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Q1 Name of your organization.

National Audubon Society/Audubon California

Q2 Grant #

20150344

Q3 Grant Period

June 1 2015 – May 30 2016

Q4 Location of your organization

City	Trabuco Canyon
State	California

Q5 Name and Title of person completing evaluation.

Dr. Sandy DeSimone, Director of Research and Education

Q6 Phone Number:

949-858-0309

Q7 Email address.

sdesimone@audubon.org

Page 2: Key Outcomes and Results

Q8 Total number of clients served through this grant funding:

643

Q9 Describe the project's key outcomes and results based on the goals and objectives. Use the following format: State the Goal: State Objective 1: Describe the Activities, Results and Outcomes for Objective 1: State Objective 2 (if applicable): Describe the Activities, Results and Outcomes for Objective 2: State Objective 3 (if applicable): Describe the Activities, Results and Outcomes for Objective 3:

The support of the S. L. Gimbel Fund has enabled Audubon Starr Ranch Sanctuary to add acres to our streamside restoration areas within the Bell Creek riparian corridor, engage in innovative approaches to riparian and upland restoration through pilot projects and ecological research, become more resilient to drought and wildfire, and implement a new “citizen science” monitoring program that trains volunteers to perform long-term ecosystem monitoring. We are pleased to send you this report on our efforts made possible by your grant.

Starr Ranch preserves 4,000 acres of woodland, riparian forests, coastal sage scrub, chaparral, and needlegrass grassland in Orange County, operating as a nature preserve and an active ecological research station, and serving 4,000 visitors a year through environmental education, citizen science, and volunteer programs. We provide an eight-month internship for six recent college graduates with degrees in ecology, biology or other related areas, who assist with research and support volunteer efforts. While our restoration and ecological research work addresses regional and global conservation needs, and has been nationally recognized, we are also cognizant that Starr Ranch abuts two residential subdivisions and the Cleveland National Forest. Our focus this past year therefore was on research and implementation of projects that will help make Starr Ranch more resilient to drought and wildfire. We proposed four objectives to guide our work this year and we are happy to highlight our achievements.

Objective I: Support ongoing riparian restoration efforts through providing a sustainable source of irrigation for new plantings.

Outcomes and Results: Achieved.

Early in the grant year, we added a rainwater catchment system to provide a sustainable source of irrigation. Starr Ranch has long had to rely on well water to irrigate new restoration plantings, which limits the amount and the success of the work we can achieve during drought years. A 1,000 gallon tank was installed last summer along with a gutter system to capture rain runoff from the 1,125 square foot roof of our parking shed. Since a 1,000 square foot roof can capture 600 gallons per inch of rain, with an average year's rainfall of ~8.5 inches of rain, we can expect to “harvest” about 5,160 gallons of water over the course of each year to irrigate restoration plantings.

As part of the project, we had interns gauge how much water native plantings use. This involved planting cuttings of seven native woody riparian species on a streambank near the catchment tank. They monitored the water level in the tank each day and calculated that the cuttings used 45.6 gallons of water per day when watering every two hours for five minutes from 8 am to 6 pm. This translates into a quarter of a gallon of water per plant per day, a significant amount of water which we no longer have to draw down from our limited supply of well water.

With this additional irrigation water, interns proceeded to collect and plant 220 cuttings from these seven species in the Bell Creek riparian corridor. As streamside habitat is capable of being home to a diversity of plant and wildlife communities, having additional plant resources available greatly supports our work to improve aquatic ecosystems, soil health, and water quality. Habitat restoration in the Bell Creek riparian areas has been underway since 2003 to remove invasive weeds and replant native species. To date, we successfully controlled the spread of three highly invasive plant species (periwinkle, smilo grass, and English ivy) within 7.6 acres of the 11 acres of streamside habitat targeted, are adding newly cleared and replanted acreage annually.

Objective II: Monitor and research oak and olive woodlands.

Outcomes and Results: Achieved, and ongoing

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The health of Southern California's oak woodlands is becoming dire: trees are dying all over California. In Southern California, this has been exacerbated by two pest insects that have spread multiple diseases in drought-stressed areas, with dead or diseased trees creating added fire hazards across the region. During the grant year we began a new monitoring program to assess the health of Starr Ranch's native oak woodlands. This involved writing a new monitoring protocol and completing a GIS analysis to identify areas (also known as "polygons") of woodlands. Nine of 67 oak woodland polygons – about 104 acres – were then assessed to determine the composition of the woodland, size of oaks found, and health of oaks. Findings so far show that the majority of trees in the areas sampled had no evidence of pests or diseases, which is good news for the Ranch. Each year we will add acreage to our oak woodland monitoring program, with a goal of resampling each set of woodlands every five years.

