Oak Woodland Restoration, Upper Bidwell Park, Chico CA

SPRING 2018 PROGRESS REPORT TO CA WILDLIFE FOUNDATION

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Introduction

This report includes: a program overview updated to include the extension of the program through 2020, a summary of the first three years, and a complete progress update of the fourth year of Butte Environmental Council’s Oak Woodland Restoration Project of Middle and Upper Bidwell Park in Chico, CA. Our deepest gratitude goes to the California Wildlife Foundation for supporting us in the following goals that benefit our natural areas, improve wildlife habitat and involve local residents in meaningful environmental stewardship activities.

Project Goals

The goals of this project are to restore oak woodlands in Upper Bidwell Park by planting and maintaining 300 acorn sites, protecting 50 wild and previously planted seedlings, native grass seeding to promote healthy soil biology, and engaging park users, community members, and students in tree planting efforts.

Goal 1: To restore oak woodlands in Upper Bidwell Park.

In 2014 a four-year work plan was developed based on Butte Environmental Council (BEC)’s restoration experience and on the feedback of numerous local stakeholders and experts. We solicited input and reviewed research from the California Oaks Foundation, the Butte County Oak Woodlands Management Plan, the Bidwell Park Master Management Plan, and Magic Inc. ReLeaf in Palo Alto. We worked closely with the City of Chico’s Parks and Natural Resource Manager to determine locations and methodology. Planting locations were chosen based on soils, historical conditions, need, and accessibility for maintenance.

The planting method involved clearing a 2foot diameter section of grass and weeds, digging a 12-inch hole, burying a screen cylinder 8 inches deep, staking the site with a wooden stake, and planting three acorns per hole. Tubex was placed over the acorns and secured to the stake. Bird protective netting was placed over the top of the Tubex and woodchips were laid 4 inches thick around the Tubex. Oak plantings were watered weekly during the dry season (May-Sept) for three years to help ensure survival, and as trees grew Tubex was removed and replaced with caging.
approximately three feet in diameter, and secured by t-posts.

In 2017, after completing the last year of watering for the original planting sights, funding from the California Wildlife Foundation was generously extended in order for the project to continue. In the Fall of 2017 with the help of volunteers, 100 additional sites were planted with acorns in Upper Bidwell Park. A work plan has been developed to maintain these plantings, by continuing the summer watering and caging efforts, and in addition to seed native grasses to condition the soil and promote the survival of the seedlings.

**Goal 2: To protect existing oak seedlings.**

During our initial research we received feedback from local ecologists that in some locations oaks are dropping acorns and resulting in seedlings but that the resulting trees are not serving to repopulate the woodlands. We added an element to the project that includes re-caging seven past Parks Department oak plantings, and in 2015 protecting a group of 18 wild seedlings from deer browsing, while leaving a nearby group uncaged to help determine best practices for local restoration. The results are discussed below.

**Goal 3: Engage park users, community members & students in tree planting.**

Public engagement is a significant component of this project. BEC is working to help the community understand the issues that can affect oak regeneration and survival with the goal of shifting perspectives and behavior and leading to long-term changes in how we as humans value and manage natural areas. The community has been involved in all aspects of the project including the development of the work plan (which was approved at a public meeting of the City’s Bidwell Park and Playground Commission), collection and planting of acorns, and watering and maintenance of the seedlings. We constantly strive to find new and innovative ways to engage and inform our community about the importance of protecting and strengthening our oak woodlands.

**Project Budget**

In this four year project; planting occurred in the first two years. Watering, caging, maintaining, and monitoring the seedlings continued through 2017, when the project was extended due to generous support by the CA Wildlife Foundation. As a result of the extension acorns were planted in the Fall of 2017. The budget below reflects the complete execution of the original funding agreement.

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*This budget reflects our updated expenditures of grant funds by year of project. Differences in budget from the year 3 report include: an increase in personnel hours, to account for more staff time and volunteer coordination in caging all surviving oaks, and a lower supply cost than projected due to generous supply donations and sponsorships from local businesses and dedicated community volunteers.*
The budget below reflects projections for the extended program, allowing for an additional 100 planting sites, seeding of native grasses, and 3 years of watering, caging, maintenance and monitoring.

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Summary 2014-2016

2014
- Organized three volunteer acorn collection outings in Bidwell Park
- Partnered with Kids & Creeks, Butte County Juvenile Hall and the public Bidwell Park Golf Course, California State University Chico students, community members, and dedicated ‘Tree People’ to plant and protect 100 tree sites in Upper Bidwell Park.
- Developed partnerships with the City of Chico, California ReLeaf!

