LAKE CACHUMA OAK TREE RESTORATION PROGRAM

2021 ANNUAL REPORT
with
Fiscal Year 2021-2022 Financials and Water Usage

Planted oak trees at Live Oak Camp

Prepared for: Cachuma Operation and Maintenance Board

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Executive Summary

The following is the annual report for the Lake Cachuma Oak Tree Restoration Program that contains the results of the 2021 annual inventory of all planted mitigation oak trees and the Fiscal Year 2021-2022 financial and water usage details. The results of the 2015 Lakeshore Survey set the mitigation number for the Lake Cachuma Oak Tree Restoration Program at 4,721 by 2025 (COMB, 2016). This number included the established mitigation ratio of two to one (2:1) and an 18% mortality rate that was determined from the 2015 and 2016 annual survey reports (COMB, 2017a; COMB, 2017b). As of the end of this year's inventory, 5,734 oak trees have been planted (and 57 adopted trees for a total of 5,791 trees) and 4,712 are alive which is a survival rate of 81.37% (Figures 1, 3 and 4). The number of mitigation trees still to be planted is **9** trees (mitigation number minus total alive trees). The cost of the program during Fiscal Year 2021/2022 was $135,594 with a total cost of the program since it started in 2005 of $2,023,084. Water usage for irrigation over the year was 0.80 acre-feet.

Recommendations for next year to meet the program mitigation objective in 2025 would be to replant approximately 50 oak trees that had perished in planted areas with a high success rate.

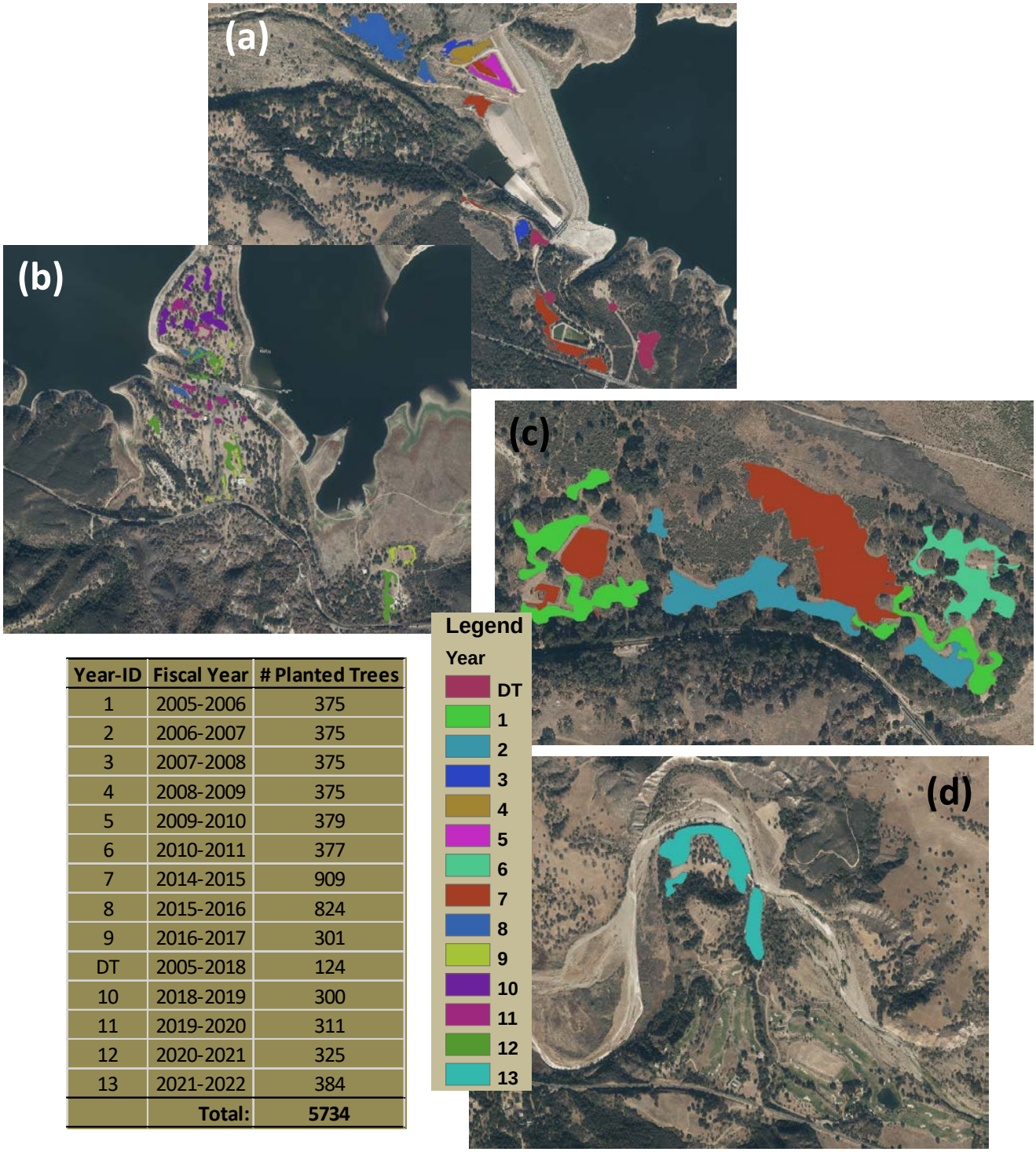
Introduction/Background

This Annual Report presents the results of the 2021 oak tree inventory and Fiscal Year 2021/2022 (FY21/22) maintenance with water use and financials for the Lake Cachuma Oak Tree Restoration Program (Program). For Program details and objectives, see the 2-Year Plan for Fiscal Years 2013/14 and 2014/15 (COMB, 2014). This annual report contains oak tree survival rates, maintenance with water usage, financials, and suggested program improvements. Annual Reports have been written for each year of the Program. References for the recent reports are as follows: 2015 (COMB, 2017a), 2016 (COMB, 2017b), 2017 (COMB, 2018), 2018 (COMB, 2019), 2019 (COMB, 2020), and 2020 (COMB, 2021).

There were 384 oak trees planted during FY21/22 at Lake Cachuma County Park Live Oak Camp that are referenced as Year (YR) 13 trees, the thirteenth year of planting trees since the Program started in 2005 (Figure 2). The survey results for this reporting period are presented by the year of the program that they were planted, and include the financials and maintenance effort.

Results

The 2021 inventory (or survey) of the oak trees planted through the Lake Cachuma Oak Tree Restoration Program was completed on 7/1/22 with the data entry and quality-assurance/quality-control occurring during the first half of the month. The objective of the annual survey is to determine the status and success rate of the trees planted since the beginning of the program with thirteen years of plantings; Year 1 (2005-2006), Year 2 (2006-2007), Year 3 (2007-2008), Year 4 (2008-2009), Year 5 (2009-2010), Year 6 (2010-2011), Year 7 (2014-2015), Year 8 (2015-2016), Year 9 (2016-2017), Year 10 (2018-2019), Year 11 (2019-2020), Year 12 (2020-2121), Year 13 (2021-2122), and the Dam Tender (DT) trees (approximately 2005 through 2018). Annual surveys traditionally are conducted in the late fall and early winter to best document the survival after the dry season and growth since the last survey. With the increased number of planted trees in recent years, the annual inventory takes longer with the objective now of completion by late spring of the following year. Methods for reducing the survey time continue to be investigated.



Year-ID	Fiscal Year	# Planted Trees
1	2005-2006	375
2	2006-2007	375
3	2007-2008	375
4	2008-2009	375
5	2009-2010	379
6	2010-2011	377
7	2014-2015	909
8	2015-2016	824
9	2016-2017	301
DT	2005-2018	124
10	2018-2019	300
11	2019-2020	311
12	2020-2021	325
13	2021-2022	384
	Total:	**5734**

Figure 1: Oak tree planting locations by year planted (Year-ID) at; (a) Bradbury Dam area, (b) Cachuma Lake Recreation Area (County Park), (c) Storke Flats, and (d) Live Oak Camp.

