REPORT FROM THE FIELD

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With
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Hopefully, some day I will learn to not keep promising the topic for my next posting, for both yours and my benefit. Again, I am not able to keep my last promise. In my last website posting, I said that this posting would focus on the comparison between the climates at Ripley and the Poppy Reserve. Although some progress has been made on collecting and analyzing the data for the comparison between Ripley's and the Poppy Reserve's climates, there hasn't been nearly enough progress for an extended discussion so I again need to delay that discussion for some future posting.

So, if not the comparison between Ripley and the Poppy Reserve, what will I cover in this posting. First, because there has been some progress in the climate comparison, that progress will first be reported.

I was really fortunate to make one trip up from Long Beach to visit the Poppy Reserve in mid-November before the current COVID-19 surge really took off and met with Marsha and Bob to explore what had happened at the Reserve over the summer and early autumn. I have now also made a second trip to the Reserve in early February. This posting will end with some of the highlights of these two visits.

RIPLEY STATE PARK

Having outlined the content of this posting, lets jump in. During my visit to the Poppy Reserve in mid-November, the first since March of this year when the Reserve was closed to visitors, Bob, Marsha and I took that opportunity to install our own temperature recorder near the Reserve's Maintenance Yard. When we established a mini, mini weather station at Ripley several years ago, the weather station included a similar temperature recorder to record Ripley's air and soil temperatures. The probe measuring the air temperature was located ten inches above the ground. That height was specifically selected to record the temperature conditions that mature poppy plants, and the other low growing plants, experience. When we started to compare those Ripley recorded temperatures with the temperatures reported by the Poppy Reserve's "official" weather station located in the Maintenance Yard, we noted some obvious discrepancies. Our trouble shooting efforts over the next months concluded that those discrepancies were likely due to the temperature probes being at different heights above the ground. As I noted above, the Ripley probe is only ten inches above the ground while the Maintenance Yard's temperature probe is approximately seven feet above the ground. Concluding that these differences in height was causing the observed discrepancies led to an experimental effort to prove our hypothesis. Measuring the air temperatures at different heights above the ground near the Reserve's maintenance yard showed that there is, indeed, a consistent temperature gradient near the ground and that this gradient was the most likely explanation for the noted recorded air temperature discrepancies. The results of this study were reported in one of my earlier website postings.

Still wanting to compare the temperatures between Ripley and the Poppy Reserve and not wanting to raise the Ripley temperature probe to seven feet led us to install our own temperature recorder near the Maintenance Yard. Our plan was to install this new recorder

last spring but COVID-19 interrupted our efforts for eight months We are now finally starting to record valid comparative temperature data and will have more results to report in the next few months but temperature data covering at least an entire year is really required to identify any significant differences in the temperature environment between the two State parks that can possibility help explain the differences in the vegetative communities of the two parks.

So far this winter, the western Antelope Valley has had only three rainstorms on 7-8 November, 27-28 December and 23-29 January. During those storms, Ripley received 0.035, 0.59 and 1.46 inches of rainfall. Somewhat unexpectedly, the Poppy Reserve received 0.27 inches of rainfall during the same first seasonal rain storm. Over the last two winters during which comparative rainfall data has been collected at the two State Parks, rainfalls have normally been closer than this so this difference appears somewhat unusual. This comparison in rainfall has been discussed in my earlier postings but, to summarize, the differences in total seasonal, 1 September to 31 May, rainfalls for Ripley and the Poppy Reserve have been only a few hundredths of an inch for both years. The comparison in the Poppy Reserve's and Ripley's seasonal accumulated rainfall for the current season starting 1 September 2020 is shown in Figure 1. The figure clearly shows the Ripley's lower rainfall from the first rainstorm but Ripley then received more rainfall during the subsequent two storms so its accumulated rainfall is now noticeably higher than the Poppy Reserve's.

Ripley's step increases in rainfall reflect the dates that Bob and Patty visited Ripley to collect the rainfall data and empty the rain gauge. The dates of the actual rainstorms are reflected in the Poppy Reserve's blue line.

