HOW to restore *95-99% weed-free* grasslands

in *"Four Easy Steps"* *without sowing any native seeds.*

And **14 *million acres of star thistles*** in California

could be gone *in 90 days* *—Get our lands back now!*

Craig's "Land Doctoring" tools used to unearth dormant native seeds in the soil, at Kite Hill Wildflower Preserve.

1.) ***"Dremann-Shaw" mowing*** *Feb. to June at 8-12" high,*

2.) ***Craig's Fertilizer and Mulch Thresholds,***

3.) ***Allelochemicals,*** *and 4.)* ***Summer Low-Mow, Blow & Go***

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Download at www.ecoseeds.com/four-steps.pdf

Other Powerpoints at www.ecoseeds.com/zoomindex.pdf

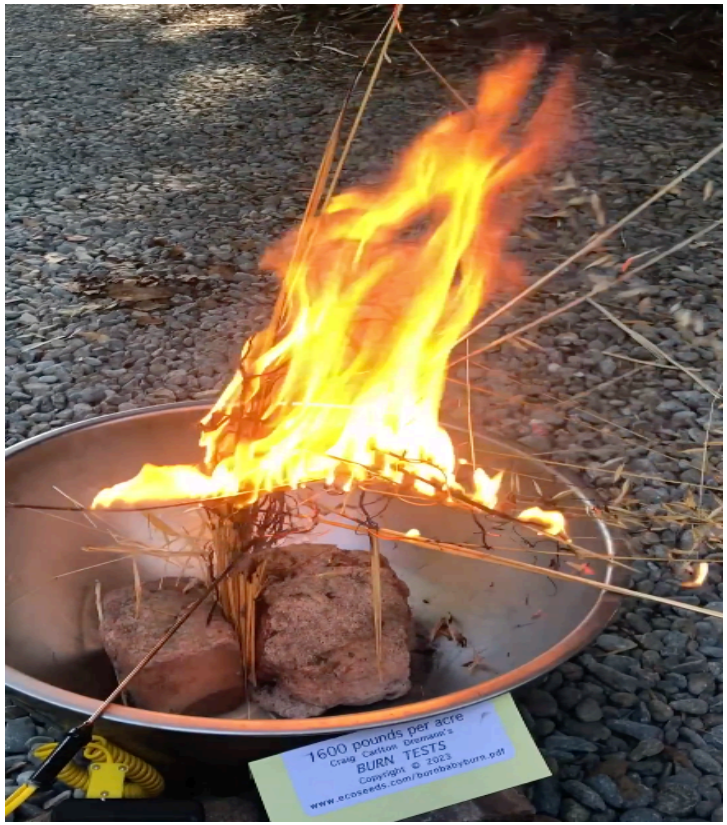
My name is Craig Carlton Dremann and a big part of my heritage is Western European. My 15th cousin four times removed is on the $10 bill
I share the same grandparents with Alexander from Scotland from the 1300s and inherited that nose from him, through our shared Y-chromosome.
I also have cousins on the $1 and $100 bills as well.
My last name “Dremann” translates from the German as
“The person who turns things around.”

My Native heritage is thorough my great grandmother Hannah and my great grandfather, Black Rabbit of the Tuscarora Nation of North Carolina. The local Ohlone-Muwekma people at the Stanford Powwow on Mother's day.
The elders call me "The Seed Guy," and one of my Native Names is "Walking Flowers Blooming" and the nickname given to me by the residents of the Town of Woodside where I work is "The Wildflower Whisperer."

EIGHT REASONS ***to spend the time and money necessary to restore California grasslands.***

Reason ONE—Where you currently mow for fire safety, finish the job by converting weeds back to fire-safe wildflowers.

The PGE 2017 wildfire, the mowed weed grass-straw still on the ground in October burned 80 homes to ashes, in the Bennett Ridge subdivision east of Santa Rosa.



“Craig’s YouTube Burn-Test channel” shows when a square foot of the weedy wild oats is set on fire, will burn for ***9-16 minutes at over 1,000 degrees F***. https://www.youtube.com/@craigdremann5631 -- Whereas the unmowed dry straw of the native Purple needlegrass and Hayfield tarplants will not catch fire. ***Surround your homes and open space areas with fire-safe natives!***

Left: *Wild oats.* Right: *Purple Needlegrass straw, bbq starter unable to keep it burning.*

Reason TWO – Restore the grasslands and wildflowers needed for the Monarchs, bumblebees and other native pollinators--and fast enough so they do not go extinct, while they are waiting.

Reason THREE – Get our Listed Endangered California grassland species, recovering. Like all of the populations of the **Marin Dwarf flax** and the **Santa Cruz tarplants**.

Both of these rare plants exist in less than two dozen locations, and they are disappearing fast. Using my four steps, these rare plants can increase, so they are no longer rare.

<u>Reason FOUR</u> *– We need to unearth 100-200 year old dormant native seeds in the* ***soil*** underneath the weeds, ***<u>while they are still viable.</u>*** Then, they can grow and produce a fresh crop of seeds for the next 100-200 years. Marin Dwarf flax seedlings.

<u>Reason FIVE</u>*- Restore the Native people's *GARDEN of EDEN!

One of the major differences between my European heritage and my Native heritage, is that my Native relatives believe they were **never kicked out of their *"Garden of Eden"*—**and that grasslands are sacred.

Plus the California grasslands and wildflower meadows, provided **30-50% of the plant foods** for the California Native peoples.

So, restoring these sacred places and native farm fields and the **Garden of Eden**, shows respect. These sacred native meadow need a lot of serious tending after ***<u>the Native caretakers were cast out over a century ago.</u>***

Reason SIX – Do some soil tests, add fertilizers and mulch, the 14 million acres of our yellow star thistle-covered rangelands, could be brought back to life in only 90 days. "Before" and "after" photos from Kite Hill, going from zero pounds of forage, to 7,500 pounds of useful animal forage per acre.

Reason SEVEN – In order to adapt to the weather changes created by Global Warming, native plants need to be above-ground and growing, Native plants have a lot of genetic diversity, but need to be living and growing in order to adapt.

Otherwise, if our dormant native seeds are unearth too far into the future, they will wake up like Rip Van Winkle into a world they are unprepared for and will not be adapted to survive. We need to unearth them now, to start adapting.
Genetic diversity of the rare Santa Cruz tarplant Arana Gulch population at
https://www.ecoseeds.com/Santa-Cruz-tarplant-genetic-diversity.pdf

Reason EIGHT—Balance effects of Global Warming, by adding fertilizers and mulch, to save California's existing native grasslands and wildflower meadows.

Since 1970, Global Warming has contributed to a gradual lowering of overall moisture levels in California through decreased summer fog and inconsistent rainfall from October to May while simultaneously increasing daytime temperatures.

These changes pose significant challenges to ecosystems, especially when grassland plant's are unable to utilize nutrients when less moisture is in the soil during the short periods of the year they uptake nitrogen and phosphorus.

Or when the summer fogs fail, then the plants which need them to survive like the tarplants and Lessingias, then they die. At Kite Hill we went from 30-50 million Lessingia in 2023 to a few thousand, when the fogs failed to in summer 2024.

We add fertilizers and mulch as a backup source of nutrients to help mitigate the effects of Global Warming on the existing native grasslands and wildflower meadows. And take off the cows, sheep and stop burning them.

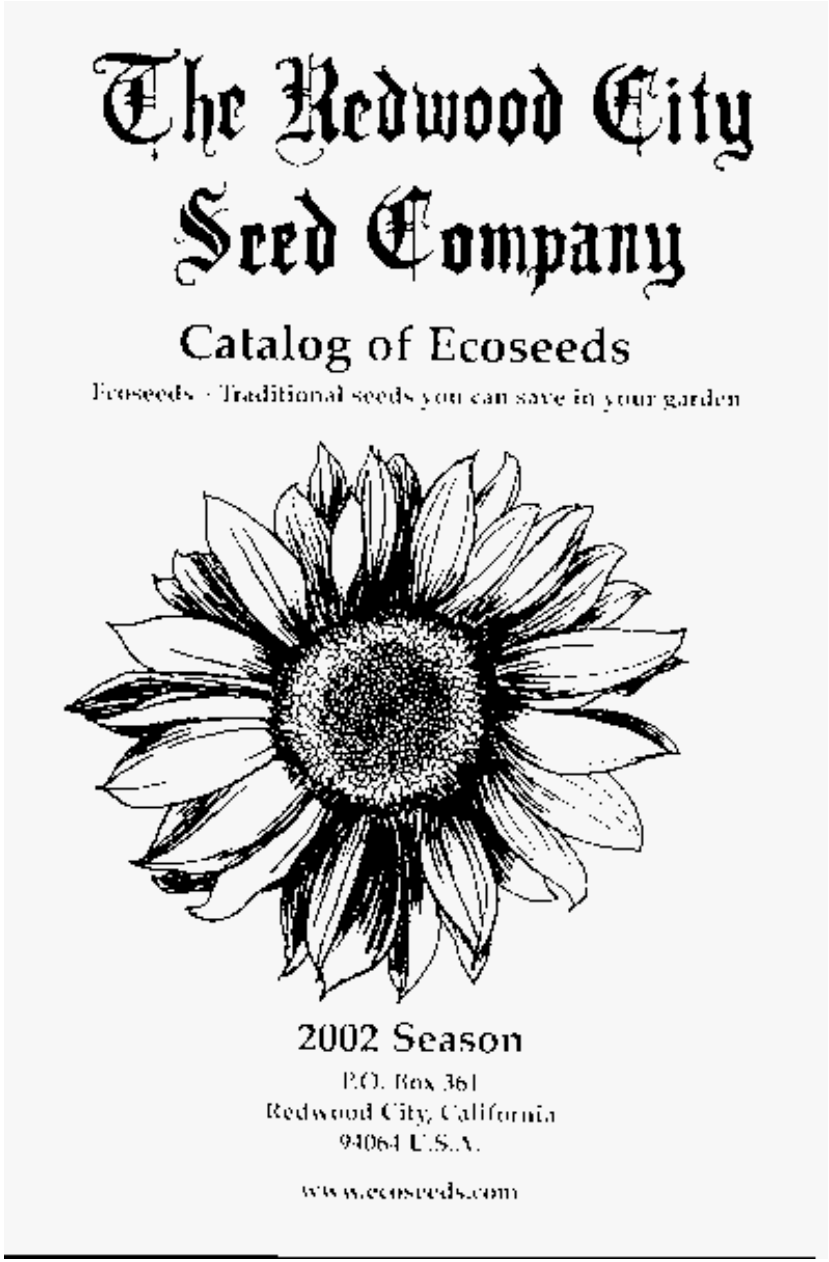
Examples from Kite Hill, during 2024-2025 drought. Left photo on I-280 side, goldfields normally are growing by Christmas Day when pictures were taken, but seedlings barely sprouting because no nutrients can get to plants in this drought. **Right photo**, the Kite Hill side of the fence, this part was fertilized in spring 2023, producing a 99% weed-free wildflower Super Bloom, but still not enough nitrogen for the native *microstachys* grass where it is turning yellow. Needed to apply several more doses to keep it from dying during the drought. ***Must be added until it all turns green.***

California native perennial grasses were so common in 1850 when the flag was designed, **12 Stipa bunchgrasses** were put underneath the bear as they look in January. Maybe the only flag in the world with native grasses on it.

Now, in only ten human generations, *the above-ground native grasslands and wildflower fields appeared to be 99% gone forever*—**Until 33 years ago,** when we started **unearthing** the dormant native seeds still in the soil underneath the weeds.

The above-ground native grasses and wildflowers are in ruins and weed-covered, and were thought to be gone forever. **This was my huge challenge** when I started working professionally as a ***"Grassland Land-Doctor"*** **in 1992**.

However, the **good news** is there are ***100-250 year old dormant native seeds*** in the soil underneath the weeds, in millions of acres of California--Where we can do some **"Botanical Archaeology"** and unearth them, to sprout and grow again.



My interest in becoming a Grassland Land Doctor started in 1960 when I lived across the street from the Edgewood Preserve, a 100-acre serpentine wildflower meadow on the Peninsula.

When at Sequoia High school started a mail order seed company to sell heirloom vegetable seeds in 1972.