Additionally we began the first steps of a research project that compares oak and non-native olive woodlands. We want to understand whether non-native olive trees can serve as "ecological equivalents" to oaks by providing alternative habitat for birds and other wildlife. During the year assessments were completed in woodlands that are composed predominantly of olive trees, and it appears that songbirds prefer oak woodlands over olive-dominated woodlands. Overall, we observed fewer disease symptoms on olive trees than on oaks and the olive woodlands had fewer understory species (and of those, most were non-native species).

Although we planned to collect acorns and replant oaks, there haven't been any acorns during the drought so we were not able to complete this portion of the proposed activities.

Objective III: Improve safe access for firefighters into Starr Ranch in case of wildfire.

Outcomes and Results: Achieved, and ongoing.

Activities completed during the year included suppressing weeds within the five-foot wide cutback on either side of the road and replanting the areas with planting fire resistant native cactus along a 656-foot length of the most heavily travelled 4.5 mile long main access road into Starr Ranch to improve safe access for firefighters, if needed. Working in partnership with the Orange County Fire Authority, we also pruned trees along the entire length of the road to provide a 14-foot wide clearance for emergency vehicle ingress/egress. We hope to be able to maintain other areas in the "Wildland-Urban Interface" adjacent to homes in the next year and have applied for a CAL FIRE grant to support this work. We tested methods of propagating and maintain cactus and found that once planted they require very little maintenance.

Objective IV: Engage citizen scientists in ecosystem monitoring.

Outcomes and Results: Achieved.

Several citizen science programs here engage people more deeply in supporting and learning about natural ecosystems. Last year 43 people worked alongside our staff biologists. About 10 of these citizen scientists have committed to supporting our long-term ecosystem monitoring of phenological (seasonal) changes in birds, butterflies, and plants. Seasonal changes, viewed over time, can serve as indicators of climatic change. Data collected by Starr Ranch's citizen scientists is included in the national database of the USA National Phenology Network. Volunteers have observed an early flowering of oaks, and have detected both butterfly and bird species that are active much longer, earlier and later in spring into summer, than in past years. For the proposed monitoring work on oak woodlands, we decided to use seasonal interns and research assistants to complete the initial intensive monitoring approach that will give us a good assessment of the structure and health of these woodlands. Because of steep, rugged terrain and long travel distances over dirt roads to access these areas, we determined this project to be less suitable for volunteers.

Q10 Please describe any challenges/obstacles the organization encountered (if any) in attaining goals & objectives.

In implementing these improvements that increase Starr's resiliency to drought and wildfire, we encountered these challenges:

- Sufficient water resources. The first rain catchment tank was so successful, we would love to install a second one, but because of the high cost of such tanks, we haven't yet proceeded with plans for a second one;
 - Oak Woodlands. Learning the many signs and symptoms of multiple oak diseases has been challenging for the interns and research assistants.
 - Citizen science monitoring. As a new monitoring protocol, it has taken a while to train volunteers in the difficult task of recognizing plant "phenophases" – meaning the various life cycle stages of plants that occur during particular seasons. However, our citizen scientists have shown a lot of perseverance with each team of two monitors coming monthly year- round to support the program.
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Q11 How did you overcome and/or address the challenges and obstacles?

- We will pursue funding to support the installation of a second water tank next year.
 - One of our seasonal interns developed a guide to oak disease symptoms that will support future monitoring efforts so it will be easier for next year's interns to make progress monitoring Starr's woodlands.
 - Our Research and Education Director will spend additional time next year with the interns training them to recognize plant phenophases and with interns and volunteers in the field to improve and standardize data collection.
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Q12 Describe any unintended positive outcomes as a result of the efforts supported by this grant.

Starr's Research Director now participates on the SoCal Emerging Tree Pest Committee, a collaboration of wildland managers across the region, which meets every two weeks via conference call about plans to educate the public about ways to prevent spread of tree diseases. Starr Ranch also has developed a strong relationship with the USA National Phenology Network and now runs a statewide volunteer bird phenology monitoring project for local Audubon chapters in California, including the Sea and Sage Audubon Society serving Orange County.

Q13 Briefly describe the impact this grant has had on the organization and community served.

The positive impact of S. L. Gimbel Fund's investments are manifold and have long-term results, including helping make Starr Ranch more resilient to drought and associated wildfire. We now have a good working relationship with the Orange County Fire Authority to work collaboratively to reduce the threat of fire at our wildland-urban interface. Our main access road now has been improved so that there is better ingress and egress in case of emergency. As we come up with solutions to diseased oaks, we hope to further reduce the risk of wildland fire. This not only protect Starr Ranch, but also our neighboring subdivisions and national forest lands.

Early support from S. L. Gimbel Fund to help us develop an approach to land management that takes into account the current and future impacts of climate change led us to initiate a phenology monitoring program. This program engages citizen scientists here in Orange County, and Starr Ranch is now leading efforts throughout California to engage other local Audubon chapter volunteers in bird phenology monitoring. We completed training sessions for the Sea and Sage Audubon Society and via WebEx for four other chapters as far north as the San Francisco Bay Area.

