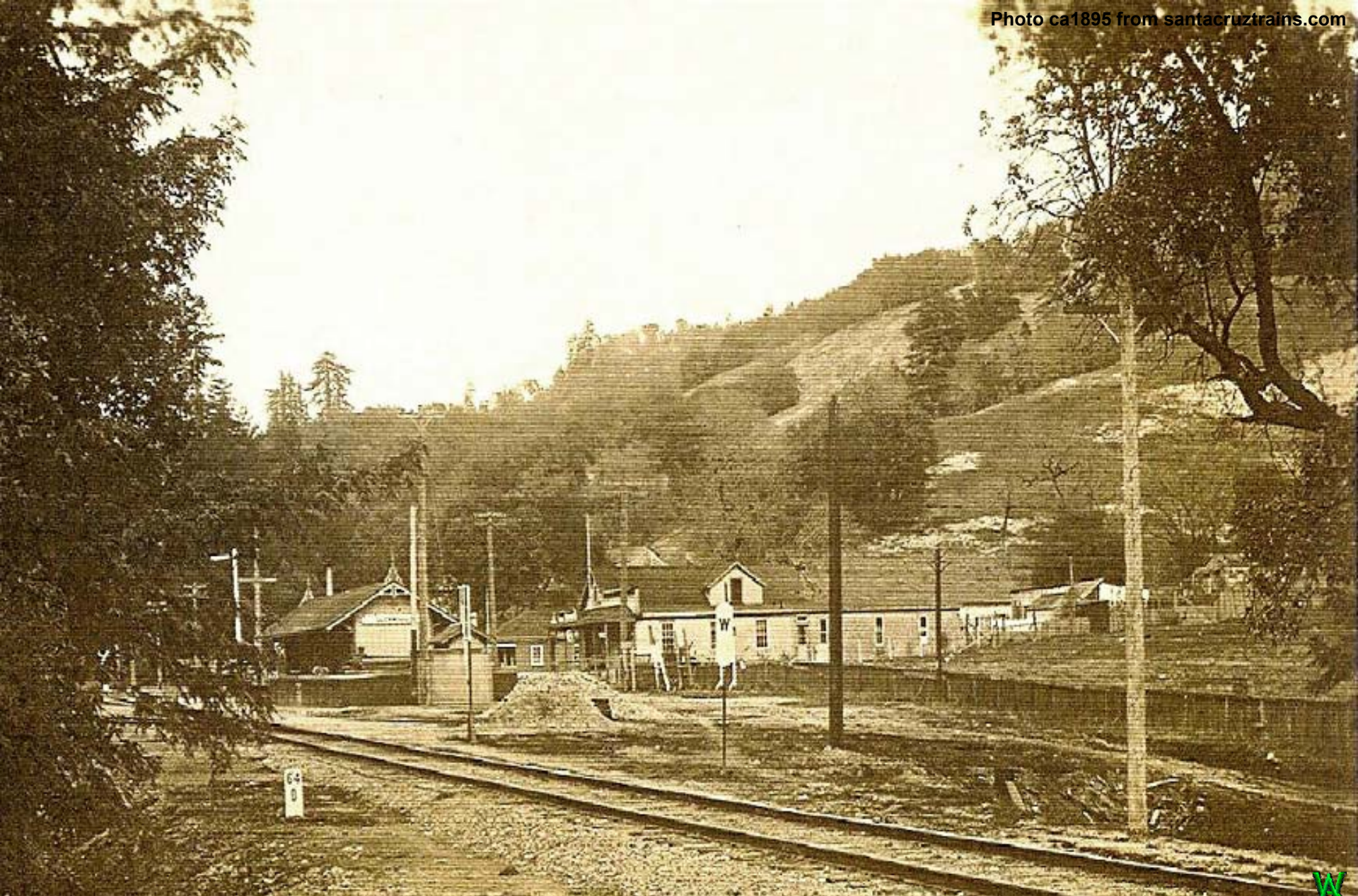


Image courtesy Derek Whaley, Source unknown but probably the Margaret Koch Collection of the Santa Cruz Museum of Art & History

This was the Glenwood train station. Yes, this was private eco-tourism by efficient rail mass-transit long before there was a decent road to the town! The two hours to get here by train from San Francisco was not much longer than it takes today. Note the bare patches of sand on the hillsides above. These soils are very poor.



Photo taken in Glenwood just south of the station ca1890s, from santacruztrains.com



It was called, "The Picnic Train." On weekends in the early 1890s, hundreds of people **per day** debarked the train to escape the city and enjoy the landscape. They had their choice of resorts: Glenwood Magnetic Springs, Summer Home Farm, or Villa Fontaney. Note how many fewer redwoods on the hillsides in the background there are than in the prior panorama 30 years later. Was it because of logging? No, the spacing is too open. The real reason is much more interesting than that.



