

# **Bob Powers Gateway Preserve**

## **Alkali Mariposa Lily Survey**

**Prepared for:**

**Kern River Valley Heritage Foundation**

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## **Introduction**

An alkali mariposa lily (*Calochortus striatus*) survey was completed at the Bob Powers Gateway to Lake Isabella Preserve immediately south of Lake Isabella in eastern Kern County, California (Figures 1 & 2). The project was conducted at the request of the Kern River Valley Heritage Foundation. This report summarizes the results of the survey conducted on May 17, 2017. This is the third consecutive year and fourth year overall of surveys following the methods described in this report. Past surveys were conducted in 2011, 2015, and 2016.

## **Project Area**

The Gateway to Lake Isabella Preserve covers approximately 19 acres located at the southwest corner of the junction of Highway 178 and Highway 155 immediately west of Lake Isabella in eastern Kern County, California. The property is owned by Kern County; which is a partner in the wetland improvement project through a 2002 Wildlife Extension Agreement with the United States Fish and Wildlife Service (USFWS).

## **Methods**

During the initial survey in 2011, the entire property was scanned for any evidence of flowering alkali mariposa lily. Once each area containing this species was identified, a grid system was established to facilitate counting individual mariposa lilies in various stages of development. In 2015 and 2016, the property was similarly scanned and if new areas containing alkali mariposa lily were found, they were added to the count. The 2017 field survey was conducted on May 17 by walking line transects within predefined plots and other identified areas that contained mariposa lily populations during the 2015 and 2016 surveys (Figure 1). The property was also scanned for mariposa lilies beyond the predefined locations in Figure 1 during the 2017 field survey. Counts were recorded of individual mariposa lily plants, buds, flowers, and fruits per plant. Representative photos were taken of areas with blooming plants, and incidental observations of wildlife were recorded during the survey.

## **Results and Discussion**

A total of 1599 individual alkali mariposa lily plants were found inside the preserve (Table 1), which was a fairly substantial decrease from the previous survey total of 2909 plants counted in 2016, but still greater than the number counted in 2015 (1,255 mariposa lilies). Six of the 14 plots (including the transplant exclusion) contained more plants than in 2016. Plot 2A contained the most plants (710), which was a decrease from 1,189 counted in 2016. No mariposa lilies were found on Plot 1B, down from 19 plants in 2016. Plot 3B contained mariposa lilies after not having any detected for two consecutive years in 2015 and 2016. The southwest corner of the preserve had a total of 289 plants, which was 45 fewer plants that were counted in that area when compared to 2016. The additional areas containing smaller groups of lilies along the southern end of the preserve in 2015 and 2016 showed a substantial decrease in total plants from 133 to 10.

A satellite photo of the project site and map of counted areas for the survey are shown in Figure 1. Representative photographs are included in Figures 2 through 4. Wildlife detected during the survey included only seven different bird species; however, an extensive inventory was not conducted (Table 2).

Although rainfall between January and May 2017 was more than an inch greater than rainfall for the same period in 2016 (4.29 inches compared to 3.26 inches), the total number of alkali

