

OUR SAND HILL ROAD



April 2010

This area was once infested first with broom and then cat's ear. It is almost pure fine sand. As the natives repopulated, the area increasingly became a complex mix of numerous species. In this spot, the more commonly represented native groundcovers are *Filago californica*, three clovers, miner's lettuce (2), two tarweeds, miniature lupine, two camissonias, stonecrop, fairy mist, lotuses (3), cottonweed, two species of *Navarettia*, *Sagina*, and not a few more, totaling about 26 native and 15 weed species.



June 2010

Same spot two months later. If you noted that the pattern of shrubs in the prior photos keep changing, your observation skills are excellent! Why? This sand hill system requires occasional disturbance or it eventually goes back to chaparral and then forest. For now, I am keeping this a sand hill, because I don't want a forest here. So, I pull the bushes, stab the trees, and burn them, constituting that disturbance. While doing so, I have noted hunks of amazing fibrous networks of mycorrhizae. Note also that the clover seems to have disappeared, leaving bare sand! Where did it go? I am guessing that ants took a lot of it and stored the seed. Now that the clovers are done, we're getting slender tarweed (*Madia gracilis*), and various Navarretias.



February 2009

Over time, I came to conclude that the prior area was probably going to be too much trouble to maintain as a sand hill over the long run, partly because it is so steep that weeding it tears up the hillside a bit more than I would like and partly because nearby oak trees were loading it up with seedlings that are very troublesome to manage. Yet as a complex community on the property, I still wanted to have a sand community some place, so, I thought I would see if I could make one. On this spot about 100' away I pulled all the shrubs, put them in a pile, added tree branches, and lit it on fire. Voila! It started out as this mix of *Lupinus bicolor* and *Filago californica*.



April 2009

Over time in comes *Cammissonia* (spp.), another known Indian staple for both roots and vegetable matter. They are common among rocks and sand here, but most are too small for food (although they grow big in road base-rock). They do better in rainy years.





Sagina decumbens occidentalis



Pterostegia drymarioides



Camissonia contorta



Cryptantha micromeres



Filago claifornica



Calandrinia ciliata



Navarretia atractyloides



This type of habitat often involves relatively small plants. The bar in each of these images is about 1”.



Early May 2010

But one just can't appreciate "small" or how complex sand hills get until you see these plants together. To weed this area effectively and efficiently, lighting is critical. Side lighting illuminates the erect weeds, such as grasses, wall bedstraw, and *Filago gallica*. Vertical lighting is more important to detect weeds in the groundcover understory. Yet, look at the leaves; they can't be more than two inches off the surface. So I hope you are wondering what I mean by "understory" when talking about low growing groundcovers.



1”



April 2012

Well, here it is: Stonecrop, *Acemipson parviflorus*, *Trifolium gracilentum*, a *Cammissonia*, *Navarretia*, and mosses. We do “small” here. Four leaved allseed (*Polycarphon tetraphyllum*, a weed found here but not in this photo) grows as small as the mosses in this sand as do wall bedstraw seedlings.

Sometimes "small" is a big challenge



February 2009



Do it for too long at any one time and you start seeing things.



It can take some time when you're doing it by hand.