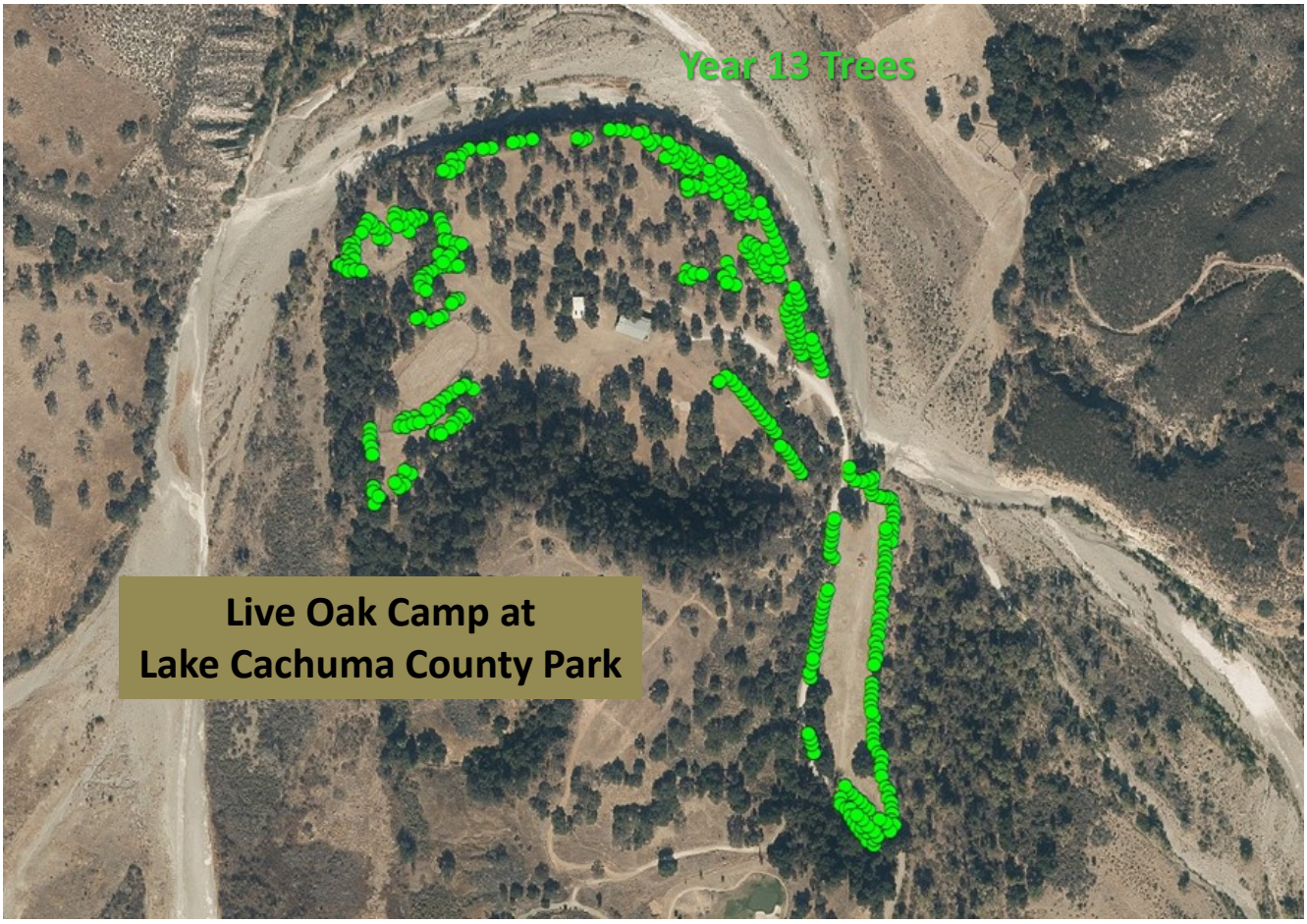


Figure 2: Year 13 trees within Live Oak Camp at Lake Cachuma County Park as mapped in FY21/22.

The following figures and tables are the results of the survey in 2021 with 2020 results included for comparison; overall success rates in 2020 and 2021 (Figures 3 and 4) and success by planting year in 2020 and 2021 (Figures 5-18). The overall success rate went from 80.28% in 2020 to 81.37% in 2021; which includes Year 13 trees and replacement of some dead trees in Year 10, Year 11, and Year 12.

Prior to WY2017, six consecutive years of below average rainfall were observed that made it difficult for planted trees to survive particularly in the Year 1 through Year 6 trees that were thought to be self-sustaining by now at a minimum of ten years since planted. The number of required mitigated trees from the Lake Cachuma Surcharge Project was set in 2015 and reported in the 2015 Lakeshore Survey Report (COMB, 2016). The required mitigation ratio is two to one (2:1) survival rate (self-sustaining) in 2025. The results of the 2015 Lakeshore Survey found there were 879 dead and 1,122 at-risk oak trees. With a 2:1 mitigation ratio and an estimated 18% mortality rate, it was estimated that 4,721 trees would need to be planted to meet our mitigation requirements in 2025. To date, there are 4,712 planted alive trees suggesting that **9** trees (mitigation number minus total alive trees) still need to be planted and soon to get established and be self-sustaining within five years (2025).

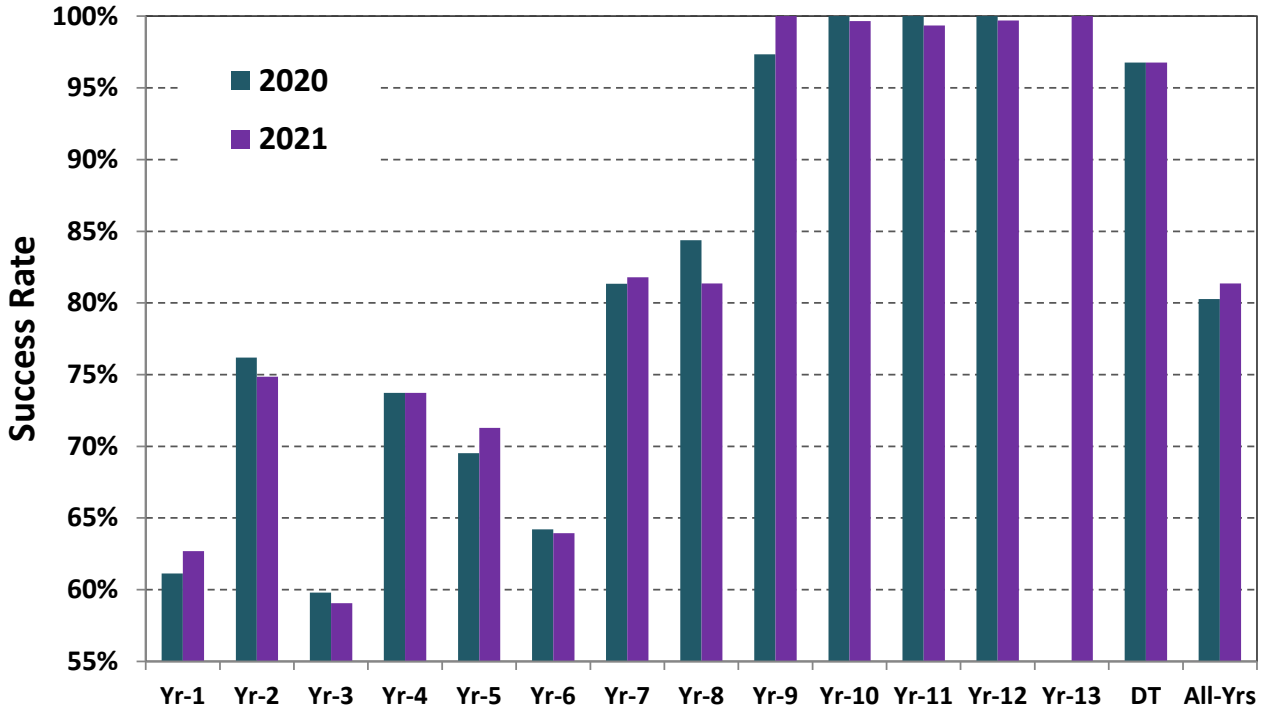
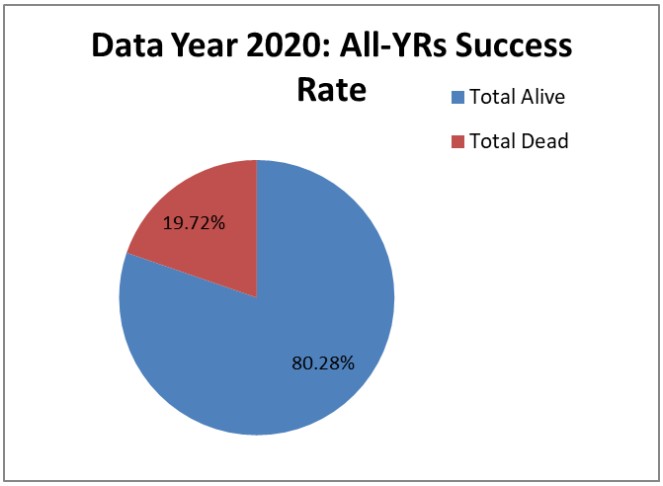
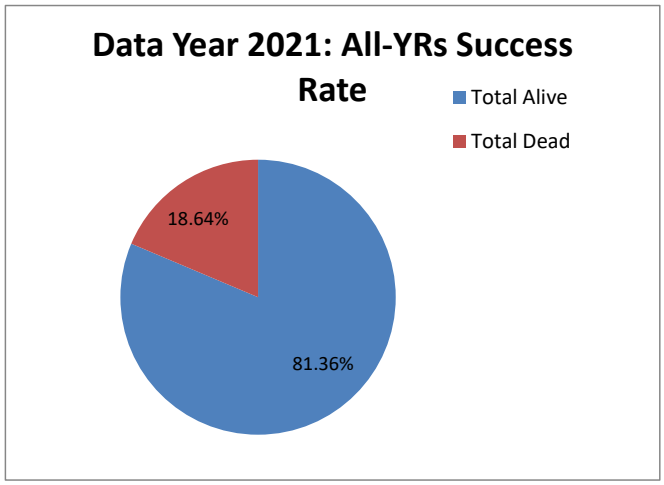