2015
- Weekly summer watering of 100 plots planted in the first year with the help of community volunteers, and caged 3 oak seedlings that had outgrown their tubes.
- Surveying the health of existing oak seedlings planted in the first year. The resulting success rate was 77%.
- Two community volunteer acorn collecting days to prepare for the upcoming plantings and four volunteer planting days with a total of 145 oaks.
- Partnerships and collaborations with: California State University Chico, Butte College, Alpha Phi Omega, C.A.V.E. Adopt a Park Program, Klean Kanteen Co., Chico Equestrian Association, Bidwell Park Golf Course, Orchard Supply & Hardware, City of Chico Parks Dept. and our community!

2016
- 200 volunteer hours over the course of the year through weekly watering, a caging day, and a citizen science assessment day!
- Weekly summer watering (June-Oct) of 204 seedling plots with the help of dedicated community volunteers, and 25 oak seedlings that had outgrown their tubes were caged.
- Significant donations of supplies from Orchard Supply Hardware and community members to water and cage seedlings.
- The success rate from year 2 to year 3 was similar to year 1 and 2; 78% of the seedlings survived (159 plots).
- Gathered GPS coordinates of all plots to generate accurate map of planting sites.
- Created an online interactive map for the public to see the locations and statistics of individual plots.
- Public outreach to inform the community about Oak woodlands, including: a guided hike, a school field, and informational presentations.
2017 Accomplishments

2017

- Held volunteer assessment day to collect height, and health data for oak seedlings.
- 59% of the 204 seedling plots planted in 2014 and 2015 survived!
- 83% of the 144 surviving plots in 2016 were still surviving!
- 78 oak trees graduated to cages, donation of t-posts from City of Chico Parks Department reduced costs to cage seedlings.
- 101 NEW planting sites were planted with Blue Oak acorns during volunteer planting days in November in partnership with Social Stewards, Students from Pleasant Valley High School and Butte College, and community volunteers!
- Renumbered oak seedlings to help volunteers during watering and make data consistent with additional planning sites.
- Updated the online interactive map, and embedded on BEC website for the public to see the current locations and statistics of individual plots, including newly planted plots.

![Image of online interactive map](image)

**Figure 2. Screenshot of Oaks Restoration Programs online interactive map. Plot 59 is selected here as an example.**

Caging Experiment Update

One of the Oak Restoration Project objectives is to conduct a small-scale investigation about the protection of wild oak seedlings. In year two of the project, April 2015, caging was placed around 18 wild seedlings to observe the differences in browsing between the protected and unprotected seedlings nearby, as well as comparing the success of wild caged seedlings to planted caged seedlings.

The average survival rate of planted seedlings from our first three years of the project is 59%. A count of the caged wild seedlings, as counted in February 2017, reported 43 total seedlings between the two cages. The cages now contain a greater number of healthy seedlings than were recorded before. There is no noticeable difference between the caged and uncaged seedlings. Therefore, we can observe that wild seedlings seem to be doing better than planted seedlings, and caged wild seedlings are doing roughly the same as their uncaged wild counterparts. Despite the apparent higher success rates for the wild seedlings, wild germination alone does not result in enough individuals in a large enough area to restore oak populations; plantings are needed to support regeneration.
Figure 3. Photo of caging experiment taken September 2016. Red line shows max height matching in both caged and uncaged seedlings. They are between 12 and 18 inches tall.

Figure 4. (above) Photos of caging experiment taken September 2017. The number of caged wild oaks has grown from 18 to 43 and there is no noticeable difference between the caged and uncaged seedlings.

Figure 5. (below left) Statistics gathered for Fall 2017 update.

Figure 6. (below right) volunteers planting oaks near Horseshoe lake.

Oak Restoration 2017 Fall Update

83% of our 144 plots had at least one surviving seedling since May 2017.

22” is the average height amongst our surviving seedlings. They grew an average of 5” over the summer!
Next Steps

In the next year of this project, BEC will continue to support the survival of as many of the 220 existing oak plots with the help of the strong volunteer base we have created and through:

- Weekly watering from June to October during summers 2018, 2019 and 2020, weaning oaks off of artificial water supply by altering the watering schedule in 2020.
- Adding protective caging of all surviving oaks that outgrow initial planting tubes.
- Planting native grass seed to promote soil health and oak success.
- Adding educational signage to some of the plot sites for park goers to learn about oak restoration.
- Identifying a plan for the caged oaks at the end of the Oaks Restoration Program.

We will also continue hosting free community events and leading fieldtrips for citizens to learn more about oak woodlands and their ecological importance.

Once again, our deepest appreciation goes out to the California Wildlife Foundation for supporting us in our goals that help preserve oak woodlands and involve the public in this meaningful cause.