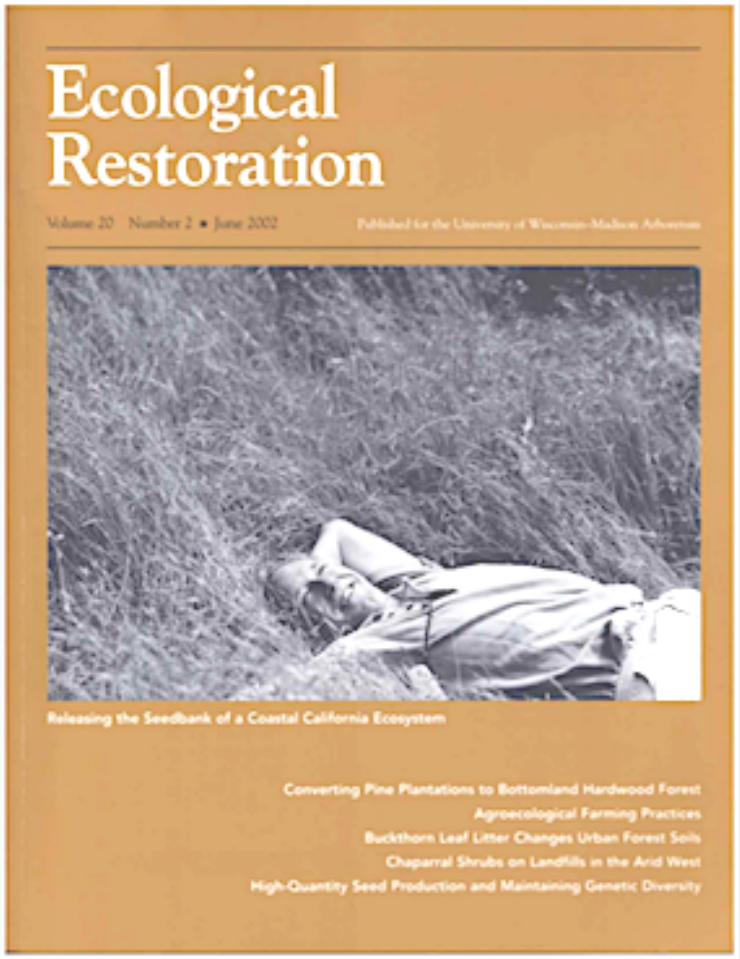
In 1980, I did not see much interest in inventing the methods needed to restore wildflower and native grass meadows, so started planting test plots to learn.

In the 1990s, I taught classes to the USFS in nine Western States, on how to harvest their own native seeds from the forests, so they could plant natives instead of exotics after wildfires, and received two Regional Awards.

Everyone having a good time harvesting and cleaning local native grass seeds at my USFS class in the Oregon National Forest. The next step was for a seed growers to take ten pounds of hand-harvested seeds, plant and grow it under contract, to produce 1,000 lbs in one year.

In 2000 I also taught my class to the **Caltrans Landscape architects**, who wanted to learn how to plant natives along our roadsides. They had 223 questions they needed answered. And I was hired to fly out and teach my class to the **Delaware DOT** as well.

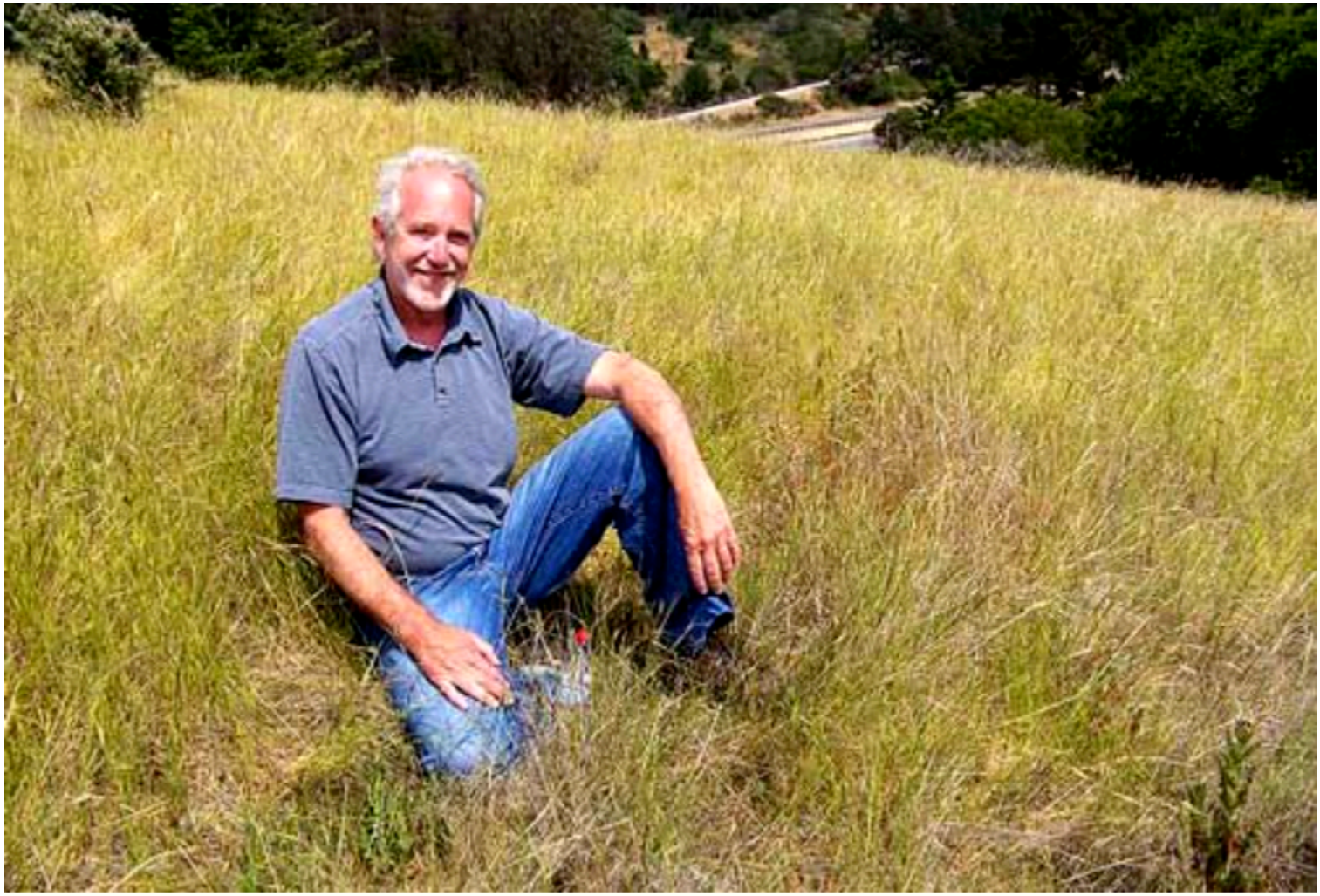
My first step and tool invented to restore wildflower meadows, in 1992 with Michael Shaw converted his 70 acres of oak woodlands and grasslands. We started with land 99% weed-covered, and in eight years, brought it back to 95% native cover at 300 Byers Lane, La Selva Beach, Santa Cruz County.



We invented the first of the four steps, the "Dremann-Shaw" mowing method, of monthly mowing from February to June at 8-12 inches high, to stop the weeds from reproducing. "Giving the weeds birth control" reduces the baby weeds in the future, and depletes seeds in the soil.
NO native seeds were sown!

Shaw is laying on a huge native Danthonia plant on the front cover of the June 2002 issue of **Ecological Restoration** journal, which tells our story. www.ecoseeds.com/shaw.pdf

Underneath the weeds, everywhere on the 70-acre Shaw property, we found over 100 species of natives, *including two unknown to science.* Native and exotic plant list at www.ecoseeds.com/shawlist.html



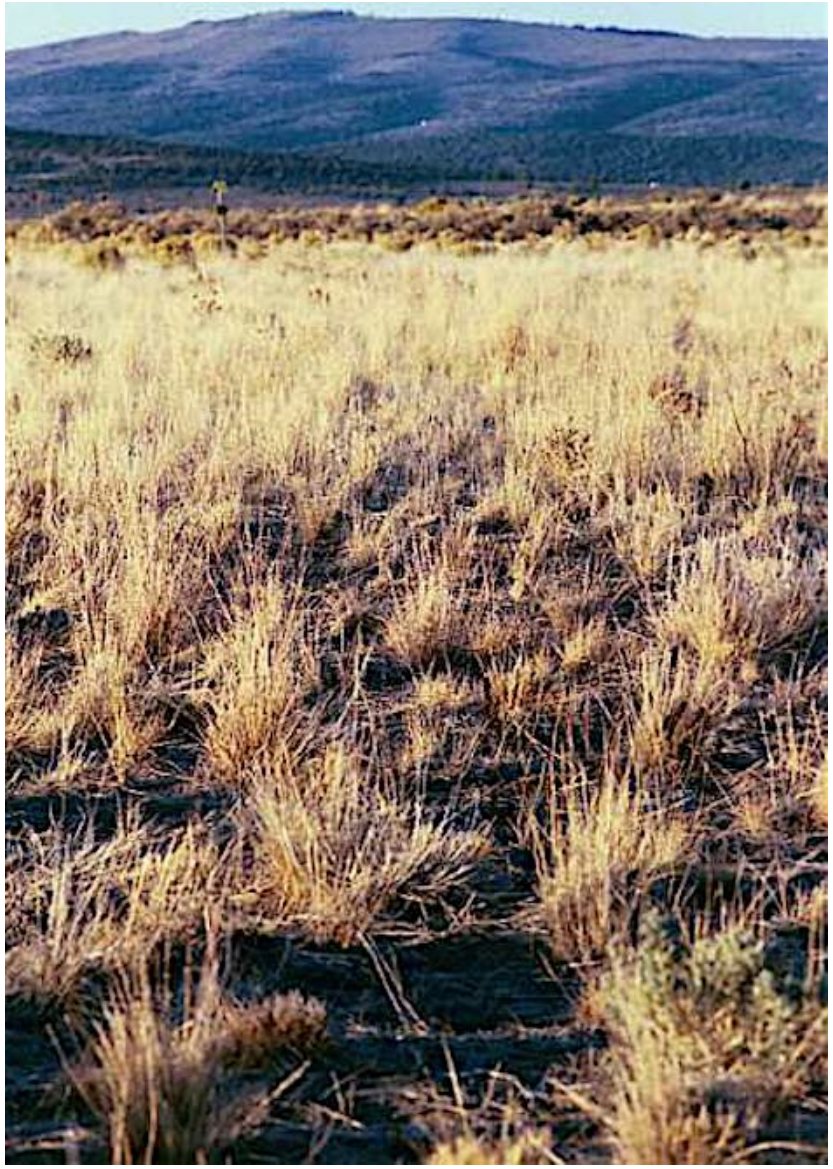
Monthly mowing at the Kite Hill Wildflower Preserve in Woodside, from February to June gets rid of the weed grasses. In this spot, we started with a solid mix of foxtails with ripgut grass, two of the most difficult weeds to mow.

The monthly mowing stopped the weed grasses from reproducing, and eventually the weed seed bank was exhausted in the soil. Then, the poppies had a chance grow, after decades of being dormant under the weeds.

Mowing the wild oats green seeds, off the tidy tips and poppies in April. The wildflowers in this picture did not exist when we started mowing a few years earlier.

These wildflowers were able to sprout and bloom from dormant seeds in the soil, after we kept mowing the weeds down to 8-12 inches high, from February to June.

The Woodside Fire Prevention District loved our monthly mowing method so much, that their Fire Marshal sent out a post card to **all of the District's 4,000 homeowners**, directing them to start mowing while the weeds grasses are still green and at 8-12 inches high. Pictures are from my Kite Hill project.