Early on, the only way to get to Glenwood by road was via Charlie McKiernan's toll road on the ridge above. The State proposed to build a highway through the Santa Cruz Mountains. Mr. Martin offered a free survey suggesting that the "best" possible route, just so happened to pass right through his town! The Glenwood Highway opened in 1916. Three years later it was paved with 5" of reinforced concrete (left), paid for out of the military budget.

But alas, the gravy train for Glenwood was not to last. The construction of the highway and the falling prices of mass-produced automobiles and gasoline lured passengers away from train travel. With fewer rail passengers, ticket prices rose and customers chose. Drivers passed through Glenwood on the way to bigger resorts at the beach in Santa Cruz (where it is cooler in summer). The hotel closed but five years later.

The State of California opened State Highway 17 from Los Gatos to Santa Cruz in 1934. The new "best" route bypassed Glenwood by about half a mile. Charlie Martin's gas station and store closed the same year. People were driving to the beach on weekends, a weekly traffic jam that continues to this day. The Picnic Train ran for the last time in 1940. Much of the route near Los Gatos lies under a reservoir today.

After the War, the State opened Henry Cowell Redwoods State Park not far down State Highway 9 from the end of State Highway 17. The option offered both effectively "Free!" access and use of public campgrounds. The State pays nothing for liability insurance and has unlimited legal resources. The days of large private land entertainment resorts, like Glenwood, were doomed.

Within 15 years Glenwood had gone from boom to bust; 20th Century socialized roads and recreational land use had killed late 19th Century private roads and ecotourism by rail. Political influence on land use had played a role just as critical in the end of Glenwood as the Homestead Act had played in its beginning.

The hotel was torn down in 1970 and the land donated to the only organization at the time that could afford to keep it.





June 2014



Glenwood became "Marywood," a vacation spot for nuns it remains to this day. The Catholic Church doesn't pay property taxes but it does preserve the view. Local residents like it that way (including me). The grassland has no productive use; it feeds no large animals; it no longer makes hay. Instead, it is mowed to reduce the fire hazard. Unfortunately, the punch line for that story will have wait.



Photo ca1922 courtesy Edward Fenn

This photo, also of Glenwood, was taken the same day as [the previous panoramic image](#) but from above and to the north. It shows the farms and outbuildings that supported the town. Obviously the area still in grassland is a significant fraction of the overall landscape. The rectangular hay field is the same as in the prior photo at the lower right. From the slopes, it appears somebody got really energetic grading off the hillside to flatten the field for mowing, baling, and hauling hay, but hopefully by now you recognize that this does not represent a 'landscape denuded by the white man.' In fact, there were once far fewer trees and certainly less brush due to the Indian preference for frequent burning. Again, note the spacing and shape of the redwoods on the slope of the gulley on the upper right as compared to the old growth trees in the foreground. The gulley had been logged about 30 years prior. The pointed tops there indicate the rapid growth of young trees compared to those in the foreground. After 30 years they would have crown-sprouted, grown to about 60' feet, and are therefore observable in this image. Hence the stand density in the gulley probably consists of crown sprouts and young trees from seed, and is therefore a much higher stand density than before it was logged. In other words, there simply were not many redwoods here before the area was settled by Charlie Martin and probably significantly fewer than that when the Sayante were in charge. My thanks to the former owner of our property, Mr. Edward Fenn, for his contribution of most of these old photographs. In 2011, he was 102 years old.



April 2012

This repeat photo was taken from about 400 yards to the south of where the prior photos were taken (there is an abandoned Christmas tree farm up there now with fir and pine trees 100' tall). This is primary succession run amok. What was a grassy hillside in the prior photo now shows no grassland at all, nor has there been for many years. There are many more redwood trees in the gully and elsewhere. The little grass that you do see at the lower right was the hayfield that is still mowed annually.

So let's take a look at where this successional process goes in terms of both biodiversity and primary productivity.



This second-growth redwood stand when we bought our property, is a good example of what happens when redwood stem density increases to the point of exclusion. There was no groundcover here then. Note how these trees grow singly and not in clusters. This stand was burned after the initial logging about 125-135 years ago (1880-1900). Burning slash killed the stump buds and forced new trees to come up from the roots or seed in bare soil. I logged about 25% of the standing volume (next page). In the process, I also cut the few “old growth” stumps to the ground.

