

September 2022

To: LARPD Board of Directors  
Subject: **REPORT ON BURNED OAK PROJECT**  
From: Mary Ann Hannon, with Conni Naylor, Michael White, Shawna Soren

On Aug. 16, 2020, lightning started a wildfire in Upper Sycamore Grove Park. The fire burned down slope into Lower Sycamore Park. About 180 acres were burned. While surveying the burn area soon after, Ranger/Naturalist, Amy Wolitzer, noticed that valley oaks in the Valley View drainage were turning green and even putting out catkins (oak tree flowers). She shared her observations with Mary Ann Hannon, Open Space volunteer, who shared Amy's interest in native plants. Both were curious about the trees greening up so soon after being burned. After consulting with Hugh Safford, Regional Ecologist, US Forest Service, Pacific Southwest Region and reading several papers on fire and oaks, Amy and Mary Ann decided to organize a volunteer project to observe the recovery of valley oaks burned in the fire. The "burned oak" volunteer observers were Conni Naylor, Michael White (also photographer), Shawna Soren, (also Google Docs creator), Mary Ann Hannon, (also recorder).

### **Proposed Goals for the Project**

- 1) Engage volunteers in monitoring and equip them to better understand our oak woodlands and the seasonal events that occur there.
- 2) Document oak recovery and seasonality with photos (non-standardize).
- 3) Share findings and photos on Sycamore Grove's Facebook and Instagram along the way.
- 4) Offer a "Valley Wilds" program to the public about this time next year during which ranger staff and the observers would walk the area and talk about what they had noticed during the monitoring.
- 5) Put together a presentation showing photos over time/comparison photos and anything noteworthy observed.
- 6) Offer to share our findings at an LARPD board meeting.

## Methodology Used

In October 2020, Wolitzer and Hannon

- 1) Selected five Valley oak trees in the Upper Sycamore Grove burn area that were accessible from trails and recorded GPS coordinates for each.
- 2) Designated each tree with a unique number on a survey stake B1, B2, B3, B4, B5.
- 3) Recorded the trees' diameters at breast height (DBH)
- 4) Noted the degree of fire scaring on trunk for each tree  
See Appendix A
- 5) Beginning Dec. 2020 to June 2022, the project volunteers (Wolitzer had resigned) made monthly hikes to take photos and record observations.

Photos included:

- a) whole tree
  - b) trunk burn
  - c) epicormic growth<sup>1</sup>
  - d) leaves
  - e) catkins (oak flowers)
  - f) acorns
  - g) anything else that seemed noteworthy
- 6) A datasheet was used on the hikes to record:
- a) presence of root sprouts as a recovery strategy
  - b) presence or absence of leaves, catkins, acorns
  - c) % of canopy green
  - d) % of epicormic growth as a recovery strategy
  - e) noted *scorched* leaves (burned leaves remaining attached to the tree) as opposed to *torched* leaves (fire is so hot leaves are burned off the tree).
  - f) when catkins appear
  - g) when acorns appear
  - h) bark burn at base of trunk
  - i) what grew on the ground under the trees
  - j) any other observations

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<sup>1</sup> *Epicormic growth is defined as shoots arising from adventitious or dormant buds on the stem (trunk) or branch of a woody plant, often following exposure to increased light levels or fire.*

## Summary of Observations

1. Trees #1, 2, 3, 5 all survived. Number 4 was heavily damaged and did not recover. It may have been diseased or weakened pre-fire.
2. Trees #1, 2, 3, 5 had varying amounts of trunk scarring. #2 had bark peeling off in Nov. 2021; #5 lost a patch of bark by 6/22.
3. No root sprouts seen from #1-5. We have learned that trees with a DBH of more than 12” usually do not root sprout after a fire, but we did see some very young (less than 24“high) valley oaks with new growth from root sprouts on the hill opposite #4 and #5 on Valley View loop. In Nov., 2021, near #1, we noted root sprouts and epicormic leaves on live oaks that had seemed dead, as well as root sprouts on a seemingly dead young valley oak (less than 12 in. diameter at breast height).
4. Although all the trees had been scorched, they had varying percentages of green canopies. (See Appendix B.) Epicormic leaves and branches appeared within weeks of the fire, and seemed to be the main recovery strategy. Even #4 had a bit of epicormic growth when selected for observation, but none was seen later by the volunteer monitors.
  - a. Some scorched leaves have stayed attached to each tree throughout observation period.
  - b. We expected #3 to have a strong recovery because of its location near Big Rock Pond at the bottom of the drainage, receiving more rainwater run-off, but Livermore received only 5 inches of rain in the 2020-2021 rain year and only 10.51 inches in 2021-2022 rain year (average is 14.49 inches). There was concern about #2 and #3 in Jan., Feb., March, 2022 because of large leaf loss. We realize now that the trees were being deciduous. In April new leaves appeared on both. On #3 the new growth seemed to be mostly epicormic.
  - c. Tree #5 had the least damage and always had the most green in its canopy. It had the strongest recovery.
5. We did not see catkins on Trees 1, 2, 3, in spring of 2021 or 2022. Conni wondered if the trees were conserving their energy to survive rather than reproduce. However, #5 produced a few blooms in 2021 and many blooms in March, 2022.