Figure 3: Success rate comparison from 2020 to 2021 for each and all tree years (Yr).

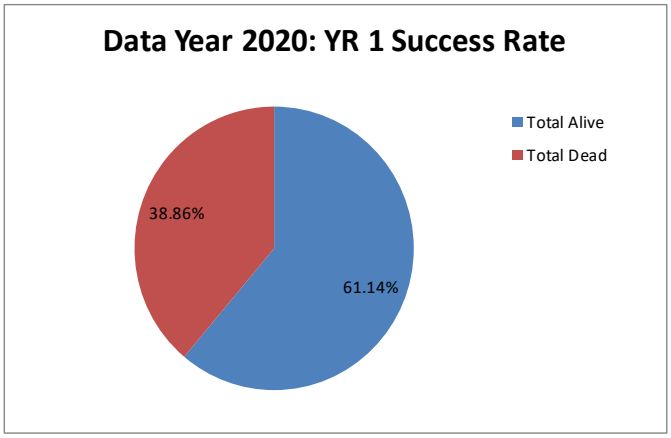


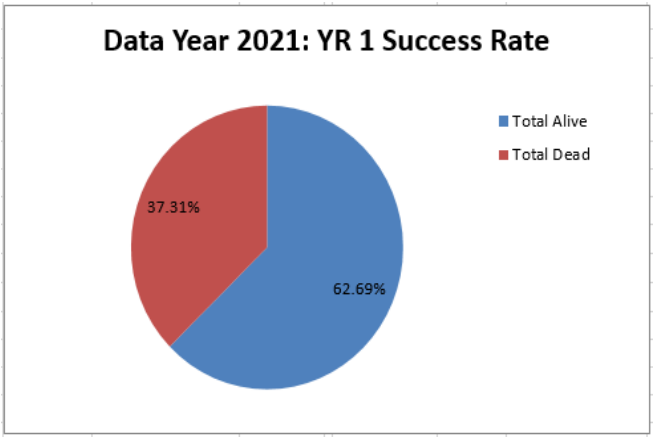


All Years - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	3876	Total Alive	4341	80.28%
Total Valley Oak (alive)	465	Total Dead	1066	19.72%
Ratio Coast/Valley	8.3	Total	5407	100.00%

All Years - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	4249	Total Alive	4711	81.36%
Total Valley Oak (alive)	462	Total Dead	1079	18.64%
Ratio Coast/Valley	9.2	Total	5790	100.00%

Figure 4: 2020 and 2021 status of oak trees from all years (Years 1 through 13) planted; including DT trees.

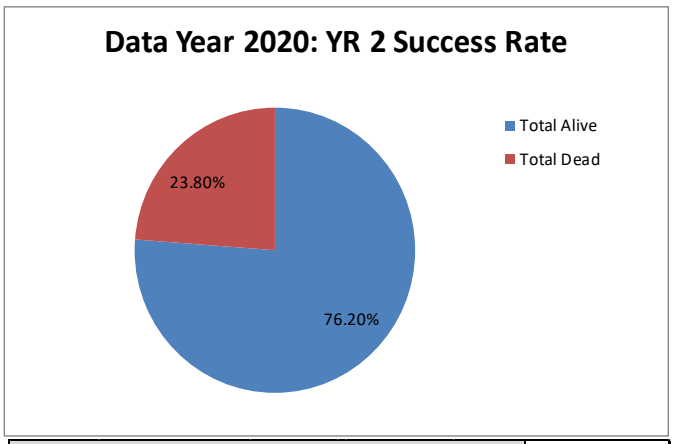


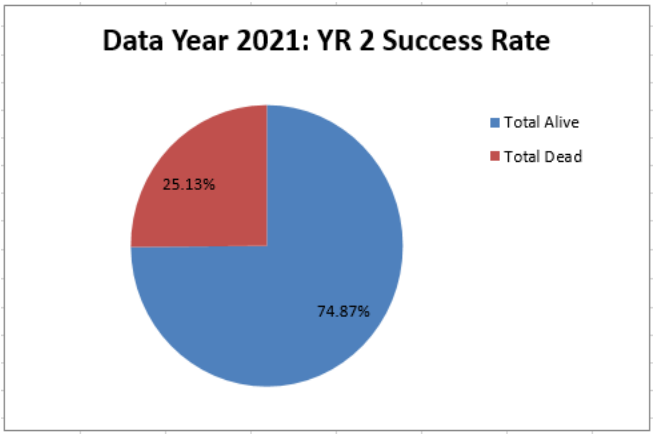


Year 1 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	222	Total Alive	236	61.14%
Total Valley Oak (alive)	14	Total Dead	150	38.86%
Ratio Coast/Valley	15.9	Total	386	100.00%

Year 1 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	230	Total Alive	242	62.69%
Total Valley Oak (alive)	12	Total Dead	144	37.31%
Ratio Coast/Valley	19.2	Total	386	100.00%

Figure 5: Status comparison of Year 1 trees from 2020 to 2021.

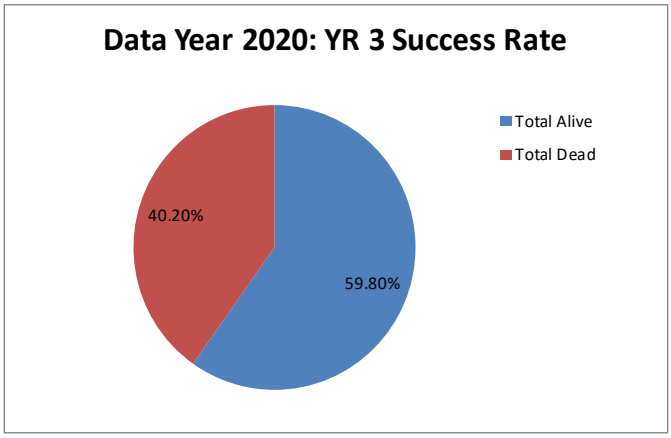


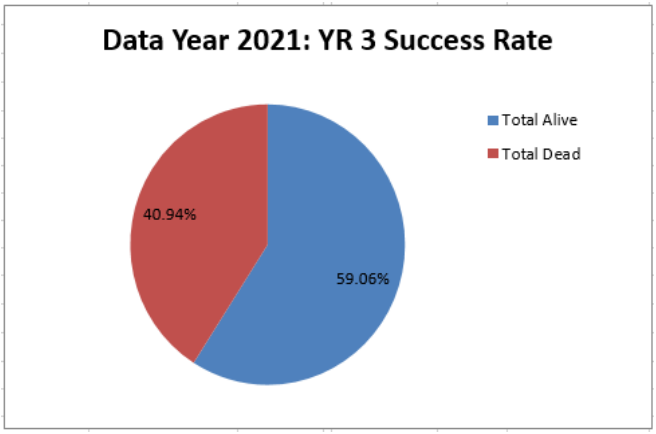


Year 2 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	261	Total Alive	285	76.20%
Total Valley Oak (alive)	24	Total Dead	89	23.80%
Ratio Coast/Valley	10.9	Total	374	100.00%

Year 2 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	259	Total Alive	280	74.87%
Total Valley Oak (alive)	21	Total Dead	94	25.13%
Ratio Coast/Valley	12.3	Total	374	100.00%

Figure 6: Status comparison of Year 2 trees from 2020 to 2021.