Now, this is going to be hard for some people to absorb but it is ecologically very important: **NONE** of those “old growth” stumps was larger than 24” across, meaning that **NONE** of the trees in this stand was over 50 years old when it was first logged in 1880. **There were NO redwoods in this stand in 1791 when the Spanish first arrived.** There are simply a great many wildly errant presumptions made about the pre-Columbian prevalence of redwood in this area.

Why would redwoods have suddenly invaded this upland during the Spanish colonial period before the Americans arrived? The Spanish Governor Arrillaga had banned Indian burning in 1793 in order to maintain summer forage for cattle. **This forest went from grassland to a redwood monoculture in less than 200 years.** That is how fast this successional system can change when anthropogenic disturbance is removed. The process kills biodiversity by displacing the plants that start successional processes in soil. Here, after 100 years of “recovery” there are no shrubs making berries, no forbs for animals to forage, no seed for rodents that feed raptors. There is minimal habitat for insect life. It’s even too dense for birds to fly in to build a nest. But it is “Natural”!!!





June 2010

Here is that stand today from another angle 20 years later. I removed about 50% of the trees but 25% of the standing volume. I left the bigger trees and a few saplings, as I prefer fine-grained timber, both as lumber and as stronger trees resistant to wind damage (the fir is maintained on the outsides of the stand to protect the redwood). I do wish there was a good way to inhibit crown-sprouting but at least the remaining trees have room for branches to grow and the band-tails and owls have room to fly. Although you can't see it here, there is a developing groundcover in a few places. Burning it would help remove the duff and stimulate germination.



June 2014


These trees at the bottom of our property started from four stumps that had been logged and burned, probably by Charlie Martin. They are now 205 feet tall, most over 4 feet in diameter, yet **not one of the four original stumps is bigger than these second growth trees**. I estimate that the original stumps were no more than 100 years old when they were logged, probably less, as there was less competition then than there is now. This means that if there were any pre-colonial redwoods on our land, there were only a very few.

So, what the heck happened? How would a redwood forest suddenly expand its range? This hypothesis is a conflation of Indian behavior, fire, contagion, and grizzly bears. Indian tribes in California did conduct extensive trade. If grizzly bears were a significant hazard, then the trading parties had to be larger for purposes of mutual defense. Trading would be therefore less frequent and tribes more insular, an idea reinforced by the differences found among California Indian dialects.

Smallpox, measles, and influenza are highly contagious and have short incubation periods. In Indians unaccustomed to crowd diseases they were quickly followed by death. If these epidemics did hit California before the Spanish expeditions, I suspect they moved through any one village within a month or so killing virtually everyone, with the likelihood of a trading party visiting or leaving during that time being relatively small, as is reflected in the archaeological record.

It is thus likely some tribes were not infected at all while others lost whole villages but perhaps not the entire tribe, with the diseases moving from village to village much like a mosaic burn in a forest with irregular fuel loads. Larger villages or groups of settlements in close proximity would be hit harder etc. The diseases would flash into the area and probably quit. This is why I believe that syphilis and tuberculosis were more devastating to the California Indian during the colonial period and after. The incubation period for both diseases is protracted; they are still transmissible but not debilitating for months or even years. Such would allow these later diseases to spread virtually everywhere before anybody realized their seriousness much less the causes of contagion. The population would crash almost completely, which it did.

If the first waves of disease had a scattered spatial impact, the tribes would then consolidate. Their aggregate territories would probably remain unchanged. As temperatures fell into the Little Ice Age, more bears would hibernate and people would hunt more productively for large game. This inference is reflected in the archaeological record, which shows increased consumption of higher ranked animals during this “pre-colonial” period between Columbus and Portolá. As the climate warmed out of the Little Ice Age, the bears would be more active and game numbers rebound, which is what I believe the Spanish land parties encountered and then Americans to a greater degree 80 years later.



Grazing produces a bifurcation in vegetative distribution analogous in many respects to regular burning. Image from Google Earth.



The "King of the Forest," June 2014

It would be very interesting to core drill its nearby counterpart stump to analyze the burn scars.

Not far from our home is the [Mountain Charlie Tree](#), 18 feet in diameter. Mr. McKiernan learned from a similar specimen nearby how difficult it is to handle a log this big and decided to leave this one for posterity. THIS is inarguably an "old growth" tree. The few like it standing before European influence were along the perennial creeks where young redwoods with thinner bark were less likely to burn. After all, Indians were burning long before this tree ever sprouted. Regular burning changes most everything because it kills seedlings. Our supposed "old growth" redwoods and most of the trees around this one probably sprouted after the Spanish burn ban in 1793.





