

# REPORT FROM THE FIELD

By

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Each year, the focus of PR/MDIA's March Newsletter "Report From The Field" article is on my prediction of what the upcoming wildflower season will likely bring based on the field observations made over the past months. Because the AVC Poppy Reserve is categorized by the California Department of Parks and Recreation as a State Natural Preserve, it is maintained "in a condition of undisturbed integrity" affording an opportunity for visitors to observe, and appreciate, how nature is able to sustain ecosystems over very long periods of time. Of course, this State Parks "hands off" policy results in the quality of each spring wildflower season to uniquely vary; some springs bring what, most recently, is colloquially called a superbloom and other years having almost no wildflower displays.

Any prediction on the quality of the upcoming season has to begin with the winter rainfall pattern. Since 1 Sept '23, the volunteer researchers' selected beginning of the poppy season, fourteen rainstorms have deposited a total rainfall of 9 1/4 inches; almost equaling the Reserve's long term average seasonal rainfall. When the post-Hurricane Hillary rainstorm rainfall is added, the 13 1/2 inches total starts to make this winter a wetter season. Although the total rainfall is important by impacting the size of the poppy plants and length of the season, the individual rainstorm amounts are critical for their impact on the amount of poppy seed germination. Nine of this season's fourteen rainstorms deposited less than 1/2 inch of rainfall; the minimum rainfall that trigger any poppy seed germination so their rainfall adds to the total rainfall but had no impact on the season's critical first step of seed germination. Starting in late December, two storms deposited slightly over one inch of rainfall each. In a more normal year, these two storms should have resulted in more than an adequate quantity of poppy seed germination needed for an outstanding display season but, as discussed later in this article, the continuing impact of the Hillary rainstorm seems to have been detrimental to this upcoming season. One seasonal storm deposited over four inches of rainfall which is too much of a good thing and likely resulted in limited poppy seed germination. Somewhere between one and two inches of rainfall results in the maximum quantity of poppy seed germination. Storm timing is also important in that it has been observed that just germinated, young poppy plants can largely survive for three or four weeks without watering but plant mortality is high if the spacing between rainstorms is longer than this period. Fortunately, the spacing of this winter's fourteen storms should not have contributed to any significant plant mortality.

A total of seven visits to the Reserve over this past fall and winter months, stretching back to 6 September '23, has documented the unfolding of this spring's wildflower season. This date was the first Reserve visit following the 19 to 21 August post-Hurricane Hillary rainstorm which deposited over 4 1/4 inches of rainfall. During this early September visit, a massive amount of filaree seed germination was observed (basically, a carpet of these plants everywhere) as well as a limited amount of poppy seed germination. Initially, fiddleneck germination was not observed but later visits did show that some fiddleneck seeds had indeed germinated also. Observing poppy seed germination was expected because poppy seed germination had previously been observed following summer thunderstorms. The limited amount of poppy seed germination was also not surprising because the four inch plus rainfall was well above the one to two inches of rainfall that has consistently resulted in the maximum amount of poppy seed germination. The amount of filaree seed germination was somewhat surprising but an equivalent correlation between rainfall and amount of filaree seed germination hasn't been determined. The observed quantity of filaree seed germination certainly indicates that the filaree's germination characteristics are likely quite different from the poppy's. It is interesting to note that other spring blooming plant species, like slender keel fruit or the forget-me-nots were not observed following the Hillary rainstorm. Although the slender keel fruit did not germinate, their closely related invasive mustard seeds did, in large numbers.

Although they mostly stayed small, a significant portion of the post Hillary rainstorm young poppy plants were observed to have survived the remaining hot summer months. A few of these poppy plants even matured enough to bloom but, typically, had only one smallish open blossom at a time. For a period during the middle of the winter months, these poppy plants became dormant and stopped blooming but, apparently, continued to slowly grow in size. This season's first open poppy blossoms were observed during the 3 February Reserve visit on several, now moderate sized poppy plants. In some cases, the plants were already large enough to have multiple open blossoms.

Because of the large amount of filaree seed germination resulting from the Hillary rainstorm, the big operative question really became "would the small filaree plants survive the remaining summer months before the fall rainstorms came?" If they did survive, the filaree gained several substantial advantages over the poppies and other native plant species. If the filaree plants didn't survive, this massive germination event would deplete, to some extent, the soil's seed bank of this species seeds and the natives species therefore gain a benefit.

The filaree won. Although the vast majority of the filaree plants stayed small, they largely did survive. It's interesting to also note that, although the majority of the filaree plant stayed small, there were a few scattered plants that continued to grow to a large size; almost like two different species.

So what advantages did the established filaree plants gain? First, looking at the soil's moisture balance dynamics. The Reserve's soils appears to be quite sandy and porous. During a rainstorm the near surface soil water content raises to a peak at the end of the storm and then the soil dries quite quickly. Within two or three days post storm the soil's near surface water content has decreased to almost the pre-storm levels. At this point my thoughts become more speculative. It is assumed that it is this peak value that determines how much poppy seed germination occurs following the storm. Poppy cotyledons start to emerge about seven to ten days post storm and the cotyledon emergence continues only over the next few days. Poppy seed germination has never been observed during a period between storms. It is believed that large quantities of established plants will draw water from the soil so a storm's peak value is lessened and therefore impacting the amount of poppy seed germination. With the exception of the early February rainstorm, which deposited over four inches of rainfall, all of the Reserve's seed germination triggering rainstorms this past winter have deposited one inch or less rainfall meaning any decrease in the peak water content decreases the amount of expected poppy seed germination. The early February rainstorm had so much rainfall that any slight decrease in the peak water content is expected to have little impact. The slope of the curve below one inch is so steep even a slight decrease in the peak value can be significant. The curve goes from essentially zero germination at 1/2 inch of rainfall to greater than 300 poppy plants per square meter for rainfalls near the optimum of one to one and half inches.

In addition, the small poppy plants that have germinated are competing with the established root systems of the already existing plants for water and nutrients. Also, the larger, established plants shade the smaller poppy plants likely interfering with the poppy plants photosynthesis process. Both effects are expected to result in smaller poppy plants which means fewer open blossoms at any time which, in turn, decreases the quality of the poppy displays.

Finally, the larger, established plants have the potential to simply physically mask the smaller poppy plants' open blossoms.

Based on the past winter rainstorm patterns and the visitation observations, only modest poppy displays are currently expected this spring season. The best displays are likely to be along the south leg of the Poppy Loop Trail. As discussed above, a modest amount of poppy seed germination occurred following the post-Hurricane Hillary rainstorm in August of last year and the survivors of these, now, moderate sized poppy plants are again starting to bloom after being dormant during the winter months. With this winter's first significant rainstorms not occurring until late December and again late January, the poppy plants growing from these later storms are still much smaller and likely will take some time before they begin to also blossom. This mixture of two widely spaced generations of poppy plants are expected to result in an extended period of only a few, widely scattered blooming poppy plants before the poppy displays slowly start to improve. Although there will be a few, scattered larger poppy plants with multiple open blossoms, a large majority of the poppy plants will likely be smallish with only a few open blossoms at a time and it is the multiple blossoms that create the awesome swaths of generalized color so it is likely that these swaths of color will be small and few. The 13 inches of total rainfall, providing a solid reservoir of soil moisture for the Reserve's plants to draw on, and the late spring rains should help extend the spring's season duration but any future protracted period of unseasonably hot temperatures can quickly dry the soil and end the season.