

REPORT FROM THE FIELD

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by

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With Marsha Neill, Bob Waidner, and Gordon Elder

For almost all of the Poppy Reserve volunteers who staff the Reserve's Visitor Center or walk the trails, the wildflower season ends when the window shades are drawn and the doors closed and locked on Mother's Day, or earlier, so the readers of this article might find it interesting to learn what happens after the "official" spring season ends.

This spring was a good year to explore the commonly held belief that California poppies can't stand heat; they're gone once spring heats up. Based on my few continuing visits to the Reserve, I can tell you that there were still a surprising number of large, healthy looking poppy plants still putting out new blossoms in the middle of June this year and poppy plants with blossoms were still found even at the end of June; see Figures 1 and 2, at the end of the blog. From the first of May to the middle of June, the Reserve had 15 days with the maximum daily temperature over 90 °F and the warmest maximum daily temperature was 97 °F. This was a quite warm spring, only four years of the last 12 had more days with maximum daily temperatures above 90 °F, but not particularly hot since nine of the last 12 years had warmer maximum daily temperatures over their May to mid-June period. For the second half of June, every day of this year was over 90 °F and twelve of the sixteen days were over 100 °F and the maximum daily temperature twice reached 106 °F. Although the surviving poppy plants certainly did not appear as healthy as mid-June, these plants survived some brutal conditions. And a few poppy plants were still alive into July. Maybe poppy plants aren't as frail as commonly believed.

One factor that could have contributed to the survival of the poppy plants was the unusual early May rainstorm; only one other of the same twelve years had a rainstorm as late as May. The May storm could have help keep the soil moist for the poppies. On the other hand, contrary to other California locations, the Reserve received only an average amount of rainfall during the past winter so the soil was not particularly moist.

I do think the late surviving poppy plants are telling us the lingering effects from the recent drought years might be finally gone. Even with reasonable amounts of total seasonal rainfall, the first several years following the driest drought year experienced shortened wildflower seasons with rather abrupt, premature dying of the poppy plants even in years with large amounts of poppy seed germination. If the drought effects are truly over, that is certainly good news for us.

At the same time, we can only hope this dry fall is not heralding the beginning of another extended, multi-year drought. The Reserve has received only one small rainstorm so far this fall, on 16 Nov, depositing 0.02 inches of rain which is well below the amount needed to trigger any seed germination. With mild La Nina conditions continuing this fall, the weather forecasters are predicting warmer, and drier, than normal weather for Southern California this winter so we just have to wait to see what the typically wettest months of December through February actually bring.

In the newsletter version of this article, I referred to the scientific discipline of Phenology. Merriam-Webster defines Phenology as "a branch of science dealing with the relations between

climate and periodic biological phenomena (such as bird migration or plant flowering)” and “periodic biological phenomena that are correlated with climatic conditions”. In simpler botanical terms, this means studying how climate affects when, and how fast, a plant species grows, when a plant species starts to bloom, when a plant species starts to fruit, and, if the plant is an annual species, when it dies. It is more complex than simply studying a plant species by itself. Because most plant species rely on some animal species, be it insect, bird, butterfly/moth etc, for pollination services and some part of most plant species are food for animal species, phenology must study the interaction between a plant species and its specific interacting animal species as well. This discipline of science has recently gained increased importance due to the predicted more rapid ecological changes resulting from Global warming. With rapid warming, things can easily get out of whack and can have a profound impact on the entire ecology.

For just one example, let’s look at pollination of the plants. The latest studies estimate there are approximately 350,000 to 370,000 different flowering plant species (angiosperms); 90 to 94% of all known plant species. Seventy to eighty percent of the flowering plant species require pollination to propagate and, although there is currently a large uncertainty, maybe 85% of these species are pollinated by a variety of animal species; bees, beetles and other insects, butterflies, birds etc. Currently, plants and their pollinators have mutually adapted so the pollinator arrives when the plant is blooming. If changes in the climatic conditions change either the plant or pollinator species’ life cycles, this might not remain true. If the pollinator arrives early, there might not be the pollen or nectar needed by the pollinator or, if the plant starts to bloom earlier, there won’t be their pollinator to deliver the needed pollen, and sperms, to fertilize the plant’s eggs. In either case, both pollinator and plant species survival is jeopardized.

