

Craig Dremann's updated report on Santa Cruz Tarplants populations

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October 16, 2018 update.

My wife Sue and I visited August 19, 2018, to check on the Santa Cruz Tarplants being "managed", "treated", or attempts being made to recover, by other native grassland Ecological Restoration "Land Doctors" And then, another visit August 29 on a tour with Arana Gulch Adaptive Management Working Group (AMWG).

(1.) ARANA GULCH Critical Habitat "UNIT-D" report-- We looked carefully at Arana Gulch's Areas A, B, C, and D. All of the four areas of Arana Gulch are SC Tarplant Emergency Disaster areas. Only two flowering SC tarplants were seen from the walking trail, growing within Area A and zero SC tarplants in Areas B, C and D. The August 29 tour of Area A with the AMWG, only a few hundred nutrient-starved plant plants seen in a small circle at the western end.

At Arana Gulch, the soil nutrients are still being taken away by the cattle in areas A, C, and D, so that the grassland natives are pretty much extinct within the cow pens, and now only exist in any substantial numbers outside of the fences. A walk-through during a tour in spring 2018, zero native plants were seen within the Area A pen, and an estimated 99% of the native plant cover is now gone, due to the burning and the current and past cattle grazing.

Also, at Arana Gulch the Area B was not being managed this summer, so a solid mat of Zorro fescue (*Vulpia myuros*) -- about 6 inches thick is covering about 55% of that area, and that grass thatch produces a toxic natural herbicide that kills native seedlings that try to germinate in winter.

In addition, any tarplants that would try to resprout in Area B, are also being suppressed by a cover of 25% wild oats, 15% cats ears, and 5% mustards, all of which produce natural herbicide-like chemicals, called allelochemicals.

See the Journal of Chemical Ecology, especially Dr. Liu's 1993 and 1994 papers, for articles about allelochemicals.

Arana Gulch Areas A, C and D, are still producing about 200 viable wild oats seeds per square foot. Fortunately, Wild Oats are the very easiest of our weed grasses to get rid of, since seeds are only viable in California soils for 1-2 years.

The estimated cost to restore all Arana Gulch four areas, using gas-powered hand-string trimmers and the costs of adding the necessary organic fertilizers, would be \$400,000 for the first year, and \$200,000 per year, for the next three years.

All of the other grassland ecological restoration methods used so far, have failed at Arana Gulch.

Only hand-string trimming, and making the investment in replacing the soil nutrients removed by grazing, will start the restoration of the populations at Arana Gulch, and avoid the eventual final extinction of the SC tarplant there. The last population in Area A have dropped to less than 40 plants in five of six years since 2013—18 in 2013, 4 in 2014, 35 in 2016 and zero in 2015 and 2017.

When a plant reaches less than a 1,000 plants in a population that only 30 years ago numbered 100,000, and less than 100 in five out of the last six years, and even zeros-out for two years--to any reasonable person, you need to do something different, if you want that species to not go extinct?

Because over the last 30 years, the wild oats have never been managed properly, the summer 2018 seed crop has already shed another 600 million seeds onto those A, C, and D Arana Gulch critical tarplant habitat acres.

The B, C, and D populations went extinct decades ago, and A population is on its way out, unless weeds are properly managed with hand-string trimming, and the four areas fertilized, and the entire native grassland habitat restored to close to 100% cover.

2.) GRAHAM HILL UNIT B report. Another SC tarplant Emergency Disaster area. Zero tarplants seen. The Holcus grass, which produces very strong allelochemicals, is the main plant covering that entire Critical Habitat Unit B, about 60% cover and the rest is 40% cover of cat's ears.

No management of the weed grasses was seen, except for some late spring mowing and the cut straw laid on the ground and the allelochemical-straw not removed. Holcus can only be managed by pulling, as it is completely resistant to eradication by mowing.

The USFWS should assume that the SC Tarplants are extinct at this site, because as long as the Holcus grass covers that Critical Habitat Unit, that weed will not allow the SC tarplants to recover and thrive there.

The only solution would be a 4-5-year project of monthly hand-pulling of the Holcus plants and the removal of those pulled plants, which would then give the tarplants room to recover. The topsoil would be need to be shaken off the roots of each plant, because the topsoil layer is only a couple of inches deep at that Unit, so you would remove too many nutrients if you carried the soil away with the plants.