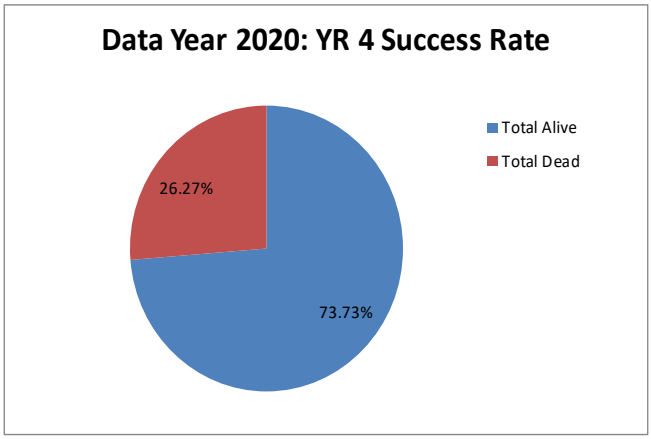


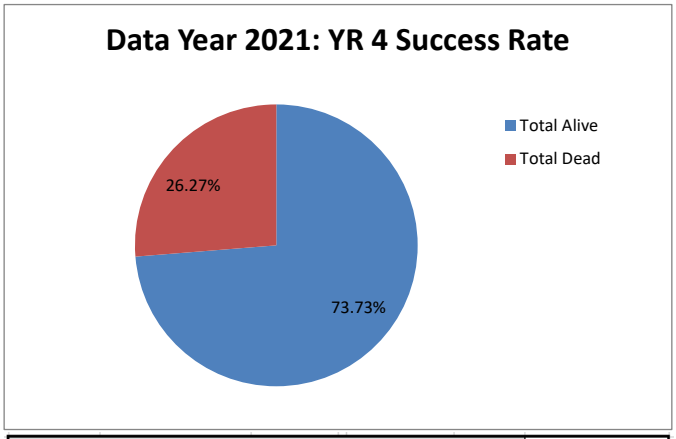


Year 3 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	220	Total Alive	241	59.80%
Total Valley Oak (alive)	21	Total Dead	162	40.20%
Ratio Coast/Valley	10.5	Total	403	100.00%

Year 3 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	214	Total Alive	238	59.06%
Total Valley Oak (alive)	24	Total Dead	165	40.94%
Ratio Coast/Valley	8.9	Total	403	100.00%

Figure 7: Status comparison of Year 3 trees from 2020 to 2021.

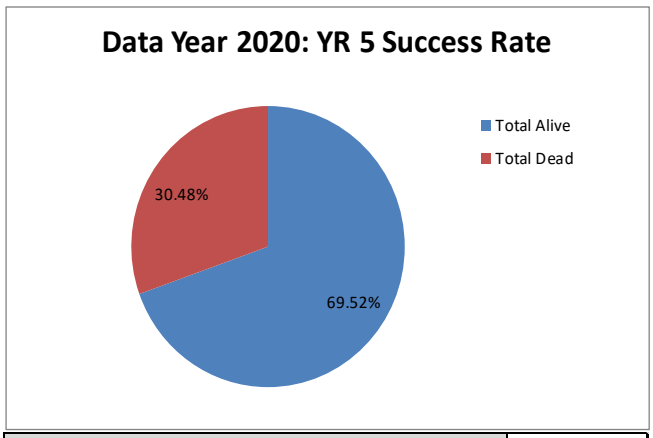


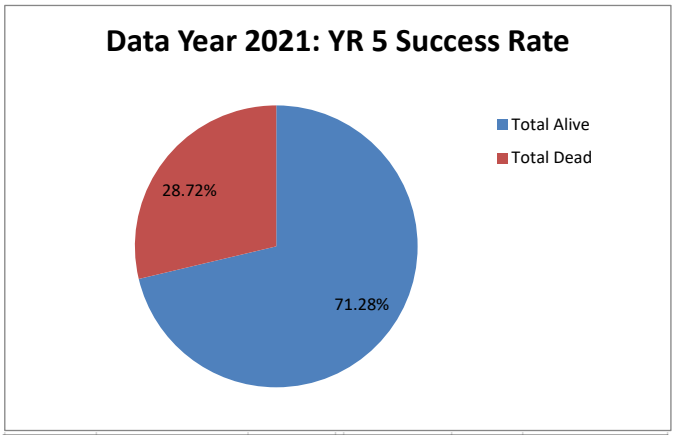


Year 4 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	249	Total Alive	275	73.73%
Total Valley Oak (alive)	26	Total Dead	98	26.27%
Ratio Coast/Valley	9.6	Total	373	100.00%

Year 4 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	249	Total Alive	275	73.73%
Total Valley Oak (alive)	26	Total Dead	98	26.27%
Ratio Coast/Valley	9.6	Total	373	100.00%

Figure 8: Status comparison of Year 4 trees from 2020 to 2021.

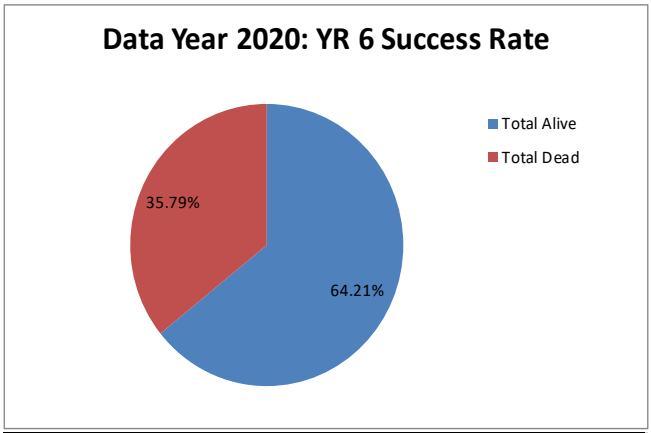


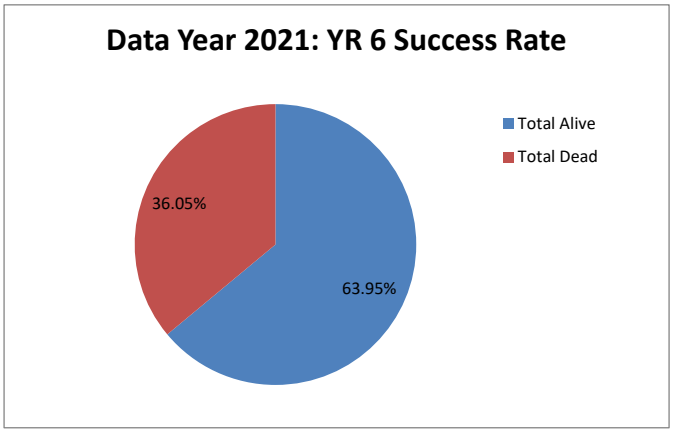


Year 5 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	237	Total Alive	276	69.52%
Total Valley Oak (alive)	39	Total Dead	121	30.48%
Ratio Coast/Valley	6.1	Total	397	100.00%

Year 5 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	232	Total Alive	283	71.28%
Total Valley Oak (alive)	50	Total Dead	114	28.72%
Ratio Coast/Valley	4.6	Total	397	100.00%

Figure 9: Status comparison of Year 5 trees from 2020 to 2021.