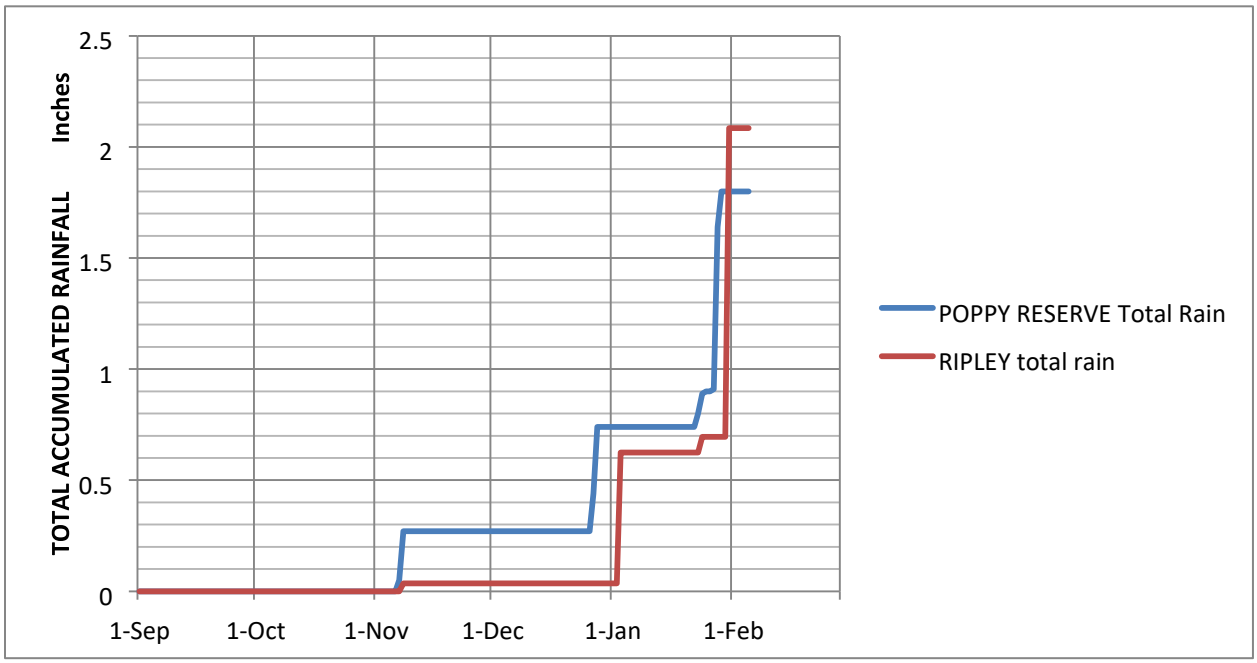

FIGURE 1: CURRENT COMPARIATIVE RAINFALL FOR THE 20/21 SEASON

The 28 December '20 rainstorm is probably of the greatest interest. During that storm, the Poppy Reserve received slightly less than 0.5 inches of rainfall and Ripley received almost 0.6 inches. Based on observations made during past years, 0.6 inches of rainfall appears to be the soil's lower moisture limit that triggers a limited number of poppy seed germination.

Those past observations also seem to indicate that the seeds of a few plant species, primarily filaree, will germinate under slightly drier soil conditions. This December rainstorm therefore provided an opportunity to better refine this rainfall seed germination limit.

Contrary to expectations, a survey looking for young plants conducted at Ripley several weeks following the late December rainstorm showed essentially no seed germination. Even though it had received lesser rainfall from that rainstorm, a similar survey at the Poppy Reserve did find young plants of several different plant species; as expected, young filaree plants being the most numerous. In addition to the filaree plants, fiddleneck and pygmy-leaved lupine cotyledons, a plant's first emerging structure, were also observed indicating that the seeds of these native plant species will also germinate under drier soil conditions than poppy seeds. In this posting's next section, you will find that this statement is not totally, completely true.

That completes the discussion on the Ripley findings so moving onto the Poppy Reserve.

POPPY RESERVE

Using the opportunity of our November visit to the Reserve, the researchers re-installed our collection rain gauges located at various locations on the Reserve. Marsha typically retrieves our rain gauges in early summer to clean them and protect them from the desert's extreme summer temperatures and solar radiation with the intent of re-installing them in early autumn before the winter rain storms arrive. This year we were a little late in getting the rain gauges back into the field because the Antelope Valley had already had one weak storm as noted above. Fortunately, the Reserve's rainfall from that single storm was well below the amount we would expect is needed to trigger any seed germination so did not expect any useful data was lost due to the COVID-19 delays. With this season's first even weak rainstorm not until early November, brings up the question "What is the latest date that the spring wildflower has started, i.e. a rain storm depositing more than 0.6 inches of rainfall?"