After the critical need for more and better phenology data was recognized, the USA National Phenological Network, USNPN, was established in 2007 under the leadership of Dr. Mark Schwartz, University of Wisconsin, and Dr. Julio Betencourt, USGS. With its National Office at the University of Arizona, Tucson, this widely partnered organization’s, made up of Government Agencies, Non-government organizations, primary and secondary schools, universities, Native American tribes, research organizations and citizen scientists groups, mission is to document the long-term changes in life stages for selected representative plant and animal species. As an indication of the amazing scope of the USNPN’s current effort almost 15 million individual observations will be submitted in 2017 alone. The USNPN has established a separate website, Nature’s Notebook, to receive, document and analyze this torrent of data. If you are interested in getting involved with this effort, check out this website to find the list of species the USNPN is currently tracking. I checked the USNPN list when they first formed but none of the plant species on the Reserve’s plant listing, including the California poppy, were then being tracked but the USNPN list has now greatly expanded.

The year around field observations made by the Reserve’s volunteer researchers beginning in 2003 comprise a valuable resource to construct a phenological database for the Poppy Reserve. As the field observations continue into the future, the expanding phenological database can be used to document any shifts in the Reserve’s vegetative community.

With each plant species requiring different conditions for its seeds to germinate and resulting young plants to flourish, each year’s wildflower displays are a different mix and quality, as we

know so well. Focusing on the May through November period, what do the field observations tell us about this year?

This past summer was a rather “good” year for the turkey mullein with dense swashes that could be seen by the turkey mullein’s distinctive light gray/green color; not only on the Reserve but the surrounding areas as well. If this plant’s clusters of small creamy blossoms covering the plant were more colorful and showy like the poppies and goldfields, the Reserve might still be filled with visitors but these inconspicuous plants live their annual lives largely unnoticed and underappreciated, see Figures 3 and 4.

This summer/fall has also been a good viewing season for the common sandaster with its striking yellow gold cone blossoms and light pink to deep purple ray petals; see Figure 5. Because the plants of this long lived perennial species continue to bloom year after year, what constitutes a “good” season? Contrary to most years where the established plants only have a few open blossoms at any time, this year the plants were covered with unopened buds and open blossoms when they started to bloom in mid-August this summer. As the fall months have progressed, the number of open blossoms has dwindled until the plants typically now have only one to three open blossoms. I also rate it a good year for this species because numerous new, young looking plants have been observed. This likely foretells even better displays of these blossoms for many years in the future.

Just because it was a “good” year for one perennial plant species, doesn’t mean it was good for all of the perennial species found on the Reserve. Rather surprising to me, it was a poor year for the desert straw. If it was a lucky trip to the Reserve, the researchers might find a half dozen or so desert straw plants with open blossoms. During a couple of mid-summer trips, no desert straw blossoms were found and we wondered if they were gone for the season but, during several later trips, additional desert straw blossoms were observed. Figure 6 shows one of the desert straw blossoms found this summer. One can go back through past years’ field observations to construct a phenological dataset for desert straw to gain an indication of what climatic conditions this species prefers. Being a perennial species, I would have expected that desert straw would be adapted to average winter rainfall amounts but that is clearly not the case; something more complex is happening.

Other species observed to be blooming from late spring through the fall months include vinegar weed with its beautiful, ornate purple blossoms, common sunflowers, jimson weed and one or both of two closely related aster family species. Both go by a variety of the same common names including hairy goldenaster, false goldenaster, false hairy goldenaster, etc, etc. In any case, they both have been found on the Reserve in past years and they both have large yellow complex cone/ray blossoms; see Figure 7.

Five different buckwheat species have been identified growing on the Reserve; some annual and others perennial. At least two species are still profusely blooming at the end of November; one with large white blossoms and the other with smaller, pink blossoms. The white blossomed buckwheat plants were first observed blooming in mid-August. The fruits of a third buckwheat species, California buckwheat, had already turned dark brown by mid-October. These plants are only known to grow along the Lightning Bolt trail below Kitanemuk Vista summit and mid-October was the first time this summer that this trail was walked.