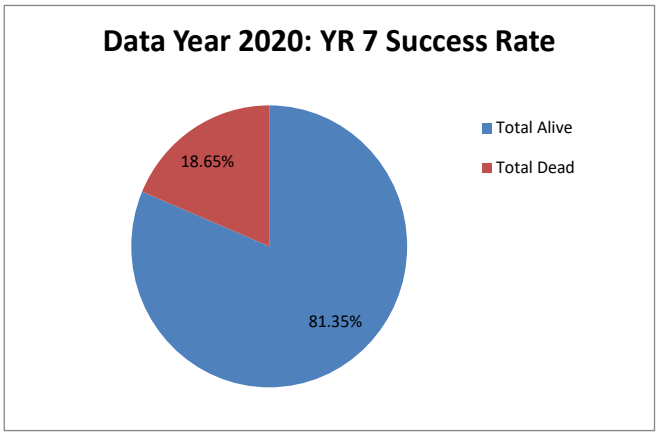


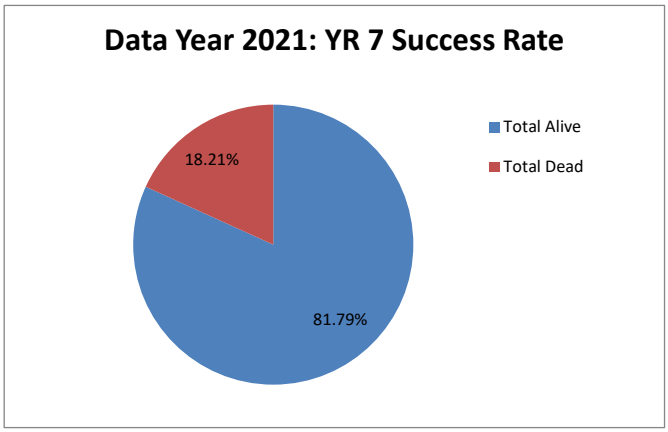


Year 6 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	215	Total Alive	244	64.21%
Total Valley Oak (alive)	29	Total Dead	136	35.79%
Ratio Coast/Valley	7.4	Total	380	100.00%

Year 6 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	212	Total Alive	243	63.95%
Total Valley Oak (alive)	31	Total Dead	137	36.05%
Ratio Coast/Valley	6.8	Total	380	100.00%

Figure 10: Status comparison of Year 6 trees from 2020 to 2021.

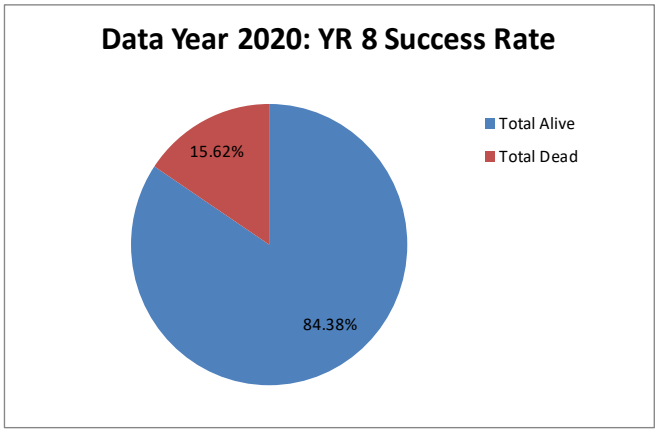


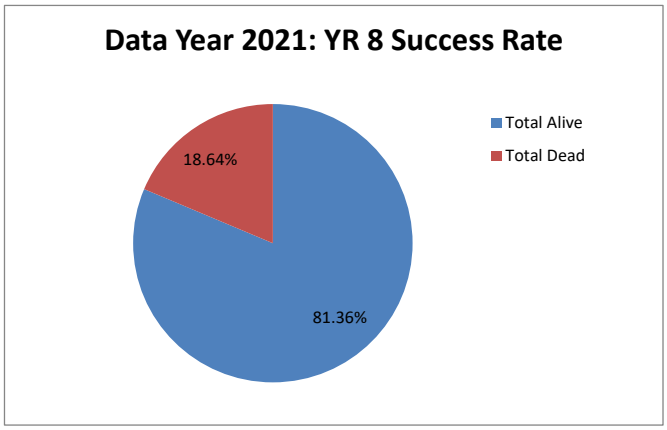


Year 7 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	604	Total Alive	737	81.35%
Total Valley Oak (alive)	133	Total Dead	169	18.65%
Ratio Coast/Valley	4.5	Total	906	100.00%

Year 7 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	610	Total Alive	741	81.79%
Total Valley Oak (alive)	131	Total Dead	165	18.21%
Ratio Coast/Valley	4.7	Total	906	100.00%

Figure 11: Status comparison of Year 7 trees from 2020 to 2021.

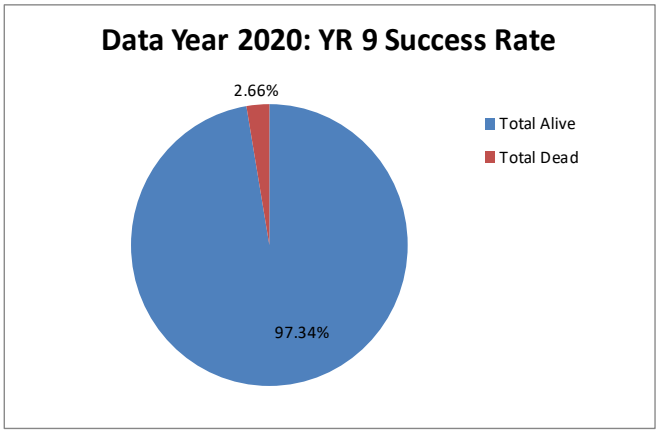


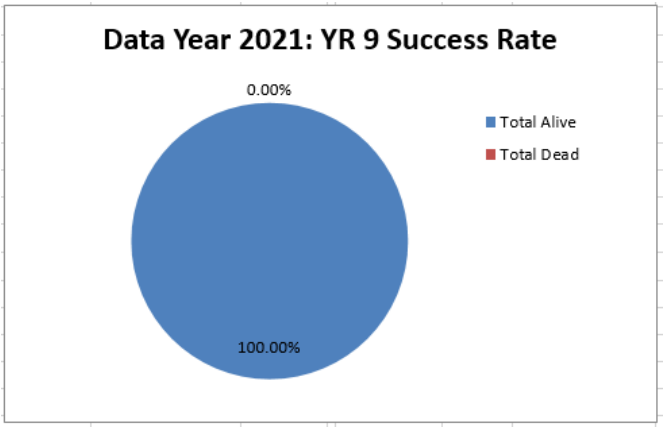


Year 8 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	653	Total Alive	697	84.38%
Total Valley Oak (alive)	44	Total Dead	129	15.62%
Ratio Coast/Valley	14.8	Total	826	100.00%

Year 8 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	625	Total Alive	672	81.36%
Total Valley Oak (alive)	47	Total Dead	154	18.64%
Ratio Coast/Valley	13.3	Total	826	100.00%

Figure 12: Status comparison of Year 8 trees from 2020 to 2021.

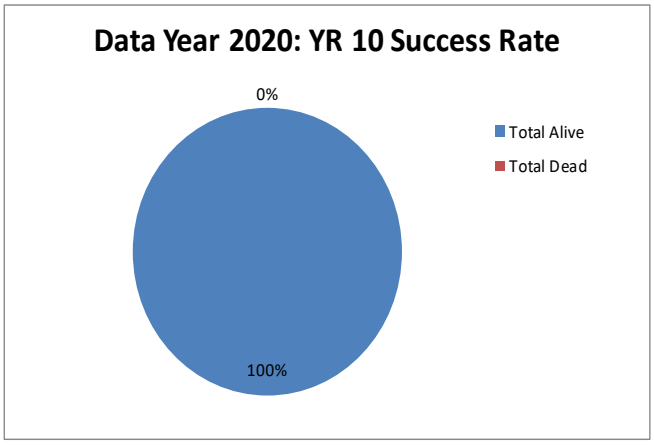


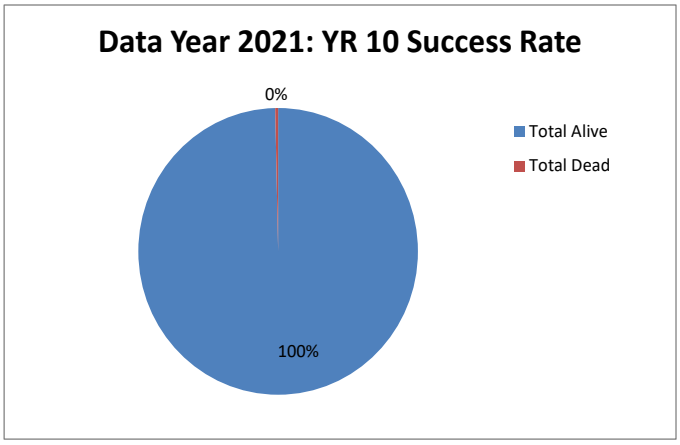


Year 9 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	273	Total Alive	293	97.34%
Total Valley Oak (alive)	20	Total Dead	8	2.66%
Ratio Coast/Valley	13.7	Total	301	100.00%

Year 9 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	283	Total Alive	301	100.00%
Total Valley Oak (alive)	18	Total Dead	0	0.00%
Ratio Coast/Valley	15.7	Total	301	100.00%

Figure 13: Status comparison of Year 9 trees from 2020 to 2021.