This poison oak vine is well over 125' tall. It died recently, probably of drought stress. We loved this plant, if only because it was amazing, without a single leaf for 100'. It was probably as old as the redwood it was climbing, starting when there was still other poison oak in this stand on the ground. There is none today.

It may be possible to reconstruct an understanding of the pre-colonial and possibly the pre-Columbian distribution of redwood by a discontinuous age class distribution of trees and stumps in more remote places (in settled areas old stumps were removed with dynamite long ago). Genetics may also yield some information in that trees started from seed are probably less likely to be root clones than old growth trees. A sudden break in regular fire scars among older trees should be compared to the age classes of intermediate growth stands. The ring structure showing the early growth of old stumps can also suggest the degree of canopy present when those trees started.

Once the distribution of pre-Columbian redwood is established, spacing might then suggest its understory composition. Compare that to the archaeological data on the distribution of tribal settlements (including seasonal habitations) along with the Spanish accounts, and one might then be able to define the scope of “bear zones” versus areas that were burned more frequently.

I do not have the time or resources to pursue this hypothesis, but I do think it would make for more than one master’s thesis. The study would best be a multidisciplinary team effort incorporating archaeology, botany, palynology, genetics, forestry, and soil analysis compared spatially to a detailed study of the Spanish diaries and possibly a reconstruction of regional temperatures.

There is a question that has vexed scientists for years as to how much of the landscape was dominated by grasses versus forbs. Archaeological remains from fire pits for cooking show predominately fire-parched grass seeds, possibly indicating a high percentage of grasses in food. Yet I have become suspicious of the translation from Spanish of variants on the word “pasto” as “grass,” when discussing feeding the mules. I suspect a better word would be “pasture” which would then include forbs. Visual descriptions such as King’s show leafy forbs to be dominant. Without disturbance, grasses are dominant over forbs. Unlike grasses, harvested seed from forbs would be ground without need for burning off the chaff, thus leaving far fewer residues in archaeological remains. Other analyses, such as the “straw” found in mission bricks indicate fewer grasses despite their desirability in brick manufacturing. It remains an open question. The answer would reveal a great deal both about the impact burning might have had upon the landscape and what might or “should” be done with it from a systematic perspective. **Forbs are necessary as a primary source of food for insects, birds, and mammals.**





Sleepy Dog, "Snow Plant," and me.
Calaveras Big Trees State Park, June 1959

This study has been a revelation to me, resolving observations that have bugged me for decades. Yet I have no intention of mowing down my forests to "make it like it was" (although I have become a little braver in the distribution of successional stages). I have loved redwood and sequoia forests since I was a child, pestering my parents to "go see the big trees" and weeping in the back of the car on the way home. So this is nothing other than the simple desire to help the forest heal as a *whole*, not just the trees, but in relation to grasslands, chaparral, and broadleaf systems. I want to learn how to manage crown sprouting and get an understory going free from the popular stupidity that makes cutting a few trees far more expensive than it should be. I want a forest with birds, berries, and wildlife. I would like to be able to sell a few logs to finance that work, as there are more that need to be removed than I can use, much less afford to deal with.

There are likely more redwood trees now than at any time since the early Holocene. In most places, there are now too many for the good of the forest. Go to Redwood National Park and look. No, not the Lady Bird Johnson Grove, go to "the back 40" of the Park along Highway 101 where it was logged back in the 1960s. There, a young, vigorous, and overstocked second growth forest is competing for water with the few ancient trees the loggers left behind. In my opinion, if you want to save those ancient living things, if you want those young trees to get big with native groundcovers thereabout, in other words, if you want to restore that "primeval forest," then, **we must thin some of those second growth trees**, learn how to control the crown sprouts, and let the logging pay for it. If we choose to wait for the forest to "thin itself" by attrition, then we stand a good chance of losing those surviving ancients when they would have otherwise been with us for centuries longer, to inspire our children and theirs.

I don't think anybody wants them to die prematurely. Please, we should at least learn *how* to do it should we finally learn that it is necessary. Should I live that long and find a way to afford it, this I will do, right here. This is Wildergarten. My hope is that in reading this, you will be inspired to grow one of your own.



CLOSER TO HOME



Photo ca 1922 courtesy Edward Fenn

For 60 years, until the construction of the Glenwood Highway, Mr. McKiernan's road was an important transportation route from the town of Los Gatos over the mountains to Scotts Valley. Every horse, ox, wagon, and work crew passing through deposited their contributions of seed from the valleys below, native or not. Meanwhile, Mr. Martin's dream of a Glenwood resort deep in an isolated valley needed supplies with which to build it and bring in customers. The resort blew in a road up to the ridge to the west with which to haul said supplies to Glenwood. In the 1920s Edward Fenn purchased a tract along Mr. McKiernan's road astride the junction of the road from Glenwood. Ed terraced this hillside with a tractor and planted apples he was only too happy to sell to Charlie Martin.