The researcher's record of Poppy Reserve weather data can quickly answer the question for the last twenty four years. At the greatest extreme, there have been two winters, 2001/2002 and 2012/2013, that never even received one rain storm that deposited that amount of rainfall. As you can guess, these years were extreme drought years. Setting those years aside, twelve of the remaining twenty two years had their first seed germinating storms in December or later, eight years had they first significant storm in January or later and three years had their first significant storm in February. Milt Stark spoke of one year where the first storm was in March but that must have been before the winter of 1997/1998 which is when our data set starts. Unfortunately, the researchers don't have the data readily available to identify the quality of the spring wildflower displays for these late starting seasons. I will point out that the season for the outstanding spring of 2003 didn't start until mid-December so there might be still some hope for the coming spring wildflower season. Only time will tell!!!

Traveling across the Reserve to re-install the rain gauges at their established sites, gave the researchers an opportunity to observe what was happening at the Reserve in mid-November as well as giving clues to what the summer had been like. Without a spring season starting rainstorm yet, the Reserve was pretty quiet. Many of the summer blooming plant species were wrapping up their season. Although well past its peak blossoms, a few of the rabbitbrush plants still have a few open blossoms, Figure 2. The turkey mullein, one of the four or five different species of buckwheat known to grow in the Reserve and even the desert straw were in the same phase of their life cycle, Figures 3,4, and 5, respectively.

Figure 2: RUBBER RABBIT BRUSH, taken 16 Nov '20

Figure 3: TURKEY MULLEIN, taken 16 Nov '20

FIGURE 4: BUCKWHEAT PLANTS, taken 16 Nov '20

FIGURE 5: DESERT STRAW, taken 16 Nov '20

It is a little harder to know where the Reserve's perennial aster species is in its life cycle. This summer and autumn blooming species has a very long period of blooming but these plants are seldom covered with blossoms. Typically, it seems these plants only have a few open blossoms at any time, Figure 6, so it is hard to know if the plant is near its end of active life or just doing its thing.

FIGURE 6: PERENNIAL ASTER, taken 16 Nov '20

Although not blooming, healthy looking rattlesnake weed was observed growing in the trails, Figure 7.

FIGURE 7: RATTLESNAKE WEED, taken 16 Nov '20

Besides observing the current status of the Reserve's various plant species, we also try to note any animal species observed during our Reserve visits. One of the most interesting observations during our mid-November walk about was the harvester ant colonies. On the day of the visit, the weather was very nice – warm with mild winds, and the ant colonies were active. What was unexpected was that there were winged ants among the ants outside the colony entrance. Unfortunately, the photographs I took of the ants are not high enough resolution to include them in this report. Seeing the winged ants resulted in me doing a little internet research reading up on harvester ants. What I read from several different sources only increases the mystery of why winged ants were observed during our mid-November visit. First off, the winged ants are the reproductive members of a colony and they only come out of the underground nest in preparation to fly off seeking mates. After mating, the male winged ants quickly die and the mated female ants land, lose their wings and go off seeking a suitable location to start a new ant colony. Once mated, the female ant becomes the queen of the colony she establishes. The internet sources of information I read consistently said that this mating ritual occurs in mid-summer a few days following a rainstorm. The observed winged ants don't seem to follow this same pattern. Clearly, mid-November is not mid-summer and our visit was ten days following a rather weak rainstorm. To sort out these differences is going to require some additional research. Although I won't promise it will be in my next posting, I'll try to cover more about the harvester ants in some future posting. Based on the information I have already gleamed from my limited research, I know I won't look at an ant colony in the same way in the future.

During almost every visit to the Poppy Reserve, the researchers are rewarded with a "magical" moment or two – a really special gift. It might be an especially beautiful sunset or finding a plant species previously unknown to be growing on the Reserve or, maybe, getting to watch a pack of coyotes coming onto the Reserve at dusk in a single file line and having them cross just below the parking lot by the kiosk where two of the coyotes suddenly realize you are there and stopping to watch you for a minute or two before lopping off to catch up with the pack. Unfortunately, we didn't see any coyotes during our November visit but we were rewarded with a number of those "magical" moments. The first moment was when we saw a Northern Harrier terrain following only several feet above the slope of the western butte as it hunted; listening for its lunch. Seeing wintering Northern Harriers with their distinctive, and identifying, white band at the base of its tail, is not that uncommon but it has been several winters since seeing my last harrier so it was great to know that they had not abandoned the Reserve.