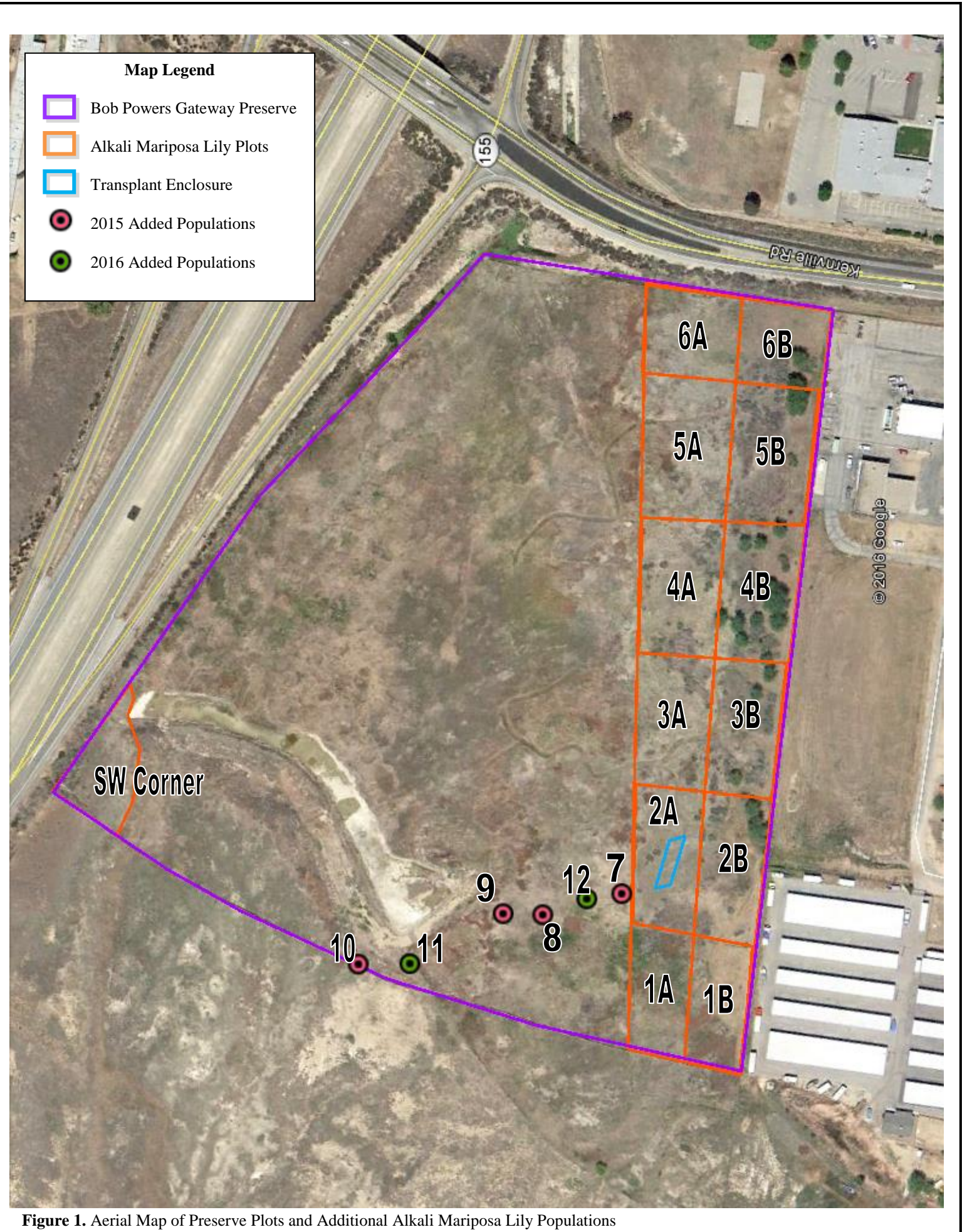
mariposa lilies found on the preserve during 2017 surveys was less than half the total number of plants found in 2016. One possible factor for this decrease in total number of plants could be that average temperatures between January and May 2017 were generally cooler than the same period in 2016. In conjunction with these possible environmental factors, during the 2016 surveys approximately 25% of the seed pods counted in each of the twelve plots were collected and donated to the Rancho Santa Ana Botanic Garden herbarium. Additionally, all detected mariposa lily seed pods and bulbs were collected from plot 4A and sent to the same herbarium to minimize the impact of development on plants found in this area.

Production (buds, flowers, and seed pods per plant) was slightly greater in 2017 than in 2016, although this difference was not statistically analyzed and is likely to have no significance (3.95 compared to 3.53). Another difference between the two years was that the plants measured in 2017 had far more buds than flowers or seed pods, unlike 2016 when the phenology was more evenly distributed. This is an indication that the count was conducted earlier in the phenology of the lilies than in 2017.

### **Recommendations**

Continue to monitor the plant community in the Bob Powers Gateway to Lake Isabella Wetlands Preserve; the recommendation for annual surveys continues. Absent physical disturbance, the population of alkali mariposa lilies appears to be thriving in regard to production, even though fewer plants were observed in 2017. Therefore, the most important management recommendation is to maintain the watershed function while minimizing compaction and trampling on the preserved.

If mowing along the property is required for property maintenance, it would affect the mariposa lily success less if it occurred after seed set and before the onset of growth in the early spring. Therefore, it is recommended that mowing be conducted between August and December and only in the minimal area required to manage the property.



**Figure 1.** Aerial Map of Preserve Plots and Additional Alkali Mariposa Lily Populations

**Table 1.** 2017 Bob Powers Gateway Preserve Alkali Mariposa Lily Plot Data

<b>Plot</b>	<b>Total Plants</b>	<b>Total Buds</b>	<b>Total Flowers</b>	<b>Total Fruit</b>
<b>1A</b>	16	43	20	0
<b>1B</b>	0	0	0	0
<b>2A</b>	710	2411	259	46
<b>2B</b>	158	710	96	31
<b>3A</b>	6	37	3	1
<b>3B</b>	4	10	4	0
<b>4A</b>	48	136	40	10
<b>4B</b>	7	23	7	5
<b>5A</b>	151	462	47	2
<b>5B</b>	22	59	4	0
<b>6A</b>	160	547	125	26
<b>6B</b>	9	44	14	2
<b>SW Corner</b>	289	709	222	77
<b>Transplant Exclusion</b>	19	79	16	3
<b>Total</b>	<b>1599</b>	<b>5270</b>	<b>857</b>	<b>203</b>

<b>Additional Areas</b>	<b>Number of Plants</b>
7	0
8	8
9	1
10	1
11	0
12	0

**Table 2.** Wildlife Observed During Surveys Conducted for Bob Powers Gateway Preserve 2017

<b>BIRDS</b>	
<i>Buteo lineatus</i>	Red-shouldered hawk
<i>Corvus corax</i>	Common raven
<i>Sturnella neglecta</i>	Western Meadowlark
<i>Petrochelidon pyrrhonota</i>	Cliff swallow
<i>Tyrannus verticalis</i>	Western kingbird
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Agelaius tricolor</i>	Tri-colored blackbird



**Figure 2:** Photo of Mariposa Lilies in a plot facing west across the Preserve



**Figure 3:** Photo looking west across the Preserve



**Figure 4:** Photo of an alkali mariposa lily on the Preserve