We will discuss Fenn's road in more detail later in this picture book. Today, much of it is an impassable ditch.



November 1989, at which time this land was still grazed.
Charlie Martin's great grand-daughter still lived in this home.

When we moved here, the heirs of Charlie Martin lived in what was once his second home (above), all that remained of his original homestead. This property adjoins ours today. You will see more of what that means to our land later in the book, as the influence of this history is not minor. The "wild oat" infestation from which we protect ourselves today, was once the grazed forage you see here.



One can still see the terraces of Ed Fenn's apple orchard on the upper northeast-facing slopes of our property (edges in red at right; there are about six or seven, of which five or six are visible in the photo). Orchards are usually tilled annually. One can only imagine how much sediment was lost on a 25-50% slope receiving 40 inches of rain in five months! Orchards are typically seeded with cover crops, in this case vetches I weed every year. Vetch seed, being a legume, is capable of remaining dormant and viable in soil for 100 years...

With the annual disturbance of disking the orchard, seeds brought in from the road found this tilled and fertilized soil to be a wonderful medium in which to establish. For decades, those weeds just kept right on multiplying and spreading.

Agricultural mechanization, truck transportation, and electrified irrigation in Santa Clara Valley ended widespread farming in these rugged mountains. The orchard was abandoned in the 1930s soon after the demise of the Glenwood Hotel and became overgrown.

In 1941, the property burned in a forest fire. Then brush started to take over. The heirs of Charlie Martin agreed to graze it to keep the brush down until a dispute arose. Because the land had been effectively tilled and fertilized, *everything* took off all at once.



May 2010





November 1989 The berm at the bottom was pushed up by ditch grading along the County road.

You are looking downward toward one of those terraces when we first bought the place. After the orchard was abandoned, the dominant brush species that invaded were native Ceanothus and manzanita. Fire-suppression allowed uninterrupted succession that progressed for decades. Oak and madrone trees sprang through the brush, but in a density only appropriate to an open area with small trees. They all bolted for light, many only a few feet apart, spindly and weak, leaning for light with included bark crotches.



October 2014 - We had worse than this, but you get the idea.

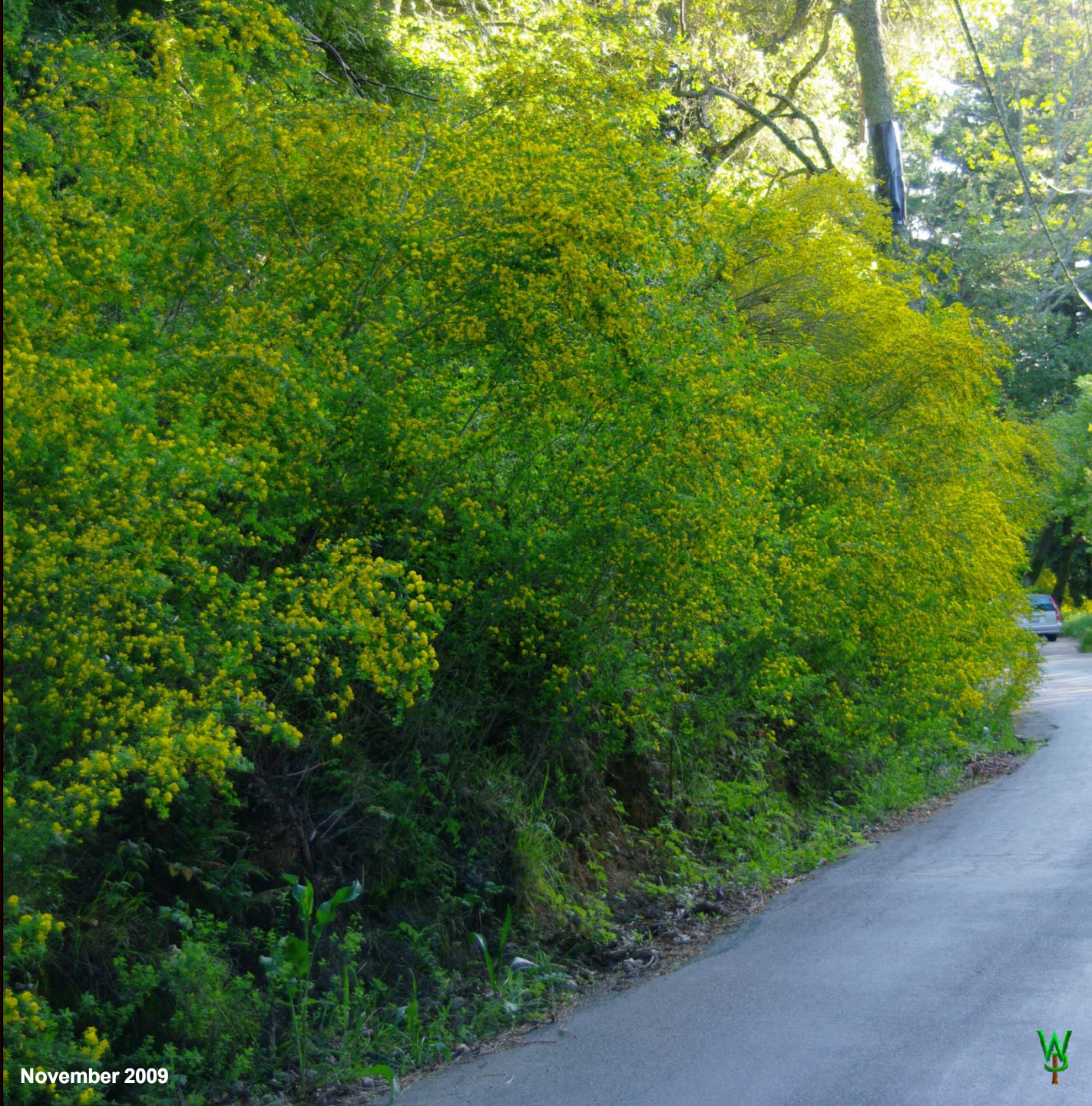
In classic primary succession, then came Douglas fir, retaining massive resinous dying branches all the way to the ground. It was a fire-bomb, land that did not know how to be the way that it already was. Lacking a profitable use, the owners wanted to sell it. From time to time they cleared a "house site" on the top of the hill but without any takers ("the view" had a power pole in the middle of it). Some time around 1960, a bulldozer with French broom seed on it (*Genista monspessulana*) was brought in to clear it. The weed took off at once and (with the exception of the redwood stands) and spread throughout the property.