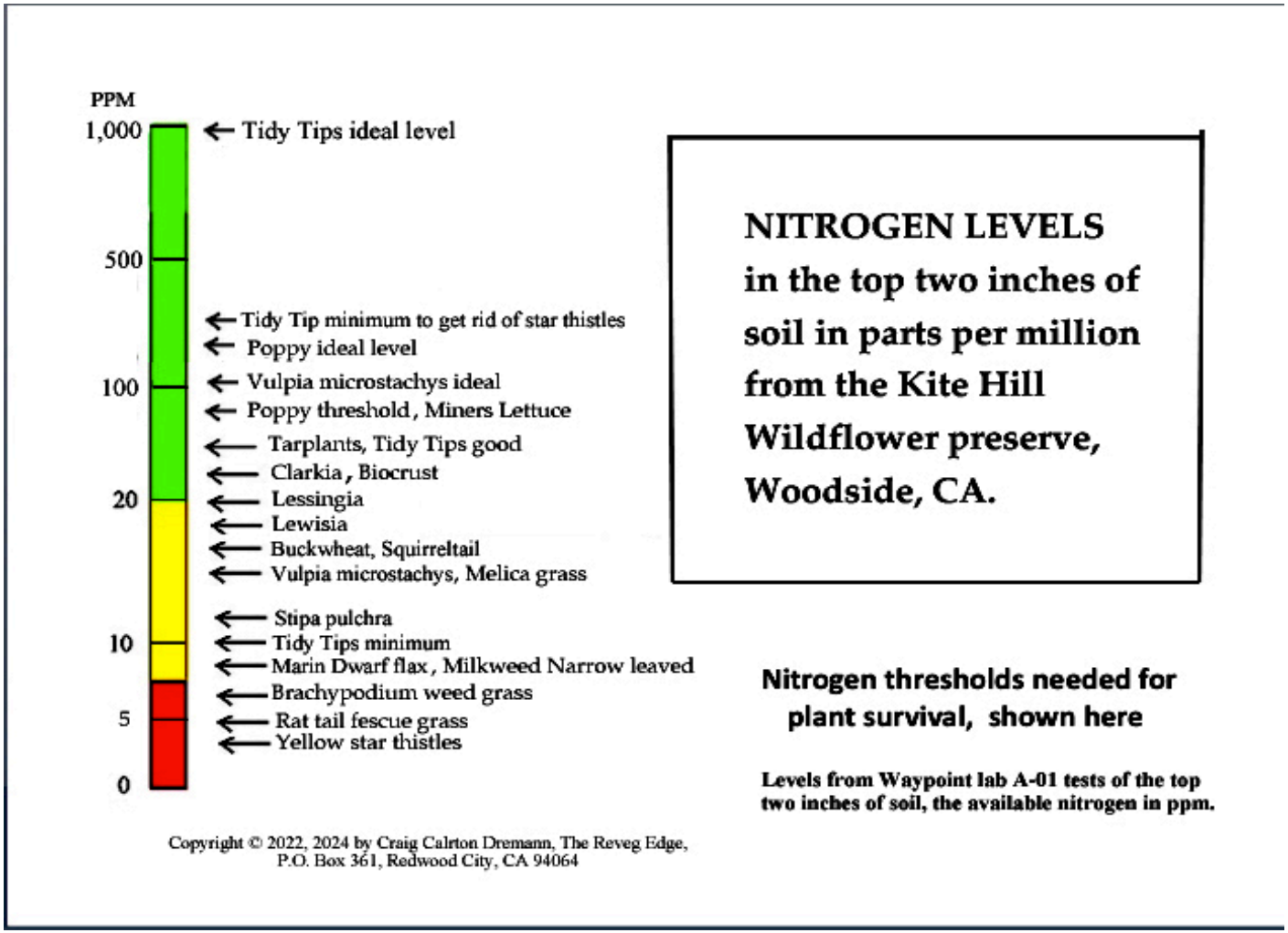


My Second and Third methods were invented after I was hired by BLM Susanville District, to figure out how to replant 100-miles of the Tuscarora gas pipeline north of Reno along US 395 in the cheatgrass-infested sagebrush desert in 8-10 inches of rainfall.

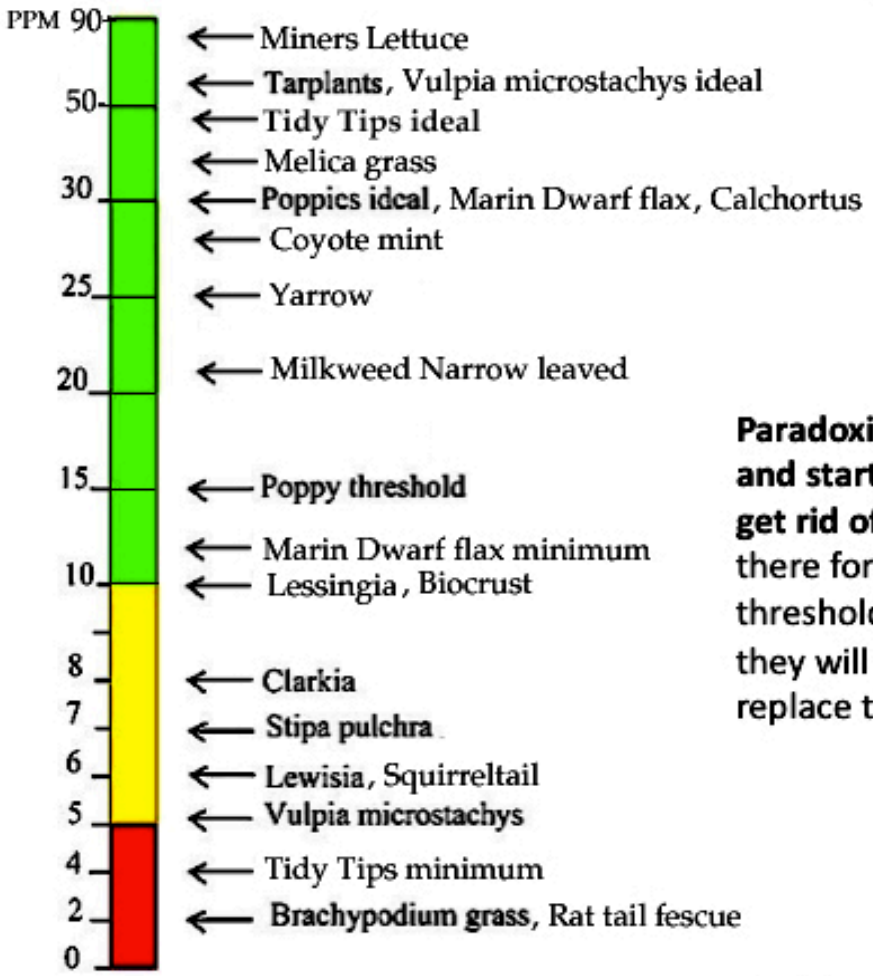
It took two years and hundreds of small-scale 3 X 6 foot test plots, to learn how to produce a planting with 100% native cover in only six months.

Photo shows 100% cover of Bluebunch wheatgrass and zero cheatgrass to the horizon.

Discovering the SECOND step. Each native plant and each kind of weed has their own "**Soil Nutrient Thresholds"** in the top two inches of soil, in terms of nitrogen, phosphorus, calcium and organic matter. **Nitrogen thresholds shown here** for the serpentine plants growing at the Kite Hill Preserve in Woodside.



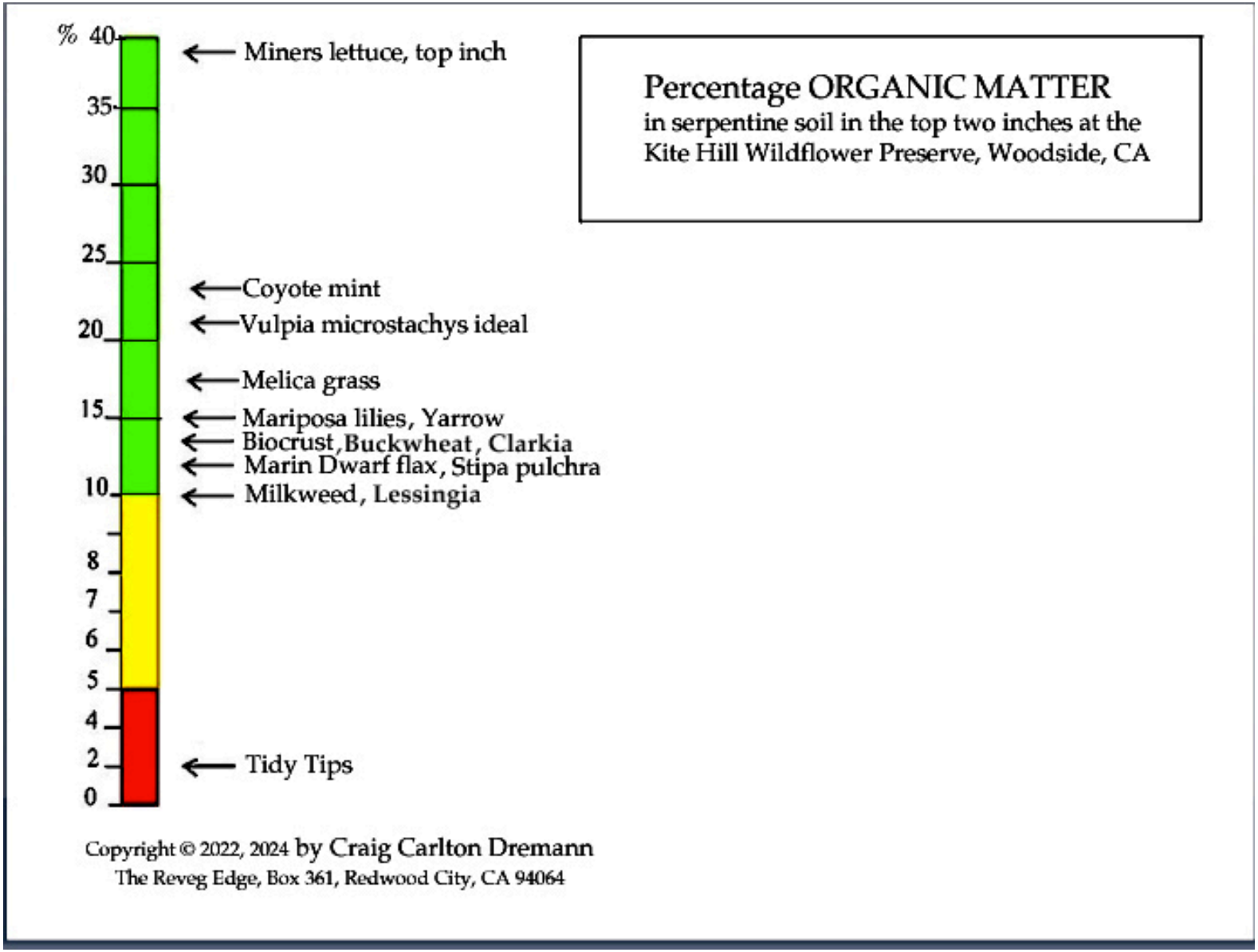
Phosphorus thresholds in the serpentine soils at the Kite Hill Preserve



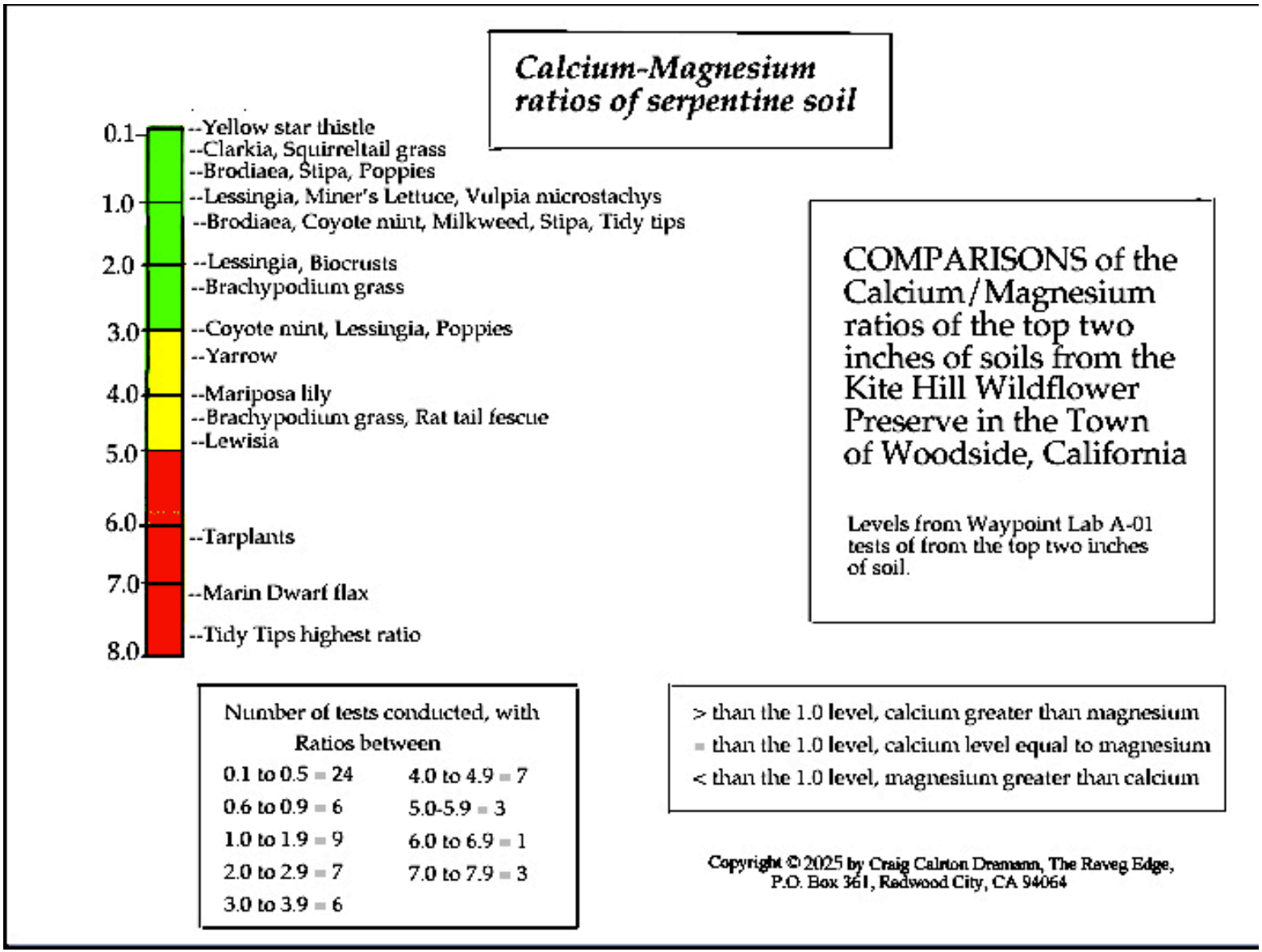
PHOSPHORUS nutrient levels in serpentine soil in the top 2 inches at the Kite Hill Wildflower Preserve, Town of Woodside, California.