March 2010

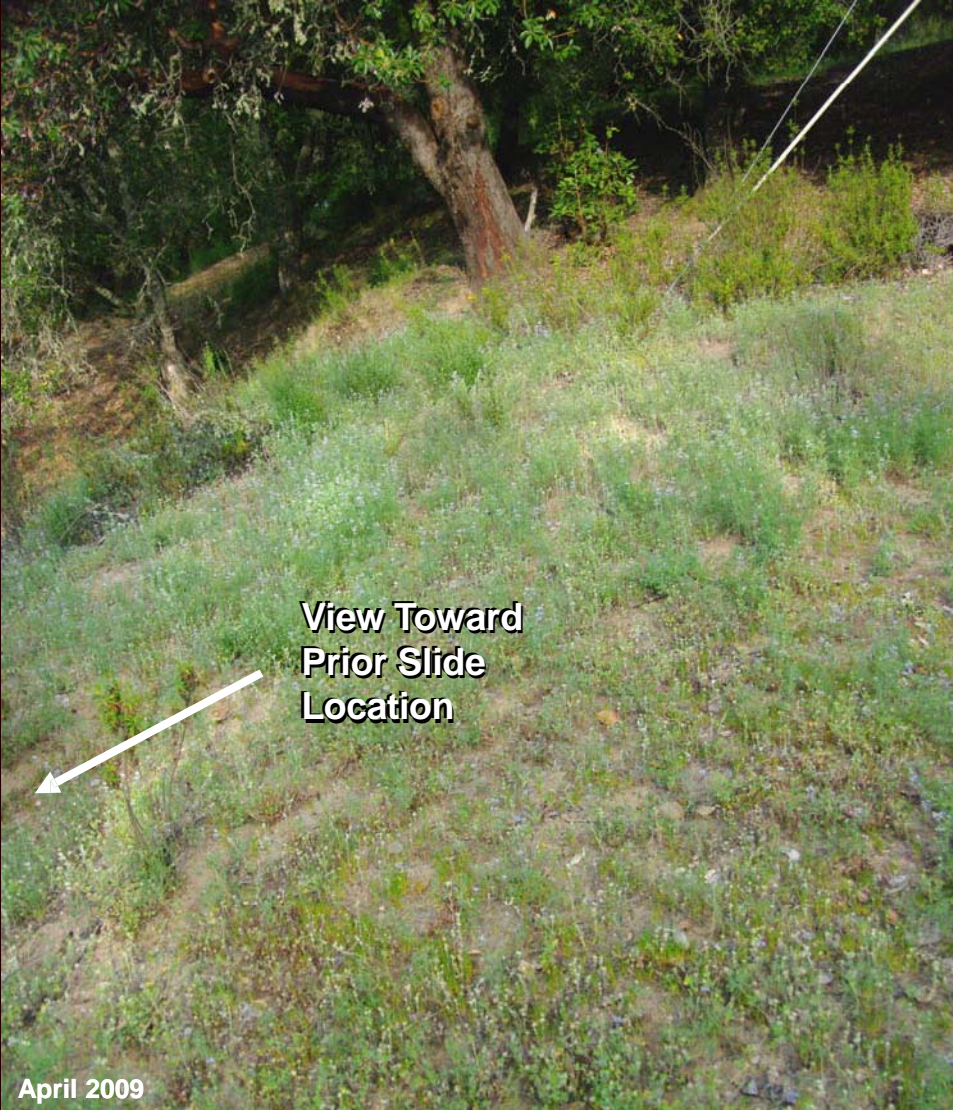


Especially when it gets this big.



April 2010





This is the ridgeline 75' above the base of the sand hill. On the left is April 2009 and on the right is the same spot the next year. Although the bumper crop of lupine in the left slide bred successfully, their seedlings did not appear the next year. 2010 was not a good year for lupine in general, which seems to prefer a drier spring, but that is probably not the reason you see so little of it (of which there may be several we will discuss). 2010 was however a GREAT year for clover. Yet you don't see the clover up here, except in a few denser patches near the back (**red outline**). This distribution, plus the fact that I stirred up this patch with a hoe five years prior, is strong indication that the clover seed bank on this ridge was once totally exhausted. The dense clover patches in the red-outlined area are the scions of the colonizers up on top from recent years. **Santa Cruz Sand Hills** are demanding because they are wide open for weeds. Yet as it turned out, we had bigger challenges than weeding only what was at the surface.



June 2011

These guys don't care what they grow. Native or exotic, it's all good. In sand hills, they play a major role in what comes up from year to year. Yet there are other factors involved, in that with a recovering native seed bank, not all of the plants are yet well distributed.



March 2010



Calandrinia ciliata



Crassula connata



Acmispon americanus



A. strigosus



A. parviflorus

All this variety has its consequences when one is making decisions about what to keep and what to weed. This area is entirely native forbs: red maids (*Calandrinia sp.*), stonecrop (*Crassula connata*), skunkweeds (2), and 3 lotuses (insets). It is a considerable difference from what was here before...





January 2003

This is the way this area used to look. Other than a few red maids at the top, it is all exotic. This is "contaminated."



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