6. #5 had a few acorns in 2021. Acorns are developing on #1 and #5 as of 6/22.
7. Growth under the burned trees. Appeared in spring, 2021.
  - Tree #1: Wild oats, non-native grasses, winter vetch, chickweed, stork's bill. Natives: Wild Blue Rye grass, Indian lettuce, milkweed between #1 and #2.
  - Tree #2: Several natives: Soaproot, checkerbloom, fiddleneck, violet, yarrow, brodiaea, Indian lettuce, mules' ears, native grass sp.
    - Non-natives: stork's bill sp., wild oats, winter vetch
  - Tree #3: Mustard, thistle, Indian lettuce, annual grasses
  - Tree #4: Nothing grew under #4 until Feb., 2022. The fire had probably sterilized the soil.
    - Mustard, thistle, wild oats
  - Tree #5: Annual grasses, wild oats, thistle, native buttercups
8. Other observations: Mistletoe in #5 –Three clumps greened up, 2 did not. Mistletoe in #2 did not survive. Occasional acorn woodpecker

## **Conclusions:**

- Producing epicormic leaves seemed to be a successful recovery strategy. The team speculated that drought may have affected the amount produced.
- Young trees may seem dead, but they should be left standing because they may be able to root sprout and survive even after several months of being burned.
- The Burned Oak project met the goal of engaging and educating volunteers about valley oak recovery from a wildfire.
- The observations were recorded and an account was written that could be used as the basis for a public education or student education programs; or management decisions like minimizing public presence in the area under and around #2 to protect the native plants in that area.
- A presentation to the LARPD Board of Directors is planned as of this writing. We hope it shows that Open Space volunteers can also contribute to ranger/naturalist research projects.

## Appendix A:

Identifier	GPS decimal	GPS d/m/s	Nearest Trail	location descriptor	Elevation (in feet)	Circumference	DBH (inches)	Evidence of fire damage on trunk
B1	37.63126N, 121.77498W	37°37'52.5"N 121°46'29.9"W	Wagon Road Loop	Near reflecting pond foundation	549	6'7"	<b>25.15</b>	trunk charred 12" up from ground
B2	37.63147N, 121.77416W	37°37'53.3"N 121°46'27.0"W	Wagon Road Loop	NE of tree B1	559	4'2"	<b>15.92</b>	trunk charred 7" up from ground
B3	37.62.920N, 121.77801W	37°37'45.1"N 121°46'40.8"W	Wagon Road Loop	Just above big rock pond	583	5'9"	<b>21.96</b>	bark seemed ashy 11' up trunk
B4	37.62899N, 121.77763W	37°37'44.4"N 121°46'39.5"W	Valley View Tr	Partly up Valley View along drainage above Big Rock Pond	628	8'3"	<b>31.51</b>	fire burned through the bark on the east side of the tree and under side of low branch; cambium exposed under peeling bark
B5	37.62642N, 121.77810W	37°37'35.1"N 121°46'41.2"W	Valley View	Well up Valley View Tr. along drainage above Big Rock pond	687	9'11"	<b>37.88</b>	a deep burn through the bark 1'2" tall and 1'2" at widest part

## Appendix B

<b>% Green in Canopy</b>				
Date	12/20	7/21	12/21	6/22
B1	12%	95%	75%.	100%
B2	0	80%.	10%	75%
B3	3%	80%.	30%.	60%
B4	0	0	0.	0
B5	90%	100%.	50%	100%