Paradoxically, we must reverse our thinking, and start "Feeding the Weeds" in order to get rid of them—if the nutrients are not there for the natives in their necessary threshold amounts they need for survival, they will never be able to come back and replace the weeds.

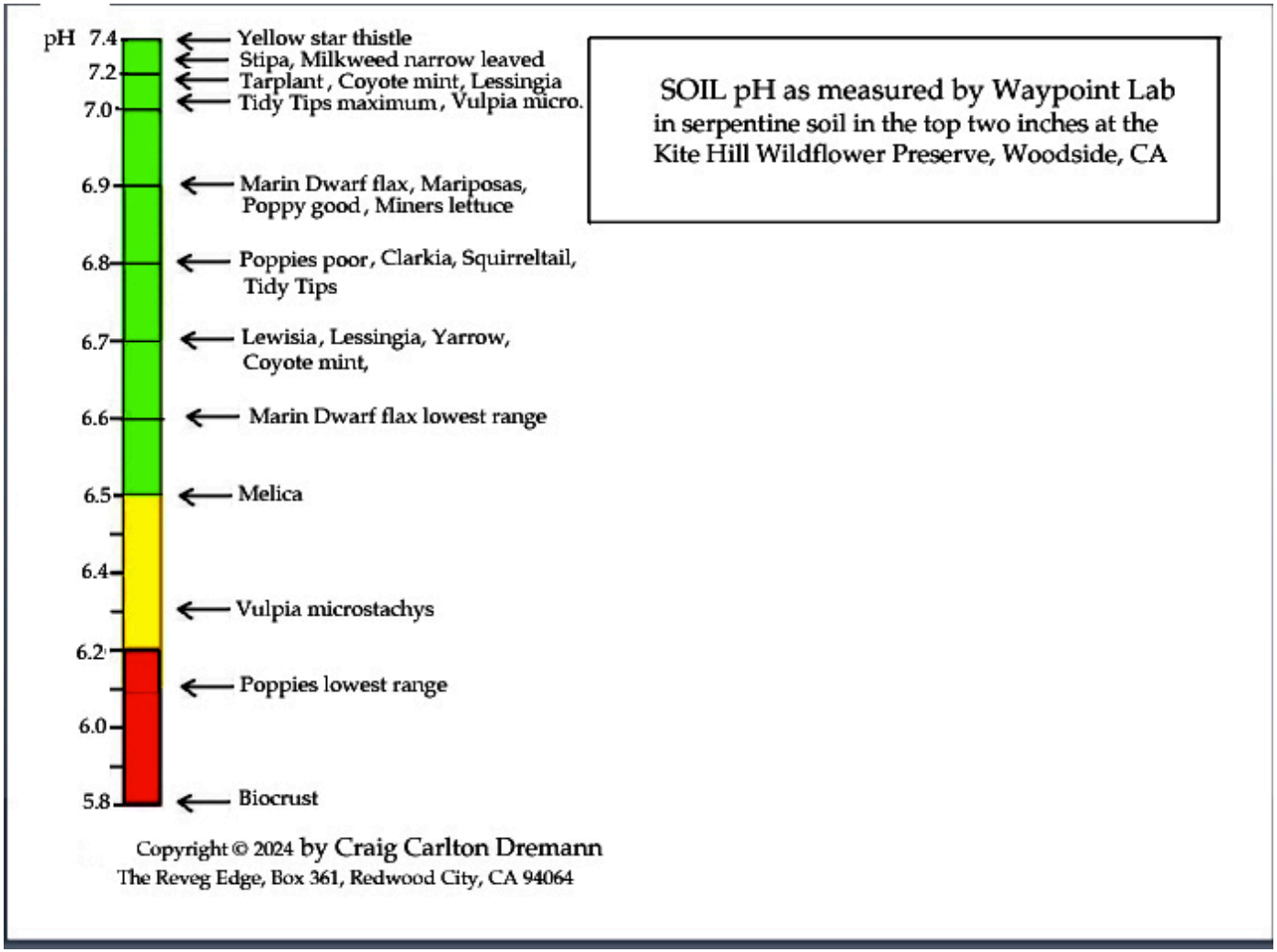
Organic matter percentages in the serpentine soils at the Kite Hill Preserve.



Calcium-Magnesium ratios, of the serpentine soils at Kite Hill Preserve.

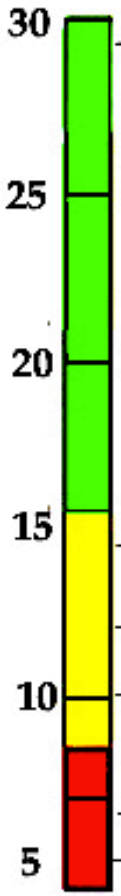


Soil pH is another issue to be concerned about in California's severely grazed grasslands, which can change the soil pH is beyond the normal levels needed for native seedling survival. Determine the normal thresholds for each native you want to grow back, and correct the pH when soils are too acid.



The Lewisia-soil nitrogen paradox! The rocky barren serpentine gravel in the top two inches at the Kite Hill Preserve contains much more nitrogen than the surrounding wildflowers? ***How come?***

PPM N



--Lewisia barren serpentine gravel level in top 2 inches.

The Barren serpentine Lewisia gravel Paradox-- How can that bare gravel have a higher amount of nitrogen, 2X- 6X higher than in serpentine soil of other native plants growing nearby?

--Melica grass, Poppy serpentine minimum

--Foxtails, average Star thistle level

--Brodiaeas, Mariposa lilies, Stipa, Yarrow

--Filaree

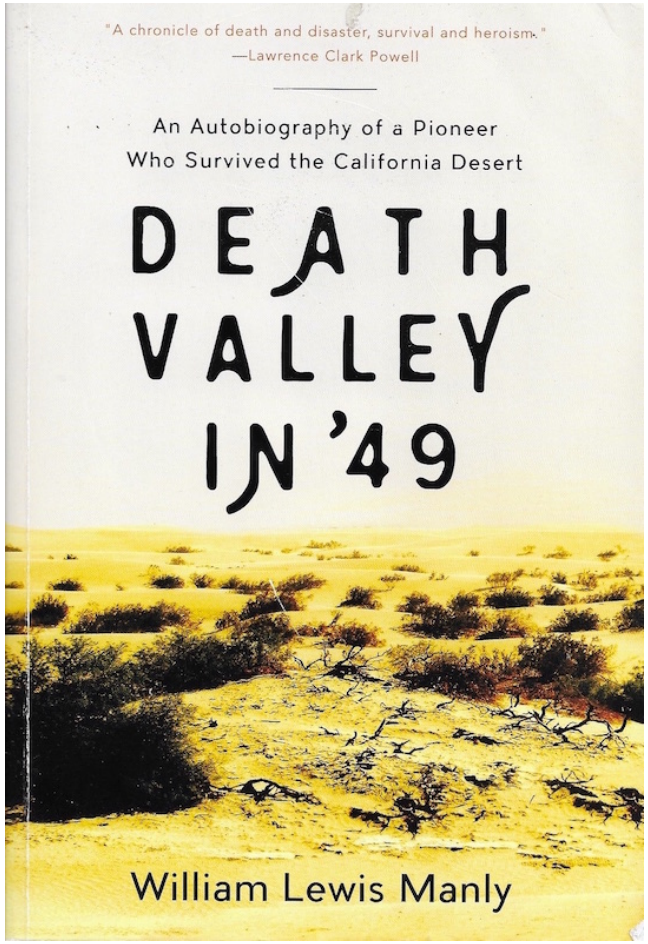
--Brachypodium grass, Star thistles

Nitrogen thresholds needed for plant survival, shown here

Levels from Waypoint lab A-01 tests of the top two inches of soil, the available nitrogen in ppm.

MYSTERY of the 1849 Santa Clara County 10-12 foot tall mustards??

In 1849 William Lewis Manly walked from Gilroy to San Jose and then to Fremont to the San Jose Mission. All along the route were ***10-12 foot tall mustard plants*** on either side of the road.



That means that the amount of nitrogen in the Santa Clara Valley soils today, is only about 20% of the 1849 levels, because those same wild mustards today only grow 2.5 feet and three feet tall at most.

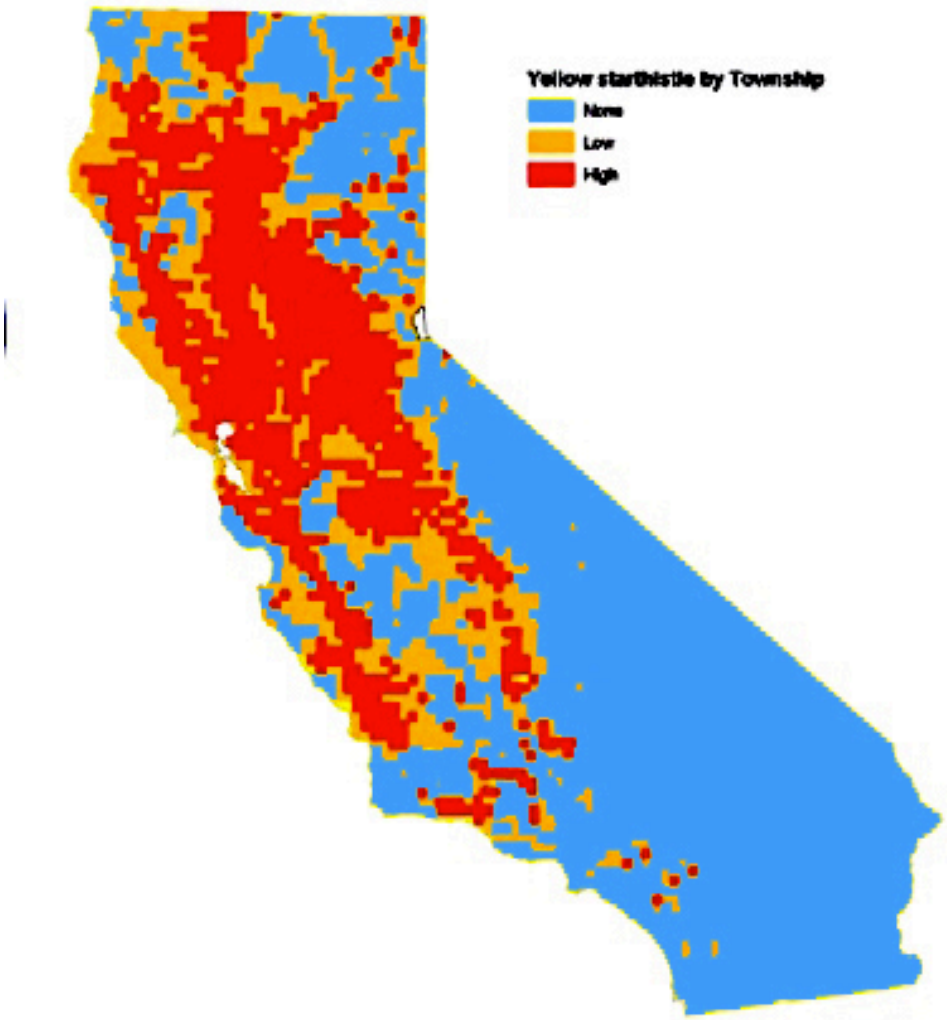
Experiments could be done, to grow those wild mustards and keep adding nitrogen until you recreate the 10-12 foot tall plants, and then test the soil for nitrogen levels, to recreate the 1849 levels which produced those tall plants Manly saw.