Marsha was singularly rewarded with the second "magical" moment when, as she was leaving the Reserve at the end of our visit, a covey of 50, or more, quail started to cross the entrance road in front of her car as they headed for their relatively safe nighttime nesting in the maintenance yard.

Then I was equally rewarded as I drove east on Lancaster Road and observed a red-tailed hawk, tentatively identified by its cream and tan speckled breast, perched on the top of a power pole along the roadway. It is not that unusual to see these hawks pole sitting at dusk along Lancaster Road and Ave I but, in this case, the hawk was flanked by two ravens sitting on the pole's crossbar. I got the car stopped but, while grabbing my camera, the hawk had enough of the raven's harassment and flew off. Even though I don't have a photograph, the image of those three birds will stay in my memory for a long time.

That visit's "magical moments" were not limited to birds and ants. The next special moment was not what was happening during our visit but only hinted at what had happened during the summer and how special it had been. From the beginning of our visit, we saw large numbers of dried plant stems rising above the general vegetation almost everywhere we went. Figure 8 is a rather poor, but only, photograph of these plant remnants but if you look close enough you can see how wide spread they really were. The puzzle of what plant species had sprung forth during the summer was unanswered for some time until a close look at a cluster of stocks finally solved the mystery. They were the remnants of desert straw plants and what a surprise this realization was. In my seventeen years of doing field observations at the Poppy Reserve, I have never seen anything close to this display of desert straw. It is true that during most years, but certainly not every year, we have found this summer and fall blooming plant species, with its striking pink blossoms, but the plants were typically few and widely scattered and seemingly concentrated along the trail edges. Based on the number of remaining plant remnants, this past summer had, at least, the potential for having an amazing display of pink blossoms that the COVID-19 pandemic caused us to miss. I would say it was only a possibility because desert straw plants, like its fellow summer and fall blooming perennial aster, typically have only a few open blossoms at any one time and, if this was true this summer, it would have seriously degraded the color display but it would have still been a sight to see.

FIGURE 8: PANARAMIC VIEW, taken 16 Nov '21

For this exceptional desert straw season to have occurred, the soil's seed bank over a wide swath of the Reserve must have had a high density of dormant desert straw seeds waiting for just the right conditions to germinate and bring forth this summer's display and I find this fascinating. Even in the natural environment with all its molds and bacteria, seeds have the

protection needed to remain dormant, but still vital, buried for decades waiting for the conditions to trigger germination and start a new life cycle. And there is the question "when did all those seeds get added to the soil's seed bank?" This display must have happened in the past, many years ago.

The final "magical moment" was when we found an Acton daisy, Acton Encelia, plant. For those familiar with the Poppy Reserve, you might ask what is magical about that. There is a dense cluster of these plants near the top of Kitanemuk vista point. Of course, you are right but this plant wasn't anywhere near the Kitanemuk vista point. The found plant was two valleys and an interceding butte to the west of Kitanemuk vista point; close to a mile away as the raven flies. Pondering questions like "How did the seed get so far from its likely source?" and "If the plant can grow here, why are all the other known Acton daisies growing in only one location?" holds the magic in this observation.

Although it might require an asterisk, the researchers will have to consider adding Acton daisy to our current list of species that have only one, or at most, a few, known plants growing on the Reserve. This list currently includes linear-leaf goldenbush, apricot mallow, evening primrose, brown-eyed primrose, chia, wild cucumber and maybe several more that I don't recall right now.

Because the just found Acton daisy plant is in the middle of a route the researchers have taken numerous times while visiting the rain gauges without noticing this plant before, makes one wonder how many other isolated plants are still out there just waiting to be discovered.

Although there was one "magical moment" during the 5 February Reserve visit, the February visit was generally quiet. By far, the predominate plant species observed growing was filaree. Although, because of its pretty pink blossoms, some might consider that fortunate, I personally consider it unfortunate due to filaree being such a serious invasive competitor to the poppies and other native wildflowers. Already established and drawing moisture and nutrients from the soil, the carpets of filaree likely hinder any young poppy plants growing from later poppy seed germination. Being able to germinate its seeds in drier soil does give filaree a competitive advantage.

