

**SoCal Urban Wildlife Refuge Project:  
Realizing the U.S. Fish & Wildlife Service's Urban Wildlife Conservation Program  
Mission through Community Engagement and Education**

*Submission Cover Sheet*

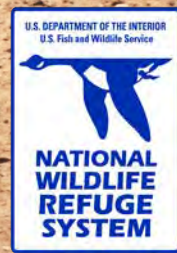
<b>Title</b>	SoCal Urban Wildlife Refuge Project: Realizing the U.S. Fish & Wildlife Service's Urban Wildlife Conservation Program Mission through Community Engagement and Education
<b>Abstract</b>	<p>The SoCal Urban Wildlife Refuge Project team responded to a national challenge and regional needs by developing integrated programs and services chiefly through partnerships with organizations throughout Southern California. The San Diego National Wildlife Refuge Complex has put a \$1 million annual funding award to work by supporting a suite of partners who are deeply rooted in local communities, use multiple engagement strategies, and serve a demographic reflecting the nation's changing racial and ethnic mix. As a result, the Project serves the second largest metropolitan area in the United States, with over 17 million people who represent the projected racial and ethnic mix expected in the nation by 2060. Since 2014, in collaboration with our many partners described in detail below, the Project has been closely aligned with the national charge to "get the word out" about urban refuges and the importance of conservation, and deliver a message that conserving wildlife and natural habitats sustains healthy human communities, too. Project leaders also recognize that innovative, varied strategies and approaches are necessary for success, especially in connecting Southern California's urban communities to nature. During the 2016 funding period, the Project provided over \$900,000 to 10 partner organizations. Through these investments, over 32,000 students, community members, teachers, refuge visitors, and volunteers were engaged through more than 1,700 education, outreach, and community service opportunities. This report highlights project impacts that include increased environmental discourse, knowledge of local animals and habitats, increased conservation behaviors, and heightened interest in STEM-careers.</p>
<b>Author:</b>	James Marshall, Ph.D. San Diego State University
<b>Funded by:</b>	The Fish & Wildlife Service, Department of the Interior
<b>Contract #:</b>	140F0119P0258
<b>Publication Date:</b>	January 31, 2017

# SoCal URBAN WILDLIFE REFUGE PROJECT

*Realizing the U.S. Fish & Wildlife  
Service's Urban Wildlife Conservation  
Program Mission Through Community  
Engagement and Education*



**urban  
wildlife  
refuge**



# FORWARD

Our partners provide the spark and access for communities, neighborhoods, schools, and families to be welcomed to the National Wildlife Refuge System. Across southern California, our partners are deeply rooted in their communities and they uniquely provide the stepping stones to expanding access to the San Diego Bay, Seal Beach, Tijuana Slough, San Diego, and Hopper Mountain National Wildlife Refuges. Each partner serves up multiple doses of nature, inoculating each child and every family with a joy and passion for the outdoors and with an inspiration to be stewards of our nation's rich wildlife heritage.

This Impact Report demonstrates the success of our collaboration with our partners to create opportunities for youth and families to enjoy Refuges, be outdoors, and explore nature. Each page highlights the effectiveness of our partners to connect youth and families to nature, and the role of Refuges as an asset and benefit to the surrounding communities. Through the SoCal Urban Wildlife Refuge Project, our partners have made the region a better place for both people and wildlife. Their efforts bring life to “Conserving the Future” and the promises and hopes of America's national wildlife refuges. We look forward to our partners infusing another generation of visitors and friends with an appreciation for the wonders of our Refuges and nature.