Some rubber rabbit brush plants were starting to show bud development for their yellow blossoms in mid-August. Little apparent development of these blossoms was observed during the mid-Sept visit to the Reserve. The first open rabbit brush blossoms were observed in mid-October and the rabbit brush blossoms were already fading by mid-November. This blossom fade is unexpectedly early compared to past years. For example, although past peak color, the rabbit brush plants still had open blossoms in late December 2014 and this was after the winter of 2013/2014 had a total rainfall of 4.5 inches; less than half of last winter.

In my newsletter encouragement to visit the Reserve before winter cold really sets in, I mentioned “magical” moments that occur at the Reserve. I’ll end this posting describing five recent events that were “magical” for me. The first is really only semi-magical but it is still pretty awesome when I think about it. The plant surveys that were used to create the Reserve’s plant listing is good for documenting the common and wide spread plant species but the surveyor has to be very lucky to find the rare and isolated plant species so it is pretty special when a plant that was previously unknown to be growing on the Reserve is found. This has happened for me maybe a half dozen times over the fourteen years that I have been doing field research. In almost all cases, once the initial plant is found, other plants are subsequently found also. In only one case that I recall has no additional plants have ever been subsequently found. This plant has been tentatively identified as an apricot mallow plant. I am not an expert in the highly complex skill of plant identification so I have to rely on looking at, and matching, pictures for my tentative identifications and I relied on Milt’s book for this case. I initially found this one perennial bush maybe eight or ten years ago but, even knowing the general area it was growing in, I lost the actual location until I was wondering if it had survived the recent drought years and made a focused effort to really find the plant. I can report the plant did survive the drought and seems to be doing quite well. Milt’s book narrative says this plant would not be expected to be growing on the Reserve; it prefers drier climates. Because this plant continues to grow and has blossoms each year, it amazes me that the researchers have not found any younger plants even in the immediately surrounding area. Maybe it is a case that this plant species relies totally on cross pollination and, after a viable seed was somehow transported to the Reserve, germinated, and the plant was established, there are no alternative sources for the needed pollen. Next year, the researchers will have to make an effort to collect seeds from this plant and test them for viability. Because this plant is growing some distance from any trail and, therefore, unlikely to be seen by others, some of the readers might like to see what the blossom of this very special Reserve plant looks like; shown in Figure 8.

The second “magical” moment was when a species that appears to be closely related to the Reserve’s spring blooming tiny forget-me-nots was found on the Reserve for the very first time this summer. This species has the same small pure white, with yellow center, blossoms of the spring forget-me-nots but has very spiky stems similar to fiddlenecks with its curved “fiddle” tips. The plant has been tentatively identified as possibly *Cryptantha angustifolia*, narrow leaved forget me not or panamint cryptantha. A photograph of this plant is shown in Figure 9. You have to look very closely to see the few tiny, white blossoms but they are there. Photographs of both the plant and blossom were posted to the California Native Plant Society’s Facebook page with a request for assistance in identifying the plant. The reply post was that it was likely *C. angustifolia* but a sample of the plant’s fruit would be needed for inspection before a definitive identification could be made. A herbarium specimen of *C. angustifolia* was collected between Lancaster and Palmdale in 1971, one of only two recorded sightings in Los Angeles County, so the proximity gives some

support to the tentative identification. This plant species is more commonly found in the eastern Mojave Desert.

“Magical” moments are more than finding new plant species on the Reserve. During the mid-June visit to the Reserve, Bob and I had one. It was pure luck that Bob stopped to check out one of the researcher’s monitoring plots and while waiting I spotted something weird in among the rabbitbrush. Investigating closer, we found this mass of bees in a temporary hive built along several rabbitbrush branches.