Perhaps the first Holcus and cats ear's removal project, could come in with a tractor and loosen up only the top two inches of soil so the weeds could be

hand-pulled easier, and the pulled plants could be put into a pile on the property somewhere and made into a compost pile, to save money on removal to a dumpsite.

You do not want to machine “cultivate” deeper than two inches, because then you would lose a lot of those topsoil nutrients, and drive them into deeper layers of the acid-sand subsoil.

However, every monthly plant-removal afterwards would need to be done by solely by hand, because native seeds will start sprouting, and the monthly weeding process will need to be done for at least 4-5 years, because the Holcus seed is viable in the soils at least for that period of time. This will be the most difficult Unit to recover the SC tarplants, of the five Units that I visited.

3.) ARMORY UNIT C report – Yet another SC tarplant Emergency Disaster area—Zero tarplants seen.

Could only see both grasslands on either side of driveway, viewing from the gate, so tarplants may exist behind the armory building. In the grassland on south side of the driveway, a “sensitive habitat” sign was seen, along with some pin flags, but no flowering SC Tarplants seen. No management of the weed grasses was seen when the two grasslands were viewed in July and no management has been done since then.

A solid patch of stinkwort(?) seems to be getting established along the edge of the driveway.

This Unit probably has the best potential to recover the SC tarplant, because it still contains the highest percentage cover of other native grassland species, of all of the Units viewed so far. Apparently there are some plants growing in the grassland weed-patch on the left side of the driveway, but none in the grasslands on the right, even though that would be good habitat for a future population.

4.) TARPLANT HILL, off Ohlone Parkway (part of Unit I) report—SC tarplant Emergency Disaster area Number 4—Zero tarplants seen, and the “Crop Circles” topsoil-scraping experiments have failed, and could have permanently lowered and changed the soil nutrient levels needed by the tarplants to thrive in the future.

The scraping of the topsoil and discarding it in piles around the edge of the crop circles, has done three huge environmental damages to the SC tarplant populations that used to be located there.

Most of the viable SC tarplant seeds that were potentially viable in the topsoil, have now been buried in that discarded topsoil, where they are unable to germinate and will die in those piles. By scraping off the topsoil nutrients, exposes poorer subsoil that cannot sustain proper tarplant-growth, and the

scraping has also unearthed dormant weed seeds, like the exotic clovers.

Until the soil nutrient thresholds are known for proper SC tarplants survival, the proper pH range, optimum organic matter percentage, optimum nitrogen, phosphorus, potassium, calcium, magnesium and micronutrients, then actions like land scraping, burning, raking/baling off cut straw, and grazing need to immediately cease as management actions, as they can have a permanent environmentally-damaging effect on the soil nutrients.

Since none of the SC Tarplant Critical Habitat land managers, have ever monitoring the changes in the soil nutrients in *any* of the SC Tarplant Units, then **any project that could make changes in the soil nutrients, is a violation of CEQA and the State and Federal Endangered Species Acts.**

It is illegal to conduct projects, where you could be doing permanent damages to the environmental, by lowering soil nutrients below the thresholds needed by a plant for its survival, resulting in the extinction of a Listed Species.

5.) WATSONVILLE AIRPORT (part of Unit I) report—SC tarplant Emergency Disaster Number 5—Zero tarplants seen in August. In 2013 and 2014, according to reports, the airport used to be the largest population of SC tarplants in Santa Cruz County.

On the western end, the weed grasses were cut and baled and the bales are still in the grassland. There may be some SC tarplants growing between the runways, but could only view at a distance from behind the roadway fences. Only a few dozen potential tarplants were seen--not the hundreds, or thousands, or hundreds of thousands of SC tarplants recorded in the past.

The Watsonville Airport is probably the second best area for potential recovery of the species, because there are still patches of good cover of the native grassland species in the area.

However, there would be a significant cost of hand gas-powered string trimming for a few years, along with the costs for the necessary organic fertilizers to correct any nutrient deficiencies.

Sincerely, Craig Dremann (650) 325-7333

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Ecological Restoration of California native grasslands since 1992.

Read about the 70 acres restored at Michael Shaw's at 300 Byers Lane, La Selva Beach at <http://www.ecoseeds.com/shaw.pdf> -- that was done without burning, grazing, land-scraping, or sowing any native seeds, and went from 1%

native cover to 94% native understory cover today.