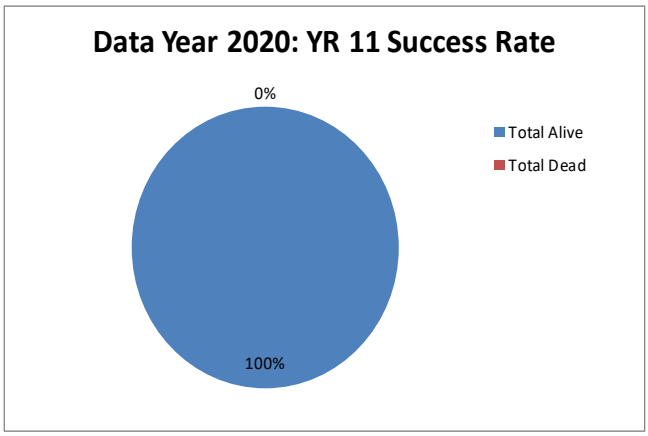


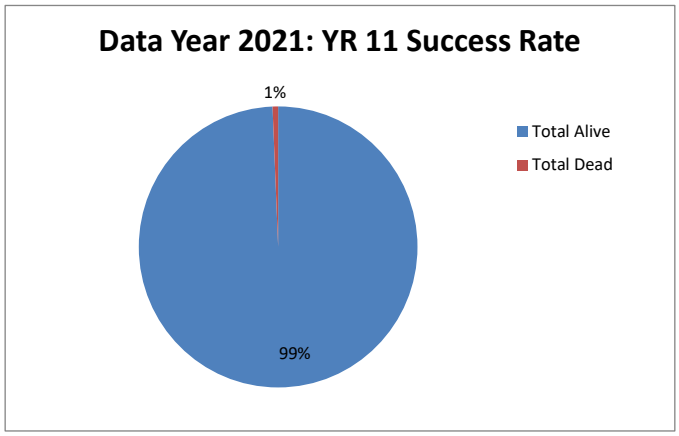


Year 10 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	272	Total Alive	300	100.00%
Total Valley Oak (alive)	28	Total Dead	0	0.00%
Ratio Coast/Valley	9.7	Total	300	100.00%

Year 10 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	272	Total Alive	299	99.67%
Total Valley Oak (alive)	27	Total Dead	1	0.33%
Ratio Coast/Valley	10.1	Total	300	100.00%

Figure 14: Status comparison of Year 10 trees from 2020 to 2021.

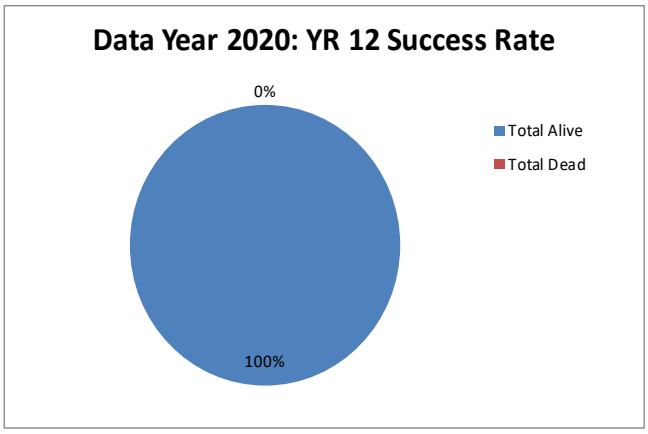


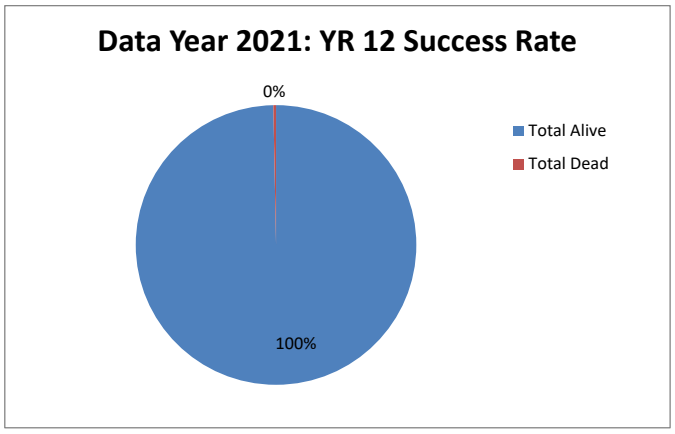


Year 11 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	275	Total Alive	312	100.00%
Total Valley Oak (alive)	37	Total Dead	0	0.00%
Ratio Coast/Valley	7.4	Total	312	100.00%

Year 11 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	285	Total Alive	310	99.36%
Total Valley Oak (alive)	25	Total Dead	2	0.64%
Ratio Coast/Valley	11.4	Total	312	100.00%

Figure 15: Status comparison of Year 11 trees from 2020 to 2021.

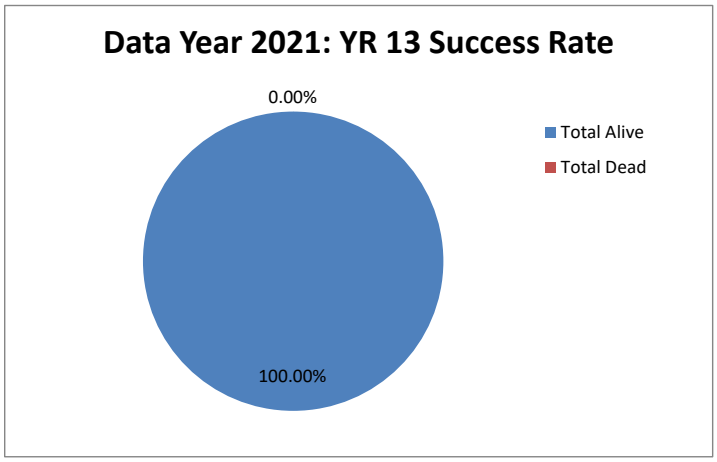




Year 12 - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	301	Total Alive	325	100.00%
Total Valley Oak (alive)	24	Total Dead	0	0.00%
Ratio Coast/Valley	12.5	Total	325	100.00%

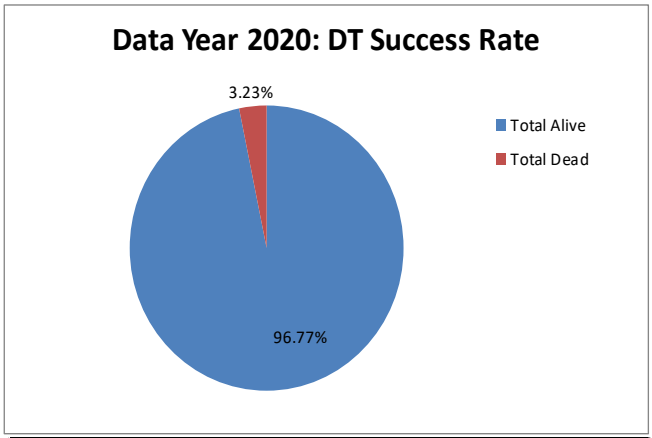
Year 12 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	316	Total Alive	324	99.69%
Total Valley Oak (alive)	8	Total Dead	1	0.31%
Ratio Coast/Valley	39.5	Total	325	100.00%

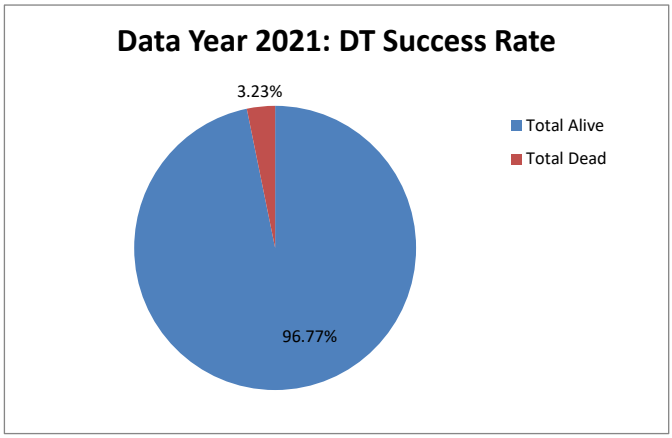
Figure 16: Status comparison of Year 12 trees from 2020 to 2021.