Adding fertilizers and mulch can make remarkable changes in California grasslands. Three million yellow star thistle plants were growing on one part of the Kite Hill Preserve.

Those star thistle plants just laughed at our mowing efforts, which failed to make a dent year after year.

Plus a decade of hand-weeding was also an useless effort as well. ***Star thistle is not invasive****, it only grows where* ***the soil is too poor for anything else to grow.***

We did Waypoint Lab soil tests, added organic fertilizers and mulch in fall, *and 90 days* later, *thistles were* ***99.5% gone***. Dark patches are the tarplants growing back. The road is Jane Drive. *No need to hand-pull, herbicide, mow, use bio-control, or graze that weed in California ever again!*



Distribution of yellow starthistle in California. *This 2002 map, based on survey data by township, illustrates how widespread the plant is in the state. At 14 million acres, it is California's most widespread weed. Data collected by the California Department of Food and Agriculture. (Pitcairn, Schoenig, Yacoub and Gendron 2006)*

My fertilizing method could get rid *of the 14 million acres of yellow star thistles in California by 2030, if there were desires and reasons to do so.*

My conversion of the Kite Hill star thistle to rangeland-forage, went from zero to 7,500 pounds per acre after doing soil tests and adding fertilizers and mulch.

Converting those 14 million acres could produce $5.6 billion in baled hay crops, or produce an estimated $630 million in Carbon Credits.

When I tell people, *"we need to feed the weeds to get rid of them"*—
they usually look at me as if I just ***got off a space ship from Venus!***

However, if natives do not have the soil nutrient and organic matter at the **minimum thresholds** they need to survive, they cannot grow back.

Plus, the extra benefit of fertilizing the weeds, is to encourage as many dormant weed seeds to germinate all at the same time.

That depletes the weed seeds in the soil as rapidly as possible.

Which then allows the native seeds to grow uninhibited in the future.

Third Step—***Learn your allelochemical levels!***

When replanting the 100-mile gas pipeline in the cheatgrass infested sagebrush desert north of Reno in 1993, that was our only hope to succeed.

The sprouting native seedlings produced allelochemicals which immediately suppressed and killed the cheatgrass seeds in the soil around them.

And as the native plants grew and matured, would keep any cheatgrass seeds in the soil, from ever sprouting in the future.

We needed to know the allelochemical strength of each native, and then how densely they needed to grow, to keep the weed seeds from sprouting.

There are several methods to assay the strength of one plant's allelochemicals against another.

An easy method is "Craig's Tea test" -- Make a tea of ½ gram of dried plant material in 25 ml of water by soaking two weeks.

Put that tea on cotton gauze and measure the impact on the germination of three mung beans for 6-7 days.

Each plant and including the soil biocrusts, produce allelochemicals, to clear out a space to grow.

- An allelochemical assay method is “Craig’s tea test” is a simple way to test the strength of the chemicals of one plant against another.
- Take a ½ gram of dried plant material, soak it in 25 ml of water for three weeks.
- Take 1x2 inch cotton gauze first aid squares and put plain water on two squares. Put the tea on a third square.
- Have nine mung beans, and boil three beans in water for five minutes.
- Put the 3 boiled mung beans on one of the water-squares and they will be the “tare weight” you subtract from the other two tests.
- Put 3 unboiled mung beans, on each of the water-square and the tea-square.
- Put each in a food storage container 3 inches tall at room temp. for 5-7 days with light. Weigh seedlings, subtract the tare weight of the boiled seeds and compare.

“Craig’s Tea Test” of spineflower allelochemicals on mung beans

"Craig's Allelochemical Tea-tests" -- done at different dilution levels.

- **The ½ gram of dried plant** material in 25 ml. of water, is a ***1:50 dilution.***
- **There are some California grassland natives** and a few exotics, which can kill mung bean in 5-7 days completely, and you need to know who they are, so you can utilize them to help manage the weeds for you
- **Once you have found allelochemical-active species** at the 1:50 dilution, should try higher dilutions like 1:100, 1:250 and 1:500 to sort out the most powerful, which are active at the lowest rate possible.
- **For example Eucalyptus leaves at the 1:50 dilution**, kills 94% of the mung beans. At the 1:100 dilution the kill rate is 90%, 1:250 dilution kill 64% of the mung beans, and the 1:500 ratio dilution, still gives you a 30% kill rate.
- **For example, if you raked up Eucalyptus leaves** and used them as mulch on weeds, that might be more effecting and more environmentally safe than using traditional chemical herbicides. Or, make an allelochemical tea.

Another method to assay allelochemicals, is to measure the density of each species and their allelochemical effects directly impacting in the environment, when they are able to clear out other plant species from around them.

- **Strongest to weakest allelochemical effects, densities of Weeds.**

  --Yellow star thistle - 1/sq. inch @ 8-12 inches tall.
  --Bur clover - 2/sq. inch @ 3 feet long.
  --Filaree - 2/sq. inch @ 2 feet tall.
  --Willow leaved lettuce - 5/square inch @ 8 inches tall
  --Rat tail fescue - 14/sq. inch @ 2 feet tall.

- **Strongest to weakest allelochemical effects, densities of Natives**.

  --30% Chilean Lotus with 70% Blow wives, clears everything around them.
  --Miner's lettuce - 3/square foot.
  --Tarplants - 5/square foot.
  --Marin Dwarf flax - 64/square foot.
  --Tidy Tips - 3/square inch when fighting wild oats.
  --Blow wives - 5/square inch when fighting wild oats.
  --Lessingia - 7/sq. inch as seedlings, or one per square foot when one foot tall.

Fourth step—*"Summertime mow, blow, rake off and go!"*

June to September, mow the grassland down to the levels of the still-green natives—like the Stipa grasses and tarplants.

Michael Shaw invented this tool 33 years ago, when he raked the mowed straw off his 70 acres each summer, and used it to fill in the eroding ravines.

You DO NOT need to rake off anything you mow from February to June.

Blow and concentrate the mowed straw and remove it from the environment, to get rid of as much of the allelochemicals, which can have an huge impact on the native seedlings in winter and spring.

When Michael Shaw raked off the cut straw in summer, the natives got the advantage, when germinating the next spring.

“Before” images of the yellow star thistle at the
Kite Hill Wildflower Preserve. Solid stands on either side of Jane Drive.

Local Woodside residents attempted to hand-pull the star thistles for a decade, and never made a dent in the population. The density of sprouting seedlings in spring, was about 5 per square inch in the serpentine soil.

What hand-pullers did not realize, ***is star thistle is NOT an invasive weed****, only growing in soil too poor* for the natives or other exotics to grow.

Star thistles were gone in 90 days after adding organic fertilizers and mulch. A person I know, calls this plant ***"Cow Antibodies"*** **–** because grazing stops where they grow, and protects the soil from getting any futher damages.

Wild Oat "before" images. This was the main weed-grass we needed to tackle on the serpentine soils, and also produces a major fire hazard for surrounding multi-million dollar homes.

The wild oats were tall enough in places, to take your breath away, sometime five feet or more—*wild oats from the Land of the Giants!*

This is the slope of the gully across from the "Castle House" along Jane Drive.

When wild oats are this tall, the string trimmers need to take them down in one-foot slices, from the top down.

Wild Oats with feelings!

The Wild Oats have a trick up their seed-stem—they can feel when their stem is cut and immediately regrow from the remaining stem-joint only 1/8 thick, a foot-tall seed stem in a week.

In April-May, each time they feel you cut, they respond and grow a new stem.

If you are not there to cut that new seed stalk, they can easily produce a new crop of seeds, and ruin all of the mowing you did earlier. However, they cannot feel if you strip off the seeds individually.

Fertilizers and mulch were used to unearth a 99% weed-free wildflower meadow.

Along the I-280 fence line, there was a completely barren, eroding serpentine slope about 20 feet wide and 200 feet long, needed our help, as it had been barren for years.

I called this place the "Serpentine Barrens" because kids rode their bikes off-trail and through the area, destroying the wildflowers, as well as the very thin layer of serpentine topsoil the natives needed to grow.

After restored 800 acres of grasslands in California, back to 95% native cover since 1992, ***this eroded barren serpentine looked like my biggest challenge*** so far. I was expecting to need to collect local native seeds and start planting.

A barren moonscape, devoid of any vegetation on the surface.

We excavated some topsoil from the other side of the ravine from where tall wild oats were growing, where topsoil was still covering the serpentine rock. We scattered a ½ inch layer to cover the barren gravel.

The added topsoil established a matrix to stop the erosion, and produced a thin layer of native cover the first year, but there was still not enough nutrients or mulch in the soil for a robust recovery. However, *those two-inch tall* ***goldfields gave us hope.***

We did Waypoint Lab A-01 and Organic Matter one-quart soil tests taken from the top two inches.

And then added bone meal (the white) for phosphorus at 20 pounds per 1,000 square feet and blood meal for nitrogen.

Blood meal was scattered on top of the bone meal. Adding ANY nitrogen to serpentine, is considered to be sacrilege—especially when entire academic careers have been built around that theory.

However the Kite Hill soil tests, showed we must add nitrogen to match each native species' threshold levels, or they could not easily grow back.

The blood meal was added to the serpentine soil for nitrogen at 32 pounds per 1,000 square feet (250 pounds N per acre) and was the *minimum amount* which has been added to the Kite Hill serpentine soils over time.

The tidy tips start at 1,000 pounds N per acre and their thresholds go up from there.

We got an immediate response after adding the fertilizers and mulch, from a completely unexpected source--dormant native seeds which were still in the barren gravel, waiting for nutrients and mulch to be able to grow again.

Unearthing a 99% weed-free *meadow, was a completely unexpected result!*

This discovery has implications for ALL of the serpentine grasslands in California, especially where rare plants are trying to survive.
We can now restore serpentine mines and asbestos mines, just by adding fertilizers and mulch, to produce wildflower meadows in only one year.

The fence in this photo is along I-280 freeway, where atmospheric nitrogen deposition from an estimated **2.9 BILLION cars** for 52 years, never added enough nitrogen to the “Barrens”, to get the dormant native seeds to sprout.

The unearthed wildflower meadow in March, 2024 was
39% Goldfields, 25% Vulpia microstachys, 21% Tidy tips, 6% Linanthus,
4% Cal. Poppies, 3% Pepperweed, 1% Soap plant, and 1% Native Plantago.

Grading of California grasslands

- **A = 81-95% native cover.**
- **B+ = 70-80% native cover.**
- **B = 51-69% native cover.**
- **B- = 26-50% native cover.**
- **C = 11-25% native cover.**
- **D = 1-10% native cover.**
- **F = Zero % above-ground native cover.** However, there still could be dormant seeds in the soil, which could be unearth in the future.

- **We need to start grading our grasslands** in their current conditions, and also make sure that all of our restoration and mitigation projects produce A+ grades when finished. ***See SF Peninsula grasslands graded*** at https://www.ecoseeds.com/WMA.html

The LAND DOCTORS. checking on and treating their WILDFLOWER MEADOW patients

0-10% native cover--The Land Doctors need to start treating their very sick grassland patients.

10-20% native cover--This level, you are starting to see some progress towards health.

20-50% native cover--Producing some good results, and grasslands are starting to recover.

50-90% native cover--**WOW!** Patient doing much better, but you are not done with your treatments yet. Recheck soil tests where weeds like star thistles and rat-tail fescues still grow.

90-100% native cover--***Oh my GOD!*** ... you will exclaim aloud. ***This is all you can say, when you check your patients in spring when they bloom.***

Your wildflower meadow patient can probably go on their own at above 90%, except when a Land Doctor wants to join the **"100% Grassland Club"** – you join when you can get 10 acres or more back to 95% or better cover in less than 10 years, and without sowing any native seeds.

Land Doctors, begin treating your grassland patients now!

Each Land Doctor, adopt an acre or two at least, and open up the dormant soil-seedbank treasure-chests and time-capsules, with your monthly mowing at 8-12 inches high. And do your soil tests and add the fertilizer and mulch medicines, the poor native needs for their survival thresholds.

Let California's Garden of Eden grow again, and get our wildflowers out of their weed coffins!

Helping those wildflower seeds sprout and bloom, puts a fresh crop of seeds back into those time capsules--so they will be ready for someone else to work with, in another 100-200 years in the future!

The local Land Doctors can actively start treating grassland patients right now, using the successful ecological restoration methods which were invented over 30 years ago, and should be in common practice by now.