This is French broom along our County Road. What you see here represents less than two years' growth, twelve to fourteen feet tall. Now, imagine ten acres of it. Try to imagine forcing your body through it, for hundreds of yards (I had to crawl). Without heavy equipment, it takes a chainsaw or brush cutter to get through it for any distance.

I wish I could take a photograph of what it is like to be inside a French broom infestation, but I cannot. A camera lens cannot capture sufficient depth-of-field to focus on all the twigs. So I tell people to go find a dense bush and climb inside (if they can). "What would you see?"

Each flower produces about eight seeds that can last 100 years in soil. The seed is carried by mud, cars, boots, water, birds, rabbits, and heavy equipment. It grows so fast that it soon goes twiggy and decadent. After every cycle of disturbance it gets more dense. By 1987, what was to become our place was a choking mess of broom, accelerated erosion, broom, dead native brush, broom, dying trees, broom, and no groundcover. And then there was the broom.

November 2009



So the end of this history begins with its beginning, in the words of Thomas Jefferson Mayfield. In 1850 he crossed the San Joaquin Valley with his family at the age of six. They settled near the Kings River on the east side of the Valley. His mother died soon thereafter, leaving his father no choice but to leave the boy with a Yokuts tribe while he sought a way to survive with his two other sons. Ten years later, Mayfield returned as a young man to a more settled San Joaquin Valley, finding a general hatred for Indians. He thus told no one of his life with the tribe. After a long and tumultuous life, at the age of 85, Frank Latta, an amateur historian and ethnographer coaxed that oral history out of Mayfield over a period of six months. Yet the old man never revealed what you are about to read; it was too personal, and too special. Then Mayfield came down with a stroke. Latta came to visit in the hospital, and thus recorded what was almost lost to history:

Suddenly my daddy pointed over the tops of the bare hills ahead of us and exclaimed, "Look there!" And there in the distance, until then lost to us in the haze, was our valley. A shining thread of light marked El Rio de San Joaquin flowing, as my mother said, "through a crazy quilt of color." How excited we all were. Everyone wanted to talk at once. Then someone noticed, still farther to the east, that what we had at first taken for clouds was a high range of snow-covered peaks, their bases lost in the purple haze. Finally we started on and passed down the long ridge, which my daddy called a "hog's back," to the small valley below. There we found the grass we had seen from above to be wild oats. They stood as high as our stirrups and were as thick as they could grow...