Year 13 - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	368	Total Alive	384	100.00%
Total Valley Oak (alive)	16	Total Dead	0	0.00%
Ratio Coast/Valley	23.0	Total	384	100.00%

Figure 17: Data of Year 13 from 2021.





DT - Total Observed in 2020				Percent of Total
Total Coast Live Oak (alive)	94	Total Alive	120	96.77%
Total Valley Oak (alive)	26	Total Dead	4	3.23%
Ratio Coast/Valley	3.6	Total	124	100.00%

DT - Total Observed in 2021				Percent of Total
Total Coast Live Oak (alive)	94	Total Alive	120	96.77%
Total Valley Oak (alive)	26	Total Dead	4	3.23%
Ratio Coast/Valley	3.6	Total	124	100.00%

Figure 18: Status comparison of Dam Tender (DT) trees from 2020 to 2021.

Maintenance

Maintenance of all planted oak trees in FY20/21 included irrigating, weeding, mulching, and deer cage maintenance is presented in Table 1. The total amount of water used from Lake Cachuma to irrigate oak trees from all year classes in FY20/21 was 0.80 acre-feet, which was lower than last year at 1.54 acre-feet. (Table 2).

Table 1: Cachuma Oak Tree Restoration Program completed maintenance in FY20/21.

	July 2021	Aug 2021	Sept 2021	Oct 2021	Nov 2021	Dec 2021[1]	Jan 2022	Feb 2022[2]	Mar 2022[2]	Apr 2022[2]	May 2022[2]	June 2022[2]
Year 13 Oaks					New Trees	New Trees	New Trees	New Trees	Irrigated	Irrigated		Irrigated
(2021-2022)					Gopher Baskets	QA/QC	QA/QC	QA/QC	Weeded	Weeded		Weeded
					Fert/Comp	Tree Tags	Tree Tags	Tree Tags				
					Deer Cages		Deer Cages	Deer Cages				
					Mulch/Irrigated		Mulch/Irrigated	Mulch/Irrigated				
Year 12 Oaks	Irrigated	Irrigated	Irrigated					Irrigated	Irrigated		Irrigated	Irrigated
(2020-2021)	Weeded	Weeded	Weeded					Weeded	Weeded		Weeded	Weeded
Year 11 Oaks	Irrigated	Irrigated	Irrigated	Irrigated						Irrigated	Irrigated	
(2019-2020)	Weeded	Weeded	Weeded	Weeded						Weeded	Weeded	
Year 10 Oaks		Irrigated		Irrigated								
(2018-2019)		Weeded		Weeded								
Year 9 Oaks		Irrigated	Irrigated	Irrigated		Irrigated						
(2016-2017)		Weeded	Weeded	Weeded		Weeded						
Year 8 Oaks												
(2015-2016)												
Year 7 Oaks												
(2014-2015)												
Year 6 Oaks												
(2005-2011)												
Year 5 Oaks												
(2009-2010)												
Year 1-4 Oaks												
(2005-2009)												
Year 1-3 Oaks												
(2005-2008)												
Year 2 Oaks												
(2006-2007)												
Year 1 Oaks												
(2005-2006)												

[1] Dead trees replaced.

[2] Oak tree inventory.

Table 2: Cachuma Oak Tree Restoration Program water usage from Lake Cachuma for irrigation during FY20/21.

	Gallons	Acre-feet
July	24,000	0.074
August	42,125	0.129
September	41,075	0.126
October	19,600	0.060
November	15,300	0.047
December	4,070	0.012
January	7,350	0.023
February	16,350	0.050
March	18,150	0.056
April	21,250	0.065
May	27,550	0.085
June	24,800	0.076
Total:	261,620	0.80

Financials

Annual expenses by Fiscal Year since the beginning of the Lake Cachuma Oak Tree Restoration Program in FY05/06 are presented in Table 3. The totals include COMB staff (plus burden) and consulting arborist hours, material, supplies, fuel expenses, GPS mapping, conducting the annual inventory, replanting trees over the period, and reporting. The breakout for those costs is presented by

labor (Table 4) and the total cost (labor, materials, and supplies) (Table 5). The financials do include the Year 13 planting and mapping efforts.

Table 3: Total program costs by Fiscal Year including planting, maintenance, mapping, conducting the annual inventory, and reporting by year (Year-ID) and number of trees planted during those years.

# of Years	Fiscal Year	Operator	Year-ID	# Planted Trees	Cost
1	2005-2006	Fournier	1	375	$116,731
2	2006-2007	Fournier	2	375	$117,620
3	2007-2008	Fournier	3	375	$138,786
4	2008-2009	Fournier	4	375	$137,872
5	2009-2010	Fournier	5	379	$136,900
6	2010-2011	Fournier	6	377	$137,878
7	2011-2012	Fournier	-	-	$79,439
8	2012-2013	COMB	-	-	$101,431
9	2013-2014	COMB	-	-	$48,097
10	2014-2015	COMB	7	909	$134,054
11	2015-2016	COMB	8	824	$128,241
12	2016-2017	COMB	9	301	$101,227
13	2005-2018	COMB	DT	124	$128,752
14	2018-2019	COMB	10	300	$120,573
15	2019-2020	COMB	11	311	$140,775
16	2020-2021	COMB	12	325	$119,113
17	2021-2022	COMB	13	384	$135,594
			Total:	**5734**	**$2,023,084**

Table 4: Labor costs for the Lake Cachuma Oak Tree Program during FY20/21.

	Total
COMB Staff (hours):	
Seasonal Biologist Aide A	305.5
Seasonal Biologist Aide B	451.25
Seasonal Biologist Aide C	90.5
Seasonal Biologist Aide D	62.5
Water Service Worker II	45
Water Service Worker II	32
Administrative Analyst	27
System Analyst	81
Biologist Assistant	1078.75
Project Biologist A	178.5
Project Biologist B	251.75
Senior Resource Scientist	111
Total Staff Hours:	2714.75
Cost - Labor plus burden	113,908.03
Consultant Service Hours (Ken Knight):	10
Consultant Cost	$1,000.00
Total Personnel /Consultant Cost	**$114,908.03**

Table 5: Total expenses (labor, materials and supplies) for the Lake Cachuma Oak Tree Program during FY20/21.

	Total
Materials and Supplies:	
Oak trees	$7,899.32
Tree stakes	$1,892.92
Tree tags	$0.00
Mulch	$890.48
Compost	$50.01
Fertilizer	$135.64
Gopher baskets	$2,505.17
Protective deer caging/netting	$0.00
Hand tools	$0.00
Hoses	$110.32
PPE	$79.48
Cable ties	$10.31
Equipment mobilization	$1,914.00
Vehicle Fuel Cost	$1,992.68
Equipment Fuel Cost (incl. diesel H2O truck)	$3,205.18
Total Materials and Supplies	**$20,685.50**
TOTAL EXPENSES (labor, materials + supplies)	**$135,593.53**

The total cost of the Lake Cachuma Oak Tree Restoration Program in FY20/21 was $135,594 which includes any replanting and mapping costs of the Year 12 trees. Again, the total reflects personnel cost (labor plus burden), materials, supplies, expenses (vehicle and equipment fuel), and consultant fees. For comparison, during the first six years of the project annual consultant costs were approximately $136,000 to plant approximately 375 and maintain the previously planted trees. In FY16/17, COMB staff planted 301 trees and maintained all previously planted trees (4,290 trees) at a cost of $101,227. The ability to keep costs down is attributed to multiple factors, which include but are not limited to:

- Relying on the COMB Fisheries Division seasonal staff to conduct the bulk of field activities.
- Minimizing the amount of full-time staff being used.
- Reduced equipment needs as the bulk of purchases occurred during the fiscal year when COMB took over the project.
- Reduced consultant hours due to staff gaining more tree care experience.
- Reduced equipment (generator/pumps) gas consumption from more efficient irrigation hosing and better delivery technique for extracting water from Lake Cachuma.
- Repurposed salvaged deer cages and stakes from Program trees over 6 feet in height.

Summary and Recommendations for Program Improvements

There are 4,712 (including Year 13 trees) alive oak trees attributed to the mitigation effort of the Program. The survival rate to date is 81.37% (Years 1-13 and DT trees) which would be considered very respectful in any open range oak tree planting effort in a similar climate. The number of mitigation trees still to be planted is **9** trees to meet the mitigation target of 4,721 trees by 2025. It is

recommended to replant approximately 50 oak trees that had perished in favorable established planting locations. This will get the Program to the mitigation target with a margin and will allow for several years before those trees need to be self-sustaining by 2025.