By supporting community engagement in field ecology and restoration at Starr Ranch, we have been able to get young people excited about science. A wonderful example of this is the work of our older "Junior Biologists." This high school group decided to take on an eight-month long "Bio-Blitz" project to document as many vertebrate species on Starr Ranch as possible. Together with staff biologists, about 25 teens have been using visual/auditory surveys, live trapping techniques, motion-triggered cameras, and scent-baited tracking stations to observe and count 42 bird species, five reptile species, three amphibian species, 13 mammal species, and one fish species. The teens have one more Bio-Blitz in May and expect to add quite a few more species, getting us closer to our goal of documenting 100 total vertebrate species.

We have heard from parents how impactful these programs have been. One parent commented: "No real science exists for kids in Orange County like your program. You people are gold. The kids love it and they get nature at a soul level."

These programs also prepared older students to go on with science. One of last year's students was nominated to the Global Youth Summit on the Future of Medicine with a full scholarship. Her mom wrote: "I have to say Starr Ranch deserves ALL the credit for her interest in biology. Thank you! You have cultivated interests and exposed kids to real biology in a natural setting with professionals and good adult role models.

Page 3: Budget

Q14 Please provide a budget expenditure report of the approved line items. Include a brief narrative on how the funds were used to fulfill grant objectives.

National Audubon Society/Audubon California passed through 100% of funds provided for the purposes of achieving the project on Starr Ranch Audubon Sanctuary. All funds were expended during the grant period. The project budget included salaries and benefits for a Research Assistant and two seasonal interns, along with benefits. Our overall project budget was estimated at \$45,543, with \$17,423 coming from other funders. Our actual salary costs were higher with increases in the minimum wage and underestimating the cost of benefits. In addition, the project budget did not reflect the time contributed by Director of Research and Education Sandy DeSimone which was significant and also Manager Pete DeSimone and covered by other funding sources. Thank you again for your support.

Page 4: Success Stories

S.L. Gimbel Foundation Fund

Q15 Please relate a success story:

Abilities Unlimited is a day program for individuals with developmental disabilities located in Lake Forest, CA and has been our biggest returning volunteer group for the 2015-16 season. Since November 2015, Abilities Unlimited has hand pulled invasive species from riparian areas, coming between two and four times a month, and contributing over 460 hours of their time. Not only were they able to give back to their community in helping Starr Ranch remove invasive species, they also learned about wildlife and the importance of protecting and restoring native habitats. This group of dedicated and inspiring individuals has achieved a large amount of invasive species removal in a short amount of time. We thank them for becoming a major part of the volunteer program here at Audubon Starr Ranch Sanctuary.

Q16 Please relate a success story here:

DEMOGRAPHIC INFORMATION ON CLIENTS SERVED: The grant funds generously provided by the S. L. Gimbel Fund directly served 43 citizen science volunteers as well as supported weed removal by our 600 "Weed Warriors" in Bell Creek riparian area. The funds also supported the work of two interns and one research assistant, all recent college graduates getting their first real-world professional experience as field scientists and land managers while working at Starr Ranch.

By supporting the increased resiliency of Starr Ranch, the grant also helped preserve and sustain the future of this unique sanctuary. Annually we serve about 4,000 visitors to our ecological research station. That includes 3,000 students in grades K – 12 and another 1,000 community members who come for our science education and hands-on conservation volunteer opportunities. We estimate about 80% of our clients served are Caucasian, 10% Hispanic or Latino, 7% Asian or Pacific Islander, and 2% African American, and 1% multi-ethnic or other. We aren't able to track the economic circumstances of our program participants.

While we don't program specifically for people with disabilities, each year some autistic/ADHD children enroll in our school programs and our teachers pay close attention to their learning needs. We also took on a new partner that has become dedicated to Starr Ranch: Abilities Unlimited, a nonprofit that provides day services to adults with developmental disabilities, as we described in the success story above. They tell us Starr Ranch provides one of the few opportunities for them to be outdoors and to give back to the community.

Q17 Please relate a success story here:

Respondent skipped this question

Page 5: Organizational Information

Q18 Which category best describes the organization.
Please choose only one.

Environmental

Q19 What is the organization's primary program area of interest?

Environment/Environmental

Q20 Percentage of clients served through grant in each ethnic group category. Total must equal 100%

Respondent skipped this question

Q21 Approximate percentage of clients served from grant funds in each age category.

Respondent skipped this question

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Q22 Approximate percentage of clients served with disabilities from grant funds.

Respondent skipped this question

Q23 Approximate percentage of clients served in each economic group.

Respondent skipped this question

Q24 Approximate percentage of clients served from grant funds in each population category.

Respondent skipped this question