The Kite Hill serpentine wildflowers, can only grow where the percentage of weed cover is below a threshold needed for each species' survival and not being impacted by the allelochemicals produced by neighbors.

- **Buckwheats** can grow in weedy conditions, but cannot produce seedlings wherever wild oats are present.
- **Calochortus white** need < 10% weed grasses.
- **Coyote mint** needs >99% weed free conditions.
- **Lessingia** for >48% cover, need 52% bare soil and nobody else around.
- **Marin Dwarf flax**, no other plants within a 2-3 inch radius.
- **Milkweeds** for >60% cover, needs <10% Bromus mollis cover.
- **Soap plants** need < 5% wild oats, and grows best with zero.
- **Tarplants**, need weed-grass free areas.
- ***We need to be able to produce very high quality results****, otherwise many grassland species will be unable to return.*

Kite Hill serpentine MIA species, or in small scattered isolated stands, whose seeds *could NOT remain viable for 100-250 years*, and seeds will need to be harvested and sown or seedlings planted to increase their cover.

- **Buckwheats**
- **Coyote mint**
- **Melica grass**
- **Milkweed**
- **Mules ears**
- **Native clovers**
- **Native thistles**
- **Poa grass**
- **Squirreltail grass**
- **The larger native mustard family, like wallflowers.**

Kite Hill native seeds, which can stay viable for 100-250 years.

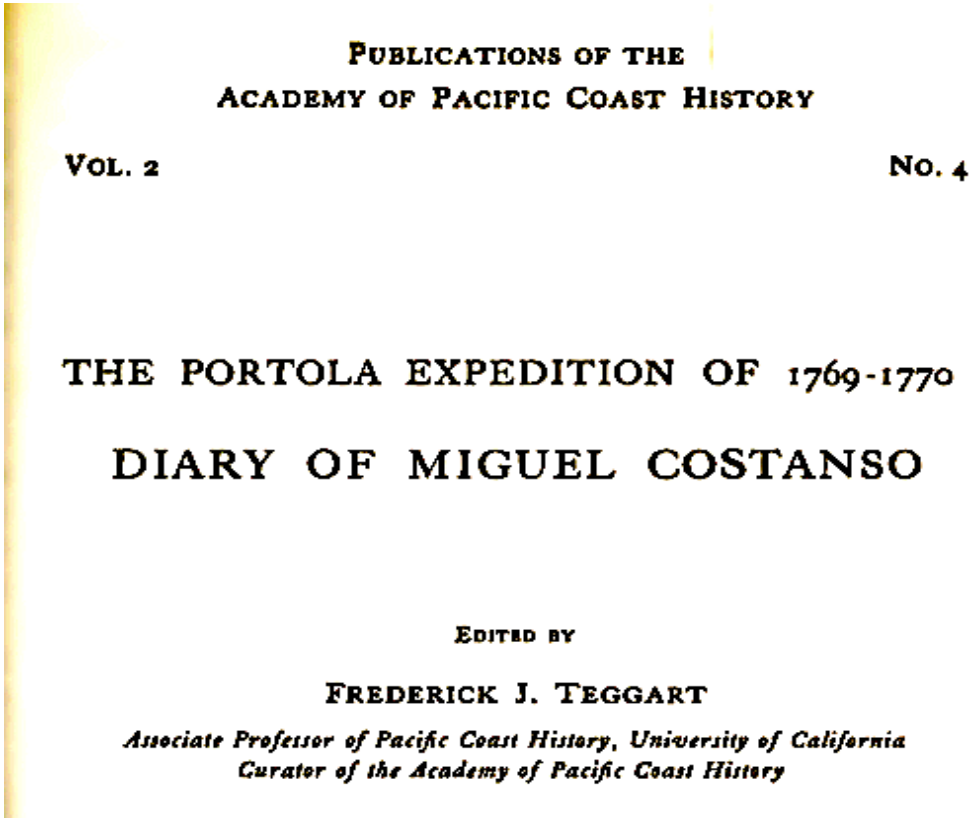
- Blow wives
- Blue eyed grass
- Bromus
- Calochortus lilies
- Chilean Lotus
- Clarkia
- Lessingia
- Marin Dwarf flax
- Miners lettuce
- Owls Clover
- Plantago native
- Poppies
- Soap plant
- Stipa grasses
- Tarplants
- Tidy Tips
- Vulpia microstachys
- Yarrow

The difference in having weeds or having natives
growing in the Kite Hill serpentine soil.
Nitrogen levels in the top two inches of soil, ppm.

- Weedy rat tail fescue grass. N = 5-7 ppm, P = 0 ppm.
- **Native Vulpia microstachys. N = 14 ppm, P = 5 ppm.**

- Yellow star thistles, solid cover. N = 13, P = 5 ppm.
- 50% Yellow star thistle cover. N = 19 ppm, P = 8 ppm.
- **No Yellow star thistle cover. N = 37 ppm, P = 4 ppm.**

Restoring the grasslands is also working to restore the local Native people's farm fields, whose seeds and bulbs were shared and fed the starving first Portola Expeditions 1769-1770, and provided 30-50% of the plant foods of the Bay Area peoples, as reported in the Miguel Costanso diary.



PUBLICATIONS OF THE
ACADEMY OF PACIFIC COAST HISTORY

VOL. 2 NO. 4

THE PORTOLA EXPEDITION OF 1769-1770

DIARY OF MIGUEL COSTANSO

EDITED BY

FREDERICK J. TEGGART

Associate Professor of Pacific Coast History, University of California
Curator of the Academy of Pacific Coast History

Native grassland seeds feeding the starving Portola Expedition.

The Jesuits were expelled out of Mexico, and Portola Expedition's objective was San Diego and Monterey to accompany Father Serra to establish new missions. 64 people left San Diego July 14.

The Native peoples brought Portola quantities of pinole and seeds, possibly harvested from Kite Hill, as the expedition traveled down the SF Peninsula.

The Miguel Costanso diary tells about each time the Native Peoples brought them food when they were starving--

July 28, they [said they] would provide antelopes, hares or seeds. August 3, "harvest seeds on the plains". August 4, trays of seeds. Aug. 7 seeds, nuts and acorns. Aug. 8 seeds. Aug. 9 seeds and acorns. Aug. 11 seeds, acorns, nuts and pine nuts, Aug. 20 fish, seeds, acorns, atole.

Aug. 23 fish and seeds. Sept 4 seeds, fish. Sept 8 roasted seeds, flavor of almonds. Sept. 26 pine nuts and seeds. October 6 ground seeds made into round pats. Oct 23 seeds kneaded into thick pats. Oct. 28 pinole and seeds. Nov. 5 seeds and fruit. Dec. 23 pinoles and seeds.

"They came unarmed and showed unequalled affability and gentleness."

What we learn and invent here in California to restore our grassland, can be critical tools to restore other arid lands worldwide.

In 2002, I took what I had learned in California, and wrote a proposal for the Saudi government, to start restoring their lands on a huge scale.
Proposal at www.ecoseeds.com/cool.html

My proposal was adopted in August 2010 by the Saudi government, and **500 million acres** were set aside as **Ecological Restoration Preserves**.

Under the “Saudi Green Initiative” ten billion trees are being planted at the rate of one million trees per week. 24 countries have now joined together as the Middle East Green Initiative to plant 50 billion trees total.

EGYPT

Middle East Green Initiative Summit 2022: Live Stream (English)

Saudi Green Initiative

2.08K subscribers

Subscribe

Kite Hill wildflowers, we always have a Super bloom of tidy tips in April, with other wildflowers blooms in March, May and in the summer. In 2024 we had 200,000 yellow Mariposa lilies blooming.

Patches of Clarkias bloom, the “Farewell to Spring”

The serpentine-loving Lessingia numbers vary each summer at Kite Hill, from a few thousand to 30 million in the summer of 2023.
Their numbers depend on the amount of fog coming over the hills at night.

Miner's lettuce is growing, where there was a solid patch of star thistle.
As this plant gets established, weeds are unable to return.
Johnny's Selected seeds sells this seed by the pound under *"Claytonia"*

This is exactly what we should see each spring, in every serpentine grassland in Marin, Alameda, San Francisco, San Mateo and Santa Clara Counties, in the place of the weed grasses.

Tidy tip seedlings.

The tidy tips at Kite Hill producing their Super bloom each April at Kite Hill. Park your car behind the Jane Drive gate and walk in the pedestrian gate which is always open. The road behind the gate is private for cars, but available for access to the Preserve on foot, horseback or on bikes. Open 24/7.

Students at Cañada College learning to be *Grassland Land Doctors* and "Grass Masters". The Environmental Science students at Cañada College, which is only 1/2 mile north of Kite Hill, not on serpentine and is on top of a chert hill.

Students setting up their one square meter test plots in fall 2024 to get results in April. Fertilizer test plots can be set up from September to mid-February. By March, natives stop up-taking phosphorus.

Mowing plots can be set up any time of the year, why not set up a few this week!

Now we have the four tools, able to successfully unearth serpentine wildflower meadows, and bring them back to 95-100% weed-free conditions, **let's get started** and use Kite Hill as a guide!

- **Four methods invented over thirty years ago,** can rapidly restore serpentine grasslands and have already restored 800 acres of California grasslands back to 95% or better native cover since 1992. Why not restore a few thousand more?

- **The "Grassland Land Doctors" of the Marin County** could get ALL of Marin County's serpentine wildflower meadows restored, weed-free and blooming by 2030. ALL of Ring Mountain, St. Hilary's Church, Middle Ridge, around Big Rock, Mount Burdell, etc.

- **Each of these Marin County serpentine meadows**, instead of being covered with extremely flammable weeds. Whereas, in the future a person could walk 100 paces and only see fire-safe wildflowers blooming, ***if there were desires to do so.***

- **And that goal could be expanded to all of the serpentine wildflower meadows** of San Francisco, San Mateo, Santa Clara and Alameda Counties as well. Let's get the **"Serpentine Wildflower Party"** started right away!

The Native people's heritage is to produce cultural artifacts -- songs, dances, designs on baskets and pottery, expressing their connections and relationships with nature, called their "relatives".

Native people knew long before the scientists, that we are all related genetically with all of the plants and animals on the planet, and to create ***cultural artifacts*** to express those connections.

Painting of the *Potentilla hickmanii* when in 2011 started work to help restore the last population on the coast. **Environmental artwork** expressing those concepts at www.ecoseeds.com/art.html

13 poems and a song written by iAsk AI

TABLE of CONTENTS----

GRASSLAND RESTORATION Cultural Artifacts- Poems and a song. In modern times, we can gather together our observations of nature and our interactions, and put together poems, songs and artworks as ***cultural artifacts.***

Marin Dwarf flax

1.) **In the Garden Where We Never Left**

In a meadow where the wildflowers sway,
And the grasses dance in a sunlit ballet,
The spirits whisper through each gentle breeze,
Telling tales of old beneath ancient trees.

Oh, we never were kicked from our Eden so fair,
For this land is our cradle; it's always been there.
With bulbs in our hands and seeds in our hearts,
We've tended these gardens since time first departs.

The bumblebees buzz with a sweet serenade,
While butterflies flit in a colorful parade.

Each petal that blooms holds a story untold,
Of ancestors' laughter and wisdom of old.

Restoration's the call that we hear in our dreams,
To bring back the meadows where sunlight still beams.
For every lost flower is a memory dear—
A reminder of life that we hold ever near.

So let's plant those seeds with a reverent cheer,
And nurture the earth with love year after year.
For in every wildflower that blossoms anew,
Lies the spirit of all who have walked here too.

2.) The Grassland's Lament

In the Heart of the Grassland

Amidst the whispering grasses, where wildflowers bloom,
A scholar stands pondering, in nature's vast room.
With a notebook in hand and a heart full of care,
He studies the landscape, the sky, and the air.

But overhead thunder, a rumble and roar,
Highway cars speeding past, their engines do soar.
Each vehicle releases a cloud of despair,
Nitrogen from exhaust fills the delicate air.

A Profound Threat to California Grasslands

"Twenty pounds per acre!" he cries with dismay,
"This nitrogen influx could lead us astray.
It alters the balance of species we cherish,
Threatening wildflowers that struggle to flourish."

On serpentine soils where these blossoms reside,
Their beauty is fragile; they cannot abide
The changes brought forth by pollution's cruel hand—
A profound threat to California grasslands.

Five Miles Down the Road

Yet five miles away on that same busy lane,
Another man toils through soil's earthy grain.
With samples collected from fields rich and wide,
To the lab they are sent for analysis inside.

What secrets lie hidden within those dark clods?
The answer reveals what nature applauds:
"These wildflowers need more than mere breath of the sky;
Two hundred pounds per acre if they're to thrive high."