Challenges for the Program, specifically tree survival, are seven of the last ten years of the Program experienced extraordinary drought conditions (WY2012-WY2021, except WY2017, WY2019, and WY2020), inadequate initial planting methodologies during the first six years (compromised gopher wire baskets, trees planted too low, deer cages removed too soon, auger hole planting, etc.), and a limited staff to take care of an extensive number of trees. Some planting areas have better soils and topography than others, for example the Year 3 planting area has shallow soils with southern exposure whereas the Year 7 planting area for the most part is just the opposite.

Lessons learned by the COMB staff from many years of conducting this Program have been put into practice and are recommended for future work, specifically:

- Start the annual tree inventory as soon as possible in the fall and swap out unreadable tags with new ones.
- Continue to carefully conduct the tree inventory to maximize accuracy, efficiency, and results. Provide sufficient time to properly train new staff on all elements of the Program.
- Systematically mulch all trees once a year, particularly newly planted trees, and obtain as clean a mulch as possible. Obtain local mulch whenever possible from the County Park or Lucidity as it is often free and free of trash (Figure 19).
- Maintain deer cages for all trees below deer browsing level (approximately 6 feet).
- Clear the dirt away from the tree trunk base.
- Expose the top of gopher wire baskets at the surface wherever possible to prohibit gopher travel over the top of the wire basket. Also, fill gopher and ground squirrel holes while watering to discourage habitation.
- Plant new trees in professional gopher wire baskets using backhoe dug holes (no auger holes that limit the spread of tree roots) (Figure 20); plant the trees slightly above grade to accommodate subsidence; and use sturdy wire deer cages instead of netting or chicken wire.
- Plant well established trees from the nursery (at least a foot tall) instead of acorns as they have a better success rate.
- Conduct structural pruning of planted trees so that they can grow larger, taller, and faster than unpruned trees, thus becoming more likely to survive and be self-sustaining. The pruning should take place in the late fall or early winter when the trees are growing very little.
- Map all replacement trees by adding a column into the inventory field sheets to facilitate work flow.
- Collaborate with willing partners to reduce cost and increase efficiency (i.e., the County, Lucidity, and Your Children's Trees), as an example working with the County and local tree trimming companies to place logs in front of our planted trees for protection against parked vehicles and work with the County to enhance the environment by installing owl boxes (Figure 21).
- Budget time for deer cage and stake removal once the oak trees are over 6 feet tall as this will need to be done as the Program sunsets.
- Carefully mow and/or weed-whack around trees for weed control and grade access roads to facilitate egress for all maintenance tasks.
- Continue to use Grow-Tubes as they appear to be quite successful particularly in areas with poor soils and where surface rodent impacts are noticed, such as near brushy natural vegetation

found along the margins of planting areas. Remove the Grow-Tubes once the trees are taller than the tube.

- Clear brush near any planted trees to discourage herbivory of Program trees.
- Wrap the bottom of deer cages with fine mesh shade cloth to prohibit surface rodents from accessing planted trees in areas near the margins of planting areas.
- Gather acorns from the local area in August for Valley Oaks and September for Coast Live Oaks to be germinated and grown at a nursery for future plantings. Look for acorns being set on our planted trees that suggest tree maturity and planting success (Figure 22).
- Survey all planted oak trees for mistletoe and remediate as quickly as possible being careful to not leave any cuttings behind (Figure 23).
- Educate the public about the Oak Tree Program to create appreciation and stewardship, and work with the County Park managers to best protect newly planted trees.
- Have the water truck and water trailer taken in for annual maintenance during the winter when they are not in use.

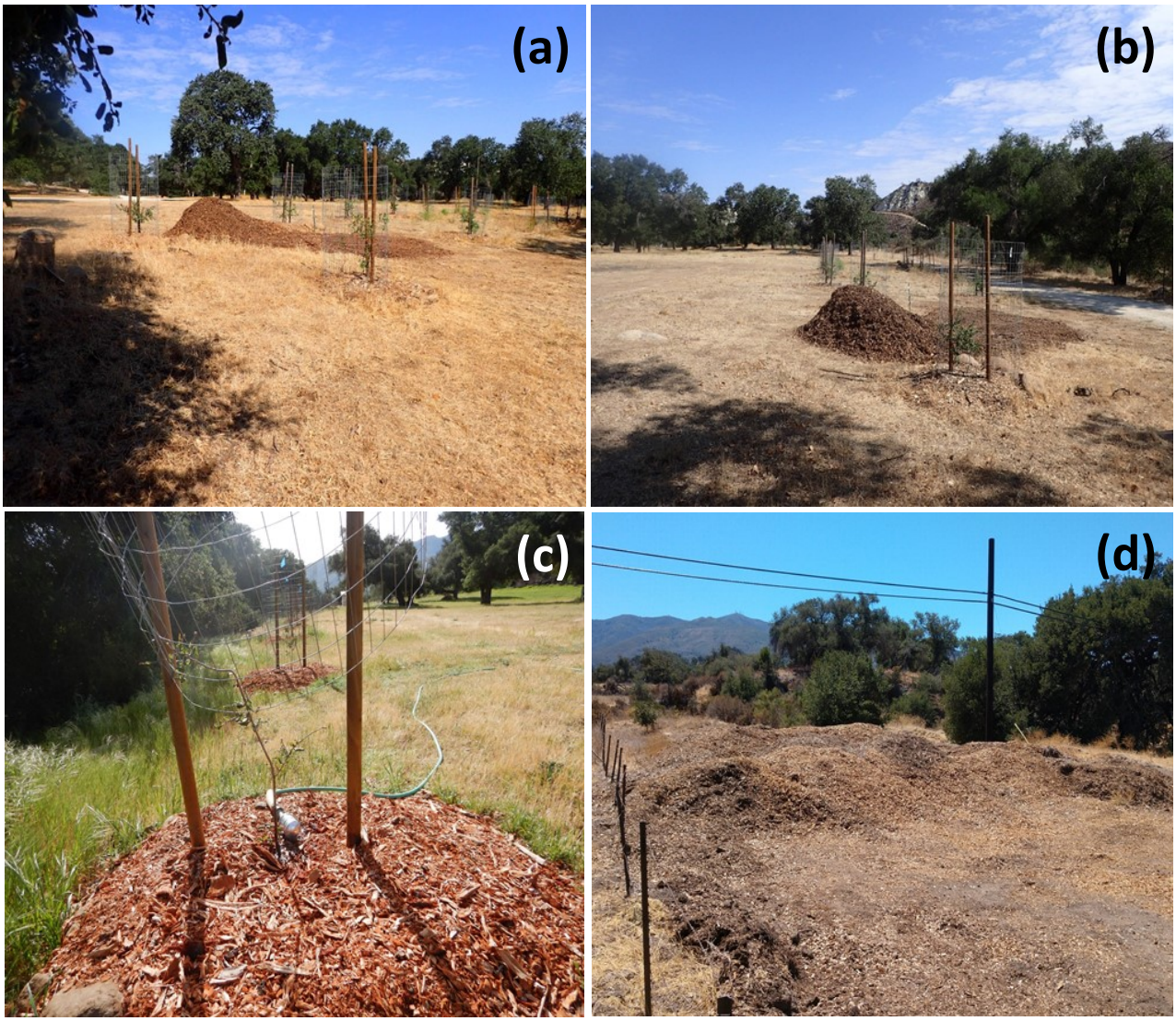


Figure 19: Collaboration with the County and Lucidity to supply mulch for planting trees at Lake Cachuma Park (a, b, and c) and use local County supplied mulch.

Figure 20: Planting oak trees at Live Oak Camp showing (a) the use of the COMB backhoe, (b) assembling professional gopher cages, (c) planted trees at the entrance to Live Oak Camp, and (d) planted trees at the entrance kiosk to the backcountry trail at the lower lot of Live Oak Camp.

Figure 21: Live Oak Camp lower lot: (a+b) logs placed to protect planted trees and (c+d) owl boxes installed in collaboration with the County to enhance the environmental condition.

Figure 22: Setting acorns on our planted trees (for example, Year 9 trees at the County Park) (a+b).

Figure 23: Mistletoe identification and removal (a+b).

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