Leaving the stream, we started across the plains in an easterly direction. We had been told at El Rancho de San Luis that we would in this way arrive at El Rio de San Joaquin where there was a ford. By this time we could see what had caused the mass of color so noticeable from the mountain the day before. The entire plain, as far as we could see, was covered with wild flowers. Almost all of the flowers were new to us. Along the creek were many blue lupines, some of them growing on bushes six and eight feet high. The low foothills were covered with two pretty, lily-like flowers, one tall and straight-stemmed with a cluster of lavender, bell-shaped flowers at the top (right)...



Triteleia laxa



...and the other a purple, ball-shaped blossom on a similar stem (right).

As we passed below the hills the whole plain was covered with great patches of rose, yellow, scarlet, orange and blue. The colors did not seem to mix to any great extent. Each kind of flower liked a certain kind of soil best and some of the patches of one color were a mile or more across.

I believe that we were more excited out there on the plains among the wild flowers than we had been when we saw the valley for the first time from the mountain the day before. Several times we stopped to pick the different kinds of flowers and soon we had our horses and packs decorated with masses of all colors.

My daddy had traveled a great deal and it was not easy to get him excited about wild flowers, or pretty scenery. But he said that he would not have believed that such a place existed if he had not seen it himself. And my mother cried with joy, and wanted to make a home right here in the midst of it all.

For my own part, I have never seen anything to equal the virgin San Joaquin Valley before there was a plow or a fence within it. I have always loved nature and have liked to live close to her. Many times when traveling alone and night has overtaken me, I have tied my horse and rolled up in my saddle blanket and slept under a bank, or among the wild flowers, or on the desert under a bush. I remember those experiences as the greatest in my life. The two most beautiful remembrances I have are the virgin San Joaquin and my mother. - [Source](#)

Seeing that the old man was tired, Latta bid him good night. Within fifteen minutes after he left the hospital, Mayfield lay dead, having finally told another human being about this childhood experience that enriched his life for 79 years.



This is *Dichelostemma capitatum*, harvested for roots by both grizzly bears and people. What Mayfield was describing was likely *D. congesta*, which has a spherical cluster of flowers similar to these. Given the scale of the patches described as "a mile more across," my guess is that much of the valley floor lacking running streams was bear territory. Even then, when Mayfield first saw it, the landscape had been seriously degraded. By 1850, horses had already overgrazed large portions of the San Joaquin Valley.

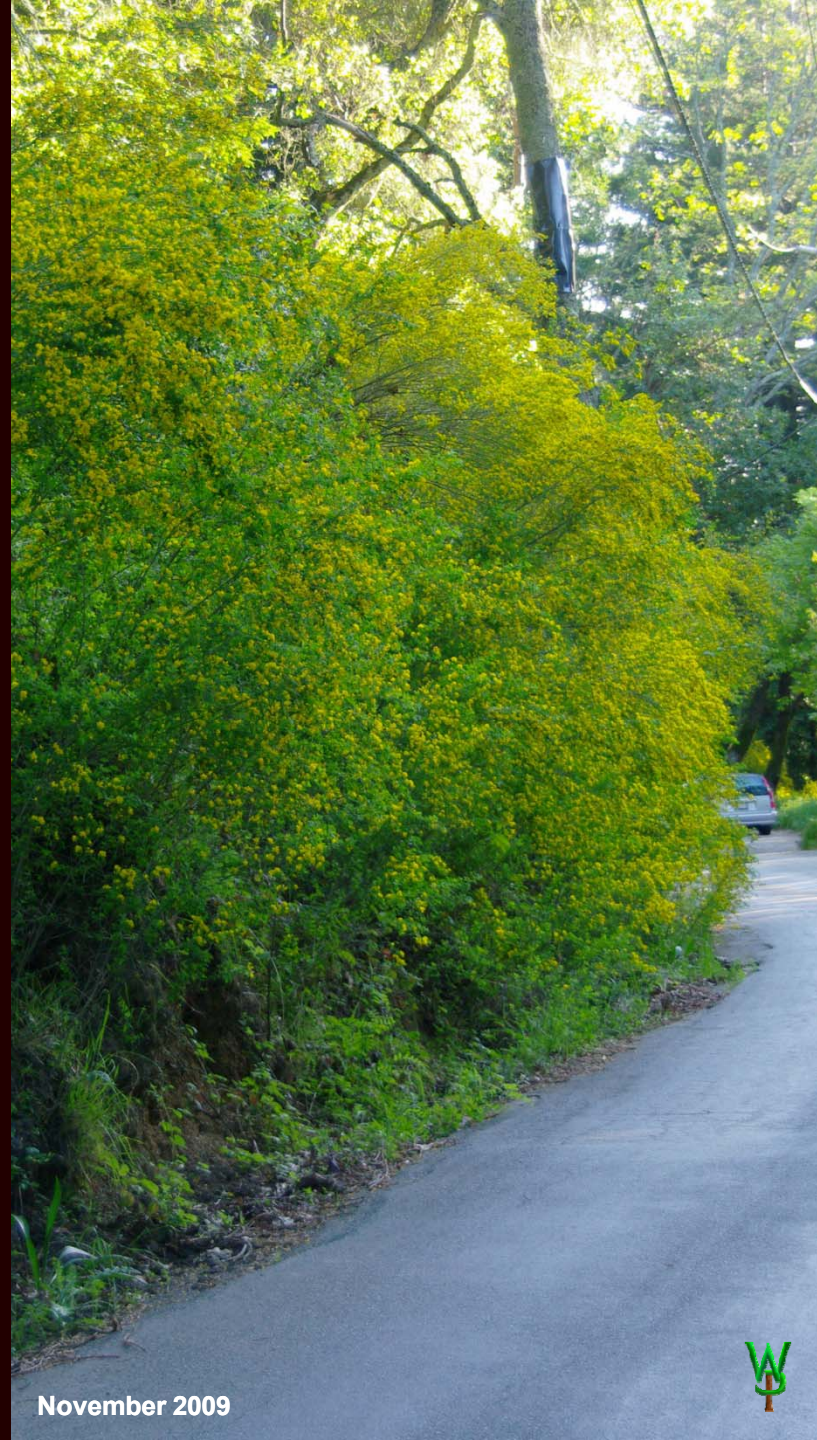
By 1850, less than 70 years after the establishment of the missions, in that area below Pacheco Pass wherever the land had been overgrazed, the wild oats were “up to our stirrups.” Today, they are less than half that tall and much more sparse, less than half of the original forage value.