To combat the weeds that encroach on their space,
The star thistles threaten this delicate place.
"A thousand pounds needed!" he writes with intent,
"For tidy tips' victory—this must be spent."

A Dichotomy of Needs

So here lies the paradox in nature's grand scheme:
One cries out for caution; one chases a dream.
For while nitrogen flows from exhaust pipes with haste,
The flowers require it—a delicate taste.

In this dance of survival beneath sunlit skies,
Both scholars seek answers as time swiftly flies.
One warns of destruction while one seeks to save—
In California's grasslands where wildflowers wave.

3.) **The Tenacious Wild Oat**

In April's embrace, when the sun starts to glow,
The wild oat awakens, with seeds all aglow.
With dreams of a harvest, it stretches so tall,
A grassy ambition that beckons to all.

But lo! Here come mowers, with blades sharp and keen,
To rid fields of weeds that dare to be seen.
They roar through the meadows, a mechanical beast,
Chopping down stalks in a green-hued feast.

Yet wild oat is crafty; it knows how to cope,
For life's not just chance—there's always some hope.
When the mower's sharp blade makes its swift cut,
The plant feels the severing—oh what a rut!

But nature's resilience is nothing but grand;
From the lower joint of its stalk in the sand,
A miracle happens—a new shoot will sprout,
Just one-eighth of an inch thick—what's this about?

With vigor unyielding and spirit so bold,
It pushes through soil as if breaking mold.
In just one short week—a foot tall it will rise,
Fooling the mower with its clever disguise.

So here lies the lesson from wild oat's great tale:
Though mowers may come with their thunderous wail,
Life finds a way through each trial and test;
In nature's grand scheme, it's survival at best.

4.) **Restoring California's Grasslands**

The Hilltop's Hope

On a hillside in California, where the sun shines bright,
We face a challenge, oh what a sight!
With weeds that dance and grasses that sway,
Our native blooms have gone astray.

Once vibrant meadows with colors galore,
Now choked by invaders, they're hard to ignore.
But armed with our tools and a plan so grand,
We'll restore this beauty across the land.

Mowing monthly at heights of eight to twelve,
We trim back the weeds, let the natives delve.
With each snip and each cut, we clear out the blight,
Hoping dormant seeds will soon see the light.

Fertilizers sprinkled like fairy dust fair,
Mulch laid down gently with tender care.
We feed our dear natives, coax them to rise,
To bloom once again under California skies.

Oh seeds of the past, hidden deep in the ground,
Awaken from slumber; it's time to be found!
With patience and love and a sprinkle of hope,
We'll nurture this hillside; together we'll cope.

So here's to the grasses that once filled this space,
To wildflower meadows that nature will grace.
In harmony's dance with each blade and each petal,
We'll restore what was lost—our hearts will be settled.

The Future Awaits

As seasons roll on and our efforts take root,
We dream of a hillside where life is astute.
Where bees buzz around and butterflies play,
In a tapestry woven from nature's bouquet.

So let us not falter; let us not tire—
For restoring our grasslands is truly inspired!
With every small step toward this noble quest,
We honor our earth and give nature its best.

5.) **Restoring the Marin Dwarf Flax—**

In the Heart of Serpentine Soils
In the heart of serpentine soils,
where the earth twists like a forgotten tale,
the Marin Dwarf flax, small and resolute,
pushes through cracks in the ancient rock,
its tiny seeds like whispers of hope,
scattered by winds that remember.

A Struggle for Light
Amongst the towering grasses,
weeds that stretch their arms to the sky,
the flax stands small but fierce,
a testament to resilience—
each leaf a story of survival,
each bloom a defiance against neglect.

Making Room for Life
We must clear the cluttered ground,
pulling back the weeds that choke its breath,
to make room for this delicate beauty—
to nurture its fragile existence,
to let it unfurl in sunlight's embrace,
unmolested by shadows of indifference.

Blooming Against All Odds
With patience we cultivate this land,
tending to each sprout with gentle hands;
for every tiny plant is a universe,
a reminder that even the smallest can thrive—
that life persists in unexpected places,
and beauty can flourish when given space.

The Dance of Nature's Balance
So let us dance with nature's rhythm,
restore what was lost in our haste;
let us celebrate each blossom's emergence—
the Marin Dwarf flax rising from obscurity.
In this act of love and care we find purpose:
to protect these tiny giants as they bloom.

6.) **A Serpentine Struggle**

In the Meadow's Heartbeat
In the quiet of dawn, where the serpentine curves
Of wildflower meadows breathe life into dreams,
Hands toil in reverence, pulling weeds from their roots,
Each tug a prayer for the blooms that once danced—
Golden poppies and blue lupines,
Whispers of color in a sea of green.

Years of Labor
Seasons turn like pages in an old book,
The sun rises and sets over weary backs,
Fingers stained with earth's stubbornness,
Sowing seeds of hope into soil worn thin.
Yet the weeds return, relentless as shadows,
Choking the promise of petals and fragrance.

The Mower's Serenade
But lo! In another corner of this verdant world,
A figure strides forth with a mower's roar—
Monthly rituals from February to June,
Cutting down chaos at eight to twelve inches high.
With each sweep, he sings a different song:
Fertilizers and mulch—a banquet for blooms!

Spectacular Super-bloom
And behold! The meadow transforms under his care—
A riotous explosion of colors unfurling wide;
Poppies cascade like sunlight on waves,
Lupines stretch tall as if reaching for stars.
While others wrestle with nature's wild hand,
He dances with it—an orchestrator of growth.

Reflections on Nature's Will
What is this lesson etched in petals and leaves?
That sometimes the heart must yield to the hand?
To embrace not just struggle but also surrender—
To find beauty in balance between chaos and calm.
For while some labor long against nature's decree,
Others may flourish by learning its ways.

In Conclusion: A Duality of Efforts
So here we stand amidst wildflowers' plight—
Two paths diverging in a meadow so bright.
One fights against weeds with sweat and resolve;
The other nurtures life through cycles evolved.
Both seek to restore what was lost long ago;
Yet one finds success where the other feels woe.

7.) **Marin Dwarf Flax poem**

On serpentine slopes where the sun does prance,
Blooms a flower so small it could hardly dance.

The Marin Dwarf Flax, with petals so bright,
In pink and white, whispers to morning light.

With roots in the rock where few dare to tread,
It laughs at the wild oats that loom overhead.

“Dear friends,” it declares with a voice soft yet spry,
“I thrive in this chaos; I’m not shy to fly!”

Oh tiny wildflower! You’re bold as can be—
In a world full of giants you’re happy to see.

While others may wilt under pressure or heat,
You flourish in sunshine—oh what a feat!

So here’s to your bloom on those sunny slopes fair!
A marvel of nature beyond all compare.

May your colors remind us when life feels too tough—
That sometimes it’s sweetness that’s just small enough.

8.) **Restoration in Serpentine Meadows**

In the Whisper of Weeds

In the golden light of dawn,
hands dig deep into the earth,
fingers entwined with roots and dreams,
pulling stubborn weeds like memories,
each tug a prayer for the wildflowers,
the serpentine meadows once alive,
with colors that danced in the breeze.

Years roll by like clouds overhead,
as seasons shift from rain to sun,
and still they toil—these stewards of soil,
sowing seeds of hope in barren patches,
their laughter mingling with the rustle of grass,
but the weeds return—persistent phantoms,
shadowing their efforts with green defiance.

The Mower's Serenade

Yet there stands another soul, unyielding,
with a mower that hums a steady tune—
February whispers to June's embrace,
a rhythm of blades slicing through chaos.
At eight to twelve inches high they rise,
the weeds bow down beneath the roar;
fertilizers rain like blessings from above,
while mulch blankets the ground in warmth.

And lo! The wildflowers bloom again—
a riot of color against a backdrop of green;
the mower knows not just to cut but to nurture—
to coax life from struggle and strife.
With each pass through tangled growth and thorns,
the meadow breathes anew—a canvas reborn.

A Dance of Persistence

So here lies the paradox of care:
hands that pull and hands that mow;
one seeks to reclaim what was lost in time,
the other embraces what is here now.
In this dance between labor and nature's will,
they find a fragile balance—a lesson learned:
that sometimes it takes both love and loss
to weave back together what once was whole.

And as wildflowers stretch toward the sky—
their petals unfurling like stories untold—
we see that restoration is not just a goal;
it's a journey through patience and pain.
For every weed pulled is a step toward grace;
every blade mowed is an act of faith.

In this serpentine meadow where dreams collide,
we learn to cherish both struggle and bloom;
for nature's tapestry is woven with threads—
of resilience stitched into every seam.

9.) **The Serpentine Saga**

In a meadow where serpentine wildflowers bloom,
A group of enthusiasts sought to dispel the gloom.
With hands in the soil and hearts full of cheer,
They pulled out the weeds year after year.

They sowed native seeds with a hopeful intent,
Imagining landscapes where beauty was spent.
Yet despite all their toil, their laborious quest,
The weeds kept on growing; they simply wouldn't rest.

"Let's gather our strength!" cried one with a grin,
"We'll fight for this meadow; we surely can win!"
But the stinkworts, thistles and ox tongues laughed in delight,
As they danced through the grasses from morning till night.

Then came a new player, with mower in tow,
Who said with a chuckle, "I know how to grow!
I'll trim back these weeds every month without fail,
And add mulch and fertilizer—let's set sail!"

From February's chill to June's warming sun,
He mowed at a height that was just so much fun.
Eight to twelve inches—a careful embrace—
While the wildflowers flourished in their newfound space.

The others looked on with a mix of dismay,
As blooms burst forth brightly where weeds used to play.
"Is it fair?" they lamented, "We've worked hard and long!
Yet here comes this mower who seems to belong."

But nature is fickle; she dances her tune,
And sometimes it takes more than pulling by noon.
For while hands may be calloused from years of good work,
A mower's precision can sometimes unburk.

So here lies the lesson in this verdant tale:
That restoration is not just about will or travail.
Sometimes it's balance—between nurture and strife—
To coax out the beauty that breathes into life.

10.) **The Struggle of Wildflower Restoration**

In the Beginning: A Hopeful Endeavor

For years they toiled on serpentine ground,
A patchwork of dreams where wildflowers abound.
With hands in the soil, they pulled out the weeds,
Planting small seeds, nurturing hopes and needs.

Each season they gathered, with patience and care,
Yet wildflowers faltered; their blooms were quite rare.
The sun kissed the earth, and rain softly fell,
But nature seemed stubborn; it held its own spell.

The Weeds' Relentless Grip

Through decades of effort, their spirits wore thin,
As grasses encroached where wildflowers had been.
They learned from the soil that was tough to embrace,
That serpentine struggles would not leave a trace.

With every new spring came a flicker of hope,
Yet blossoms remained just beyond their scope.
They studied the patterns of nature's design,
But still found their efforts met with decline.

A New Approach: The Mower's Touch

Then came a lone figure with a different plan,
Who mowed down the weeds with a steady hand span.
>From February's chill to June's warming light,
He kept them at bay—his vision was bright.

At eight to twelve inches he trimmed with great care,
While adding organic fertilizers to share.
This simple routine brought life back anew,
As wildflowers flourished in colors so true.

The Super-Bloom Emerges

With each passing season, the landscape transformed,
From barren and bleak to vibrant and warmed.
A tapestry woven with petals so bold—
What once was a struggle now shimmered like gold.
The super-bloom blossomed in radiant array,
A testament forged through persistence and play.
Where once there was silence now echoed delight—
Nature rejoiced in her colorful flight.

Conclusion: Nature's Resilience

So here lies the tale of two paths intertwined:
Of those who persisted yet struggled to find—
And one who embraced what the land had to give—
In harmony working for wildflowers to live.

11.) **SONG: Mowing the Weeds in California's Dream**

Verse 1
In the golden fields where the sun does shine,
Weeds grow tall, but they ain't divine.
Once a month, I take my stand,
With a mower's roar across this land.
Rip Van Winkle sleeps beneath the ground,
Dormant seeds waiting to be found.

Chorus
Oh, mow those weeds, let the wildflowers breathe,
Uncovering dreams that the earth weaves.
With every cut, a story unfolds,
Of colors and scents that nature holds.

Verse 2
The grassland whispers secrets of old,
Tales of blooms in hues bold and gold.
I gather my tools with organic care,
Fertilizers rich to nourish what's rare.
Mulch like a blanket on soil so deep,
Awakening life from its slumbering sleep.

Chorus
Oh, mow those weeds, let the wildflowers breathe,
Uncovering dreams that the earth weaves.
With every cut, a story unfolds,
Of colors and scents that nature holds.