Limited numbers of fiddlenecks and pygmy-leaved lupine plants along with a variety of unidentified young plants were also observed. One, tentatively identified, blue dick monocot was also seen.

The "magical moment" came when two young poppy plants were unexpectedly observed, Figure 9. Because both plants had several true leaves, these plants had to have come from seed germination following the late December rainstorm. This reduces the poppy lower rainfall limit for seed germination to approximately 0.5 inches; 0.1 inch less than the previous observational based limit of 0.6 inches. Because it has been easier to locate young fiddleneck and lupine plants, these species appear to still have a slight advantage over the poppy.

With the Reserve receiving between 0.9 and 1 inch of rainfall from the 27-29 January rainstorm, we can count on the spring wildflower season having finally started but, because our 5 February visit was about a week too early to assess the rainstorm's true impact, that still needs to be confirmed and a prediction on the quality of this spring's displays can't be made, yet. It typically takes from a week to ten days after a rainstorm to observe the first Poppy Reserve poppy cotyledons emerge from the soil and a few more days for all of the germinated plants to show themselves and the visit was only six days after the end of the

rainstorm. A few small filaree cotyledons that appeared to be just emerging were observed during the visit so we were just on the cusp of activity; just a few days early.

As an interesting side note, I observed emerged poppy cotyledons only three days after this last rainstorm here in Long Beach. It is interesting to speculate why the big difference in the plants' development rate.

FIGURE 9: POPPY PLANT, taken 5 February '21

In my last website posting, I started a photographic rogue's gallery of plant species that the researchers frequently see blooming during non-spring periods of the year as a way of encouraging visits to the Reserve during the "off-season". In that posting issue, I shared photographs of turkey mullein, vinegar weed, a buckwheat and tumbleweed blossoms.

In this posting, I'll start off with a species that the researchers don't frequently see during the "off-season" but have in a few years. This species is the beautiful perennial grape soda lupine, Figure 10. Most of you are probably already arguing that is a spring blooming species but that is only partially true. Probably not this year with its later rainstorms but in a few years that had solid, early season rainstorms, we have been rewarded with seeing the plants on the west side of the Tehachapi Vista trail covered with blossoms as early as mid to late December and what a reward it is to see these blossoms while fighting through wind chill and snow.

FIGURE 10: GRAPE SODA LUPINE

Rather than a late winter blooming plant, the next highlighted species is really associated with summer; the sunflower. Most years, the sunflowers seem to be concentrated from the northeast corner to the northwest corner of the northern loop of the Poppy Trail near the two wooden bridges but you can find these plants in other areas as well.

FIGURE 11: SUNFLOWER

The third, and final, member of this posting's Rogue's gallery has already been briefly discussed. The researchers have tentatively identified this plant species as an apricot mallow. As far as is known there is only one plant of this perennial species growing on the Reserve. It is not too far off of the Antelope Trail near its western start. If you know where it is located, it's quite easy to see from the trail. In most years, this plant will be covered with its orange blossoms from June through autumn.

FIGURE 12: APRICOT MALLOW (tentative id)

You might wonder why the mallow is only tentatively identified. Having just stumbled onto this plant, it was up to the researchers to then identify what we had found. Not being trained in the art of plant identification, we were left with no choice except to compare photographs of the plant we took with pictures and general descriptions in wildflower books; a risky shot at best. It takes a highly skilled expert to truly do a detailed plant classification down to species, subspecies and even variation.

As always, I encourage everyone to continue to visit the Reserve throughout the year; only this year, please continue to obey the masking and "social distancing" restrictions. During many years, you can see plant species blooming almost year around. These are different plant species that you don't find during the spring season so you can add to your personal plant list. The autumn months have some of the best weather conditions – reasonable temperatures and mild winds. If you visit early enough in the morning, even the summer months can be quite nice and, even in winter, if you add ear muffs, gloves and enough layers of clothing, it can be a bracing outing.

A quick reminder that I am open to receiving feedback on what past years readers judge had outstanding poppy displays.

If you have any questions, comments, corrections, or simply just want to say "hi", you can contact me at mfpowell@verizon.net. I always enjoy hearing from any readers. May all stay safe and healthy.