It all happened so fast. But that is not the message meant for you. Here it is: **“Fast” doesn’t stop.** Glenwood was just getting going when my grandfather was born. By the time those old photos were taken, he could have ridden a horse-drawn wagon or Model T down this road with orchards, farms, and ranches along the way. Our land changed from a rip gut and oat grassland to an impacted and decadent oak woodland full of exotic brush with 100 foot tall invading fir trees within little more than a century. Had I come up here as a kid, I might have seen cows grazing not 50 yards from this photo.

What we do not seem to incorporate is that while infestation and succession may slow down, there is no real permanence. The broom you see at right wasn’t here when we first moved in. Yet somehow, when we see these, we unconsciously think ‘they have always been that way.’ Then, when it changes radically, we act surprised, even though we knew what would happen with a fuel load like this. It’s inevitable, just as inevitable as the belief that such a fire would be “Natural.” Given the history, there is no such thing.

This is the power of myth, sufficient to change the land beyond recognition, starting with the way our beliefs filter what we see, then to change what we see to fit that belief, to which habit makes us blind. Many an expert has read those Spanish diaries and not seen the implications. I didn’t either, believing that the Indians once dominated the landscape as they did elsewhere in America. It took a third reading for the alarm bells to go off. We know so little about the system response to disturbance, that the “consensus” scientific opinions about these ecological systems are totally out to lunch.

With the rate at which new weeds are still coming in and with succession progressing to catastrophic fuel levels, I hope that the prospects of policy driven by such beliefs (rather than by hard experimental data) is as alarming to you as it was to me. Were we to introduce grizzlies on these landscapes today, they would likely starve to death. We simply have too much yet to learn to be making such massive decisions by defaulting upon our responsibilities. The land needs study, experiment, and development work, not “preservation.” Else, mystery repeats itself.



Wildergarten Site-History References

These are the historical, ethnobotanical, and archaeological references directly applicable to this area. Other applicable references such as for general anthropology or habitat management can be found [here](#).

Because this section is less cross-linked to other work, there is a bibliography for this chapter here. Most of these sources are liable to remain stable because they are printed books, but several are so old that they are unlikely to be available unless obtained by inter-library loan. Some were recently rediscovered in the basement of an old bookstore; they might be available on Amazon. Others are only available as republications, but many of those are of absolutely horrible (unreadable) quality, much less suitable for corroborative research. So, good luck with that.

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- This image is all over the Internet. I have looked for the source like crazy but have not identified it. As this is not for profit public education, it is surely fair use, but I would still like to have obtained a grant of use as I don't like using such images without asking. But it was SO COOL for this purpose, I just couldn't resist. My apologies to the photographer. If you are out there, I'd love to obtain permission and offer the credit.

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