Bridge
California skies stretch wide and clear,
As I toil under sun without fear.
Each blade of grass tells a tale anew,
Of seasons past and skies so blue.

Verse 3
So here's to the work beneath the sun's glow,
To nurturing life in this land we know.
From dormant seeds to blossoms bright,
A cycle of beauty brought back to light.

Chorus
Oh, mow those weeds, let the wildflowers breathe,
Uncovering dreams that the earth weaves.
With every cut, a story unfolds,
Of colors and scents that nature holds.

12.) The city of Santa Cruz used grazing between 2012 and 2018 to restore the Endangered Santa Cruz tarplant, and their soil tests showed that only five years of grazing had lowered the soil nitrogen by 80 % and the phosphorus by about one-half.

A Case Against Grazing for Grassland Restoration in California

In California's golden land, where the sun does brightly shine,
Lies a tale of grassy meadows, once lush and divine.
But alas! The cattle came, with their hooves and their might,
And turned verdant dreams into a nitrogen blight.

Oh Arana Gulch meadow, so rich in your lore,
With Santa Cruz tarplants that we all should adore.
Yet five short years of grazing—what a tragic affair!
Nitrogen plummeted; the soil gasped for air.

Eighty percent it dropped, oh what a dreadful fate!
While phosphorus dwindled—nature's cruel bait.
Half of what was needed for those rare blooms to thrive,
Now lost to the munching of cattle alive.

And pH levels climbed into acid's embrace,
A toxic transformation—a sad, bitter place.
Restoration projects? They sound good on paper,
But they damage the soil and native plants taper.

So let's ponder this question: is restoration the key?
When grazing leads to loss—oh can't you see?
We must think of our choices with wisdom and care,
For the health of our meadows is precious and rare.

Let's abandon these projects that harm more than heal,
And cherish our grasslands with reverence real.
For in nature's balance lies beauty profound—
Let's protect what remains; let true healing abound.

Craig's YouTube channel at https://www.youtube.com/channel/UCHl6YA4PvegxYo3TxSGOs9Q shows how one square foot of weeds and native burn, the temp. and duration.

The Perils of Pyros in the Prairie

In California's grasslands, where the natives once thrived,
A restoration plan has been contrived.
But hark! What's this? A fiery scheme,
To burn away weeds, or so it would seem.

With flames that leap high, a thousand degrees,
They scorch through the grasses with alarming ease.
Yet those native plants, so gentle and meek,
Are not built for such heat; they're far too unique.

The weeds grow like wildfires, a fuel-laden feast,
Their flames roar and crackle—oh what a beast!
For ten minutes they blaze with an insatiable hunger,
While the natives can't handle such heat; they go under.

So let's ponder this puzzle with care and with thought:
Is burning our grasslands the answer we sought?
When fire is wielded like a sword in the night,
It's often the innocents who suffer from fright.

Instead of restoring with flames that incinerate,
Let's nurture our grasses to cultivate.
For nature knows balance; it thrives on its own,
Without fire's fierce fury to claim it as bone.

So here's to the prairies—let them flourish and grow!
With patience and wisdom, let true healing flow.
For in every green blade lies a story untold—
Of resilience and beauty that never grows old.

Environmental Solutions: A Nash-inspired Poem

The Problem We Face
In a world where the ice caps melt,
And the heat of the sun is more keenly felt,
We ponder solutions, both grand and small,
Yet forget that nature has answers for all.

The Plant Life's Role
For millennia past, with grace and with ease,
Plants managed CO2 like a well-tuned breeze.
Through photosynthesis, they took in the air,
Transforming our worries into oxygen fair.

A Shift in Consciousness
But alas! In our haste to engineer might,
We overlook what's been working just right.
To fix global warming, let's not just contrive;
Let's nurture our planet so it can revive.

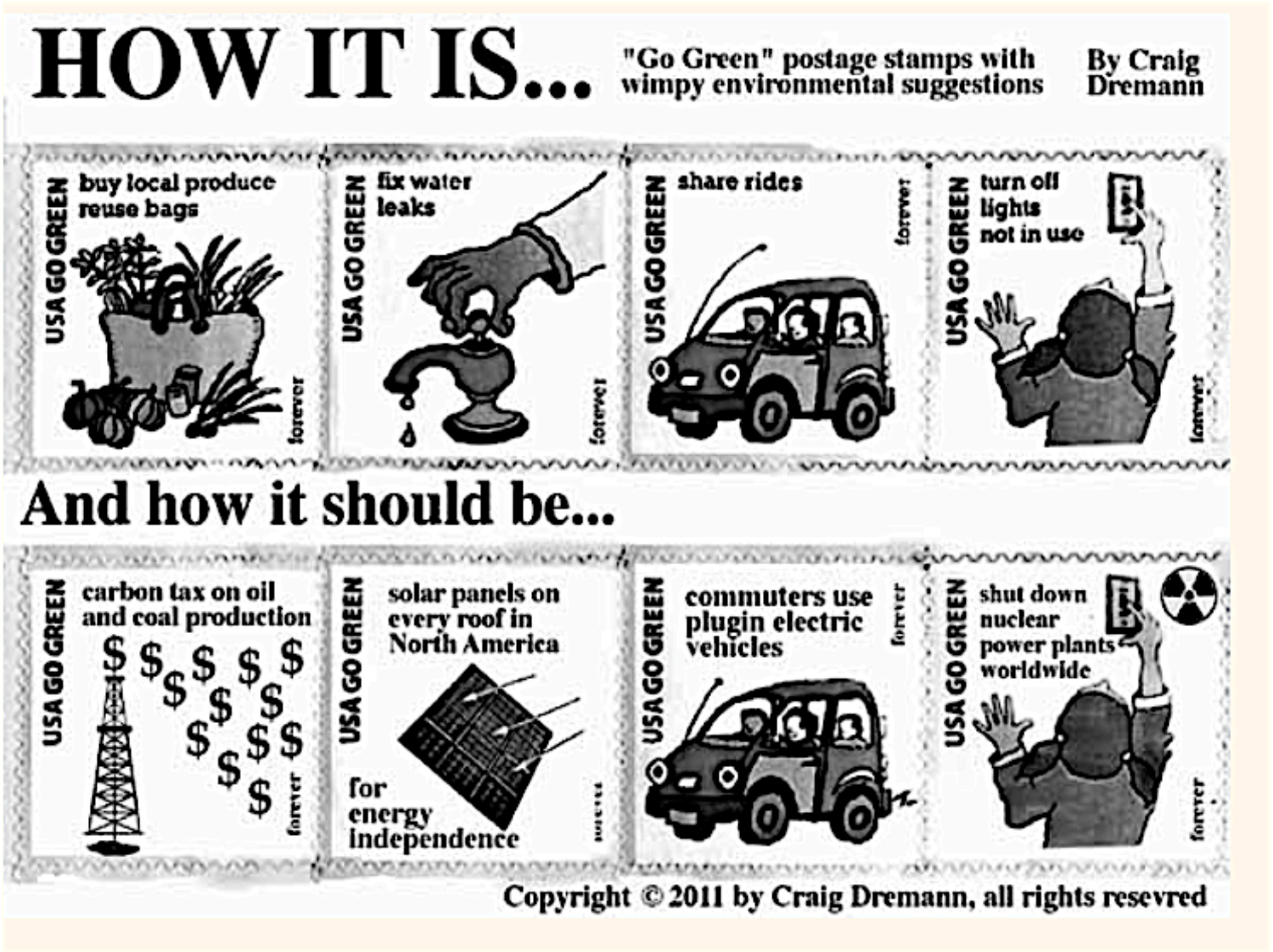
Seeking Solutions in Nature
Instead of machines that hum and that whir,
Let's plant more trees and let nature confer.
With roots deep in soil and leaves reaching high,
They'll capture the carbon as they reach for the sky.

A Call to Action
So gather your seeds and your shovels with glee,
Let's cultivate consciousness—just you wait and see!
For when we align with the earth's gentle ways,
We'll find that solutions are there every day.

Conclusion: The Path Forward
So here's to a future where we learn from the past,
Where environmental wisdom is built to last.
With plants as our allies in this noble quest,
Together we'll flourish; together we'll rest.

The possible environmental future of the United States, when we get serious.

"Go Green forever stamp" designs Copyright 2011 © USPS.

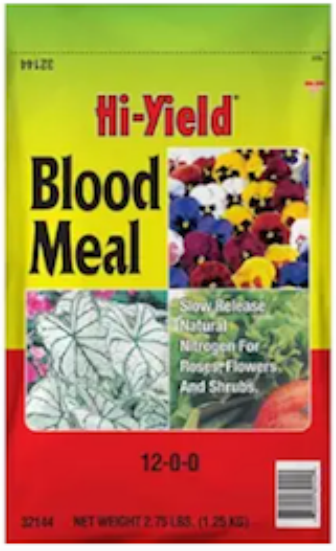


Let's get the "Wildflower Party" started today! *PINK* sings at https://www.youtube.com/watch?v=Hg-_uxD3H80

Get your Wildflower Party started!

A shopping list of materials:

1.) **Blood meal** Hi-Yield, or another brand—32 pounds per 1,000 square feet.
2.) **Bone meal** Hi-Yield, or another brand – 16 pounds per 1,000 square feet.
3.) **Super soil** brand potting soil, one cubic foot bags—10 per 1,000 sq. feet.
4.) **Gas powered string trimmer**, get an Echo SRM-225—On Ebay or Amazon.
The Echo PAS-225SB can be better, because the shaft splits. To be legal in California, needs to be manufactured December 31, 2023 or earlier.
5.) **Air filters** for string-trimmer. Check and change every 10 hours of use.
6.) **100 octane gas** if you can get it, and use the best 2-cycle oil.



Echo SRM-225

Many of California's rare grassland wildflowers are down to such low numbers, like the Marin Dwarf flax on Ring Mountain, as reported at https://zulupeacekeeper.wordpress.com/2015/05/23/ring-mt-rings-with-jim-11-may-2015/ -- ***This slide is a call to*** **all of the Marin County Land Doctors** to set up their Emergency Rooms and small scale test plots in ALL of the Marin Dwarf flax locations, and see if those populations can be resurrected using these Four-Steps, before they blink out forever. ***All of the Marin Dwarf flax populations need our help right now!***

Marin dwarf flax, Hesperolinon congestum: "Occurrence limited to one or a few highly restricted populations or present in such small numbers that it is seldom reported, endemic to California and endangered throughout its range." http://www.nps.gov/prsf/learn/nature/marin-dwarf-flax.htm

List of the Marin Dwarf flax populations which need Land Doctor treatments!

MARIN DWARF FLAX locations

MARIN COUNTY

TIBURON GROUP

--Marin Day School #10
--Middle Ride #8
--Ring Mountain #8
--San Rafael #11
--St. Hilary's church #5

CENTRAL MARIN

--Alpine Lake North #23
--Big Rock Ranch 5 #13
--Carson Ridge #12
--So. of Nicasio reservoir #28
--West of Big Rock #32

MOUNT BURDELL group

--N of fire road #24
--N. of Saddle Mountain #25
--Unspecified #a

SAN MATEO COUNTY

--Caltrans I-280 r/w south of Barkley Field #n/n
--Caltrans Farm Hill Blvd. 22-acre "Wildflower Reserve" #n/n
--Crystal Springs 1 #1
--Crystal Springs 2 #30
--Crystal Springs 3 #4
--Crystal Springs 4 #2
--Edgewood East $17
--Edgewood West #4
--Hillcrest #31
--Hillsborough #21
--Polhemus Road #22
--Stalstaf Park #29
--Woodside Glens #5

SAN FRANCISCO

--Inspiration Point #20
--Laurel Hill #14
--Lone Mountain #15 (extinct)
--Presidio #16

DO we want to see, another one of these populations go the way of the San Francisco 'Lone Mountain' one—let's get started now!

Patron "Saints"? -- Perhaps the only possibility of these rare California grassland plant's survival, is if each **Land Doctor chooses one or more species and become its Patron "Saint"** and administer aid so each population can get back to good health, with massive numbers of plants living in weed-free habitats.

My 27th great grandmother is Saint Queen Margaret of Scotland and is the patron saint of many things, **Learning**: She promoted education and art and **Fashion**: She asked her people to learn how to weave better materials so they could become distinct as a nation through their clothing.

The Patron of the Marin Dwarf Flax and the Crystal Springs Lessingia is what I have chosen, and see if I can help produce a restored habitat for them to return to, and be able to live surrounded by other native plants instead of weeds--with butterflies, bumblebees and birds flying overhead instead of empty skies.

I am encouraging every Land Doctor to choose one or more rare species and become a Patron and help it survive!