Andy Yuen

*Project Leader San Diego National Wildlife Refuge Complex*

# Table of Contents

<i>1</i>	<b>Project Background</b>
<i>9</i>	<b>Project Partners &amp; Programs</b>
<i>11</i>	<b>Earth Discovery Institute</b>
<i>15</i>	<b>Friends of the Los Angeles River</b>
<i>19</i>	<b>Living Coast Discovery Center</b>
<i>23</i>	<b>Los Angeles Conservation Corps</b>
<i>27</i>	<b>Ocean Connectors</b>
<i>31</i>	<b>Outdoor Outreach</b>
<i>35</i>	<b>San Diego Zoo Global</b>
<i>39</i>	<b>San Diego Zoo Institute for Conservation</b>
<i>43</i>	<b>Santa Barbara Zoo</b>
<i>47</i>	<b>Additional 2016 Accomplishments</b>
<i>51</i>	<b>New Partners Joining the Project's 2017 Work</b>

*During 2016,*  
**the SoCal  
URBAN  
WILDLIFE  
REFUGE  
PROJECT**

*engaged over*  
**32,000  
individuals**

*in learning  
and conserving,  
with the goal  
of inspiring the  
next generation  
of conservation  
stewards.*





The SoCal Urban Wildlife Project (Project) continues its successful response to a critical question posed by U.S. Fish and Wildlife Service (USFWS) leadership:

**How do we connect the 80% of city dwelling, plugged in Americans with nature, and—by extension—to values centered on conservation and environmental stewardship?**

**As a result of our efforts,** students, teachers and community members are engaging with nature throughout Southern California every day of the year. The Project and its program partners are connecting city-dwelling Californians with nature and building stewards for the environment.

The initial annual report, released in 2015, presented the efforts and resulting impact from the Project's first reporting period. During the 2016 funding period, the Project provided over \$900,000 to ten partner organizations. Through these investments,

over 32,000 students, community members, teachers, refuge visitors, and volunteers were engaged through more than 1,700 education, outreach, and community service opportunities.



**In addition, during the 2016 funding period, the SoCal Urban Wildlife Project supported:**

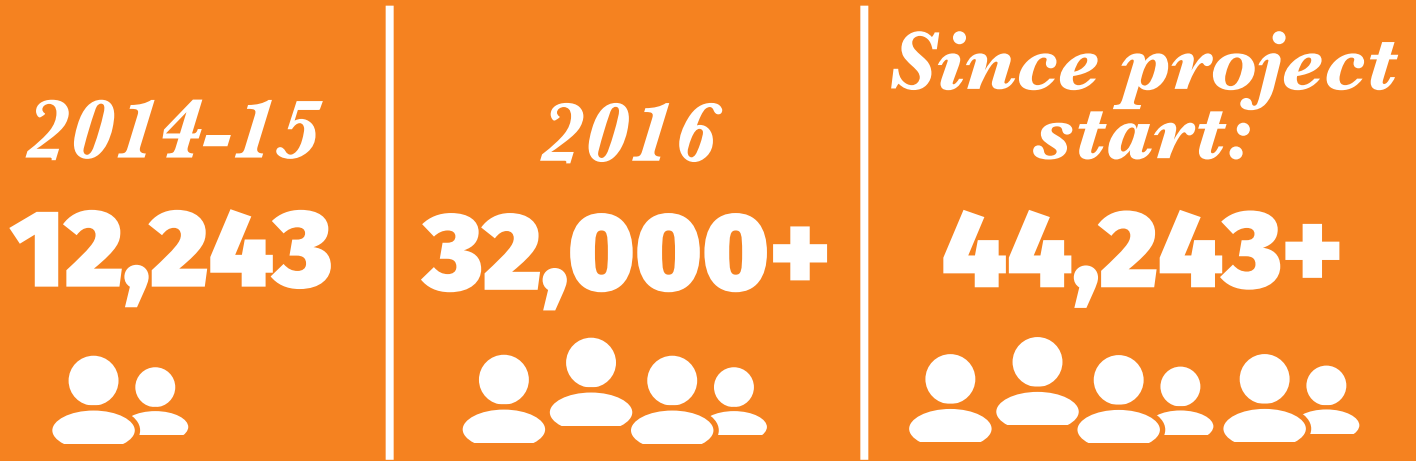
**Community members** who worked with their local refuges and project partners, expanding their knowledge and appreciation of refuges and conservation alike.