Although infrequent, dragonflies, or damselflies, have been observed at the Reserve. They have been seen enough times to prompt me to previously purchase a field guide on dragonflies of California to help identify them. During the mid-September visit, I was rewarded with a spotting a dragonfly that eventually landed on a rabbitbrush plant along the edge of the parking lot allowing me to take the photograph shown in Figure 11. The photograph doesn’t really give justice to the dragonfly’s true colors. While it was hovering in sunlight, the body was a radiant gold color and the wings sparkled with a filigree of golden veins. Based on the description and photographs contained in “Dragonflies of California ...” by Kathy Biggs, this dragonfly has been tentatively identified as a female Variegated Meadowhawk. It is a dragonfly, and not a damselfly, because of its heavier body and, more telling to me, its wings remain extended while resting; damselflies fold their wings back along their bodies when at rest. Variegated Meadowhawks have “unique Porthole-like spots low on the abdomen” and bi-colored patterns near the wing tips. It is a female because the male has a much more reddish color pattern.

Because dragonflies are associated with watery environments, why are dragonflies ever seen on the desert grassland Reserve? There are several possible answers. First, Variegated Meadowhawks are one of a few dragonfly species that annually migrate so the observed dragonflies could be migrating individuals. Northern population adults that emerge from aquatic larvae in the spring time will migrate south, as far south as Honduras, while some southern adults that emerge in the fall will migrate north before breeding; adult dragonflies live for a few months. The second possible answer is that the observed dragonflies are part of the southern populations that live and breed in place. The University of Alabama Museums sponsored OdonateCentral website, a central data collecting website for all things dragonflies and damselflies, lists sightings of Variegated Meadowhawks at both Apollo Park and Edwards Air Force Base’s Piute Lake. Because dragonflies are known to travel miles searching for food, it’s possible the Reserve’s observed dragonflies are local population members coming to the Reserve for a late lunch before going home to water.

With the Antelope valley a wintering area for a number of migratory bird species, off-season visits to the Reserve offers an opportunity for some great bird watching and, maybe, even adding to your bird list. The opportunities run from high to low and in between. Up high, you might spot a flock of turkey vultures silently circling in great loops around thermal updrafts as they drift north to their summer home areas; as far north as southern Canada. Down low, you might catch sight of a northern harrier expertly skimming the contours of the Reserve’s hills just a few feet above the ground listening for prey and, in between, a variety bird species from small to large; from sparrows to red-tailed hawks, from mountain bluebirds to burrowing and barn owls, from quails to “I don’t know”. The mountain bluebird is one of my favorites. Both because the male is a beautiful all blue color and it doesn’t winter on the Reserve every year so it is quite special when you do get to spot it. In addition, it is fun to watch these birds, both individually and in flocks, hover motionless

in the air for ten to twenty seconds looking for food before diving towards the ground and then pulling up and doing it all over again.

The red-tailed hawk seems to be one of the most common raptor wintering in the Antelope Valley and hunting on the Reserve. It is quite common to see one or two “pole sitting” on top of power poles along Avenues J and I or along Lancaster Road on the way to or from the Reserve. At least, I think they are red-tailed hawks by their creamy breast with scattered brown speckles. This same species can be seen hunting over the Reserve. Many times they are up high and far away so it is always “magical” when they decide to check us out by gliding silently 50 to 100 feet directly overhead; see Figure 12. Whenever they reward me with this close-up display, my awe is mixed with a little concern that they are eyeing me as a possible meal.

I’ll end with again encouraging everyone to visit the Reserve during the off-season months. You will likely find at least one species blooming on the Reserve every month of the year, except maybe late December. Even if you don’t find any blossoms, there is always the potential that you will experience your own “magical” moments and that is worth the trip unto itself.



FIGURE 1: POPPY PLANTS, 13 JUNE '17



FIGURE 2: POPPY PLANTS, 29 JUNE '17



FIGURE3: PANORAMIC VIEW OF TURKEY MULLEIN



FIGURE 4: CLOSE-UP OF TURKEY MULLEIN BLOSSOMS



FIGURE 5: COMMON SANDASTER



FIGURE 6: DESERT STRAW BLOSSOM



FIGURE 7: HAIRY GOLDENASTER



FIGURE 8: APRICOT MALLOW (TENTATIVE ID)



FIGURE 9: NARROW LEAVED FORGET ME NOT (TENTATIVE ID)



FIGURE 10: TEMPORARY BEE HIVE



FIGURE 11: FEMALE VARIEGATED MEADOWHAWK DRAGONFLY (TENTATIVE ID)



FIGURE 12: RED-TAILED HAWK