**Teachers** from diverse school districts, who have bolstered their knowledge about broader environment-related concepts and refuge-specific content to share what they've learned with students in the coming years.

**Volunteers** of all ages and interests across Southern California, who were engaged to increase conservation in their regions.

**Youth**, who engaged as volunteers—restoring wildlife habitats, connecting with the outdoors and preparing themselves to be the next generation of conservation stewards for the environment.

# Number of Southern Californians Engaged by the SoCal Urban Wildlife Project



*Project leadership has continuously monitored impact, including the number of individuals engaged by the SoCal Urban Wildlife Project. By optimizing the portfolio of project partners, the 2016 efforts reported here reached more than twice the number of Southern Californians relative to the Project's initial year.*



# PROJECT BACKGROUND

*In 2014, refuge managers throughout Southern California responded to the challenge issued by USFWS leadership to connect the urban dwelling population in the region with wildlife and urban refuges. These managers assessed needs and opportunities across the region, and sought ways to engage the Southern California community, while extending existing national and regional efforts.*

## Results of this assessment identified unmet opportunities to:

**Connect** diverse urban youth and adults to nature, thus reversing the current trend of a U.S. population becoming increasingly isolated from nature;

**Create** ways for individuals to interact with the natural environment by observing wildlife, restoring habitats, learning about nature—to help them gain an appreciation and understanding of what nature offers, and why it should be protected;

**Provide** opportunities for historically underrepresented young people to explore and develop an interest in Science, Technology, Engineering and Mathematics (STEM) careers;

**Empower** teachers through increased understanding of effective and creative strategies to instill the wonder of science in their students, and develop the next generation of scientists needed in our changing world; and

**Inspire** people to become tomorrow's stewards of the environment and be aware of their impact on the world around them.



## *What is an* **URBAN REFUGE?**

An urban refuge is a National Wildlife Refuge located within 25 miles of a population of 250,000 or more.

Efforts on and around these refuges continue to bring nature into diverse communities and build shared values for wildlife conservation among community members of all ages and interests.

Urban areas present strategic opportunities to reach new audiences, increase their understanding of the USFWS and its conservation work, and encourage visits to USFWS lands. Urban refuges provide the means to strategically build an urban conservation community that acknowledges, values and takes an active role in the National Wildlife Refuge System.

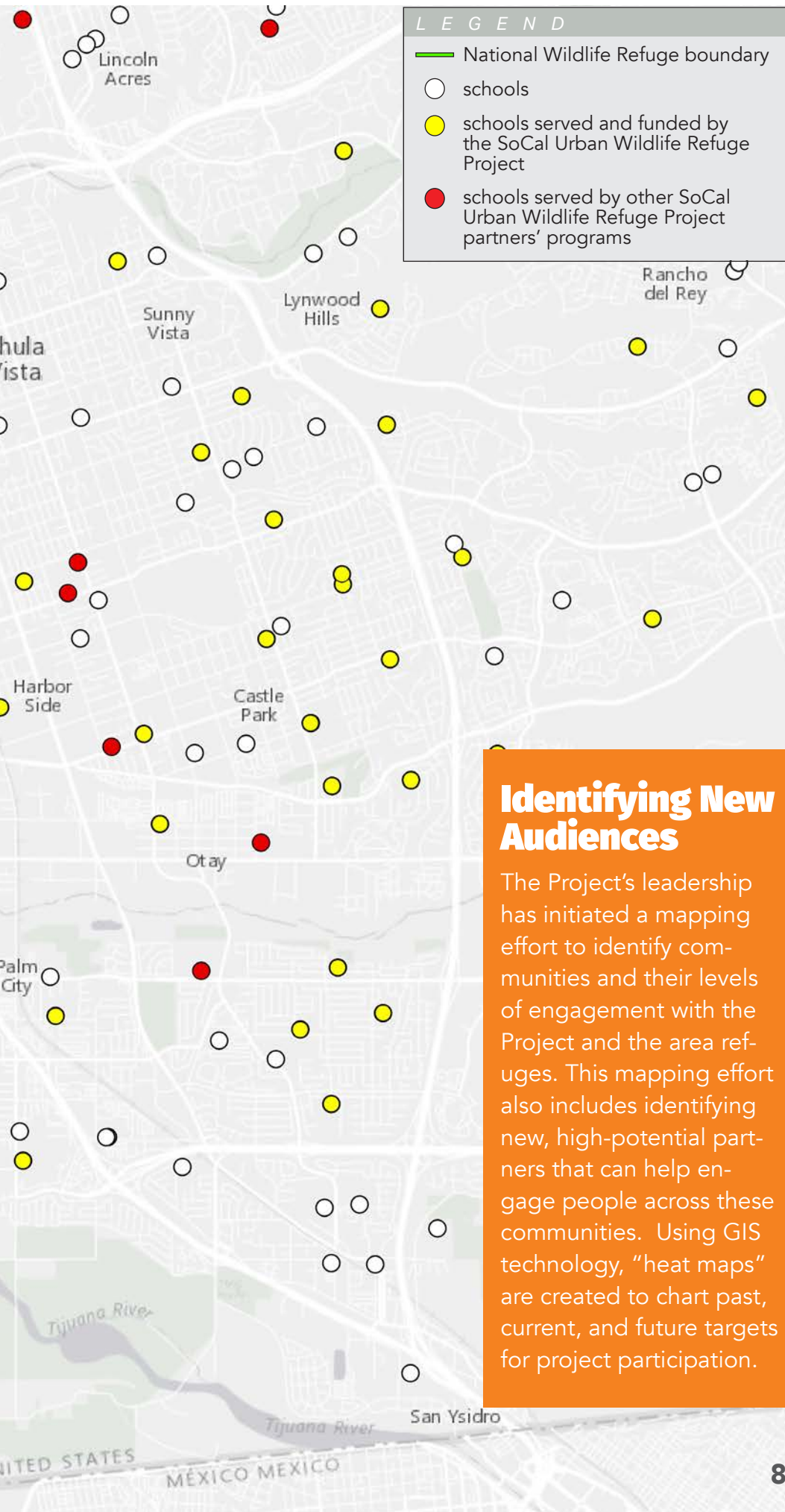


# *What is the SoCal* **URBAN WILDLIFE REFUGE PROJECT?**

The SoCal Urban Wildlife Refuge Project team responded to the national challenge and regional needs by developing integrated programs and services chiefly through partnerships with organizations throughout Southern California. The San Diego National Wildlife Refuge Complex has put the \$1 million annual funding award to work by supporting a suite of partners who are deeply rooted in local communities, use multiple engagement strategies, and serve a demographic reflecting the nation's changing racial and ethnic mix. As a result, the Project serves the second largest metropolitan area in the United States, with over 17 million people who represent the projected racial and ethnic mix expected in the nation by 2060.

Since 2014, in collaboration with our many partners described in detail below, the Project has been closely aligned with the national charge to “get the word out” about urban refuges and the importance of conservation, and deliver a message that conserving wildlife and natural habitats sustains healthy human communities, too. Project leaders also recognize that innovative, varied strategies and approaches are necessary for success, especially in connecting Southern California's urban communities to nature.





**Identifying New Audiences**

The Project's leadership has initiated a mapping effort to identify communities and their levels of engagement with the Project and the area refuges. This mapping effort also includes identifying new, high-potential partners that can help engage people across these communities. Using GIS technology, "heat maps" are created to chart past, current, and future targets for project participation.



**Standards of Excellence**

To guide the efforts in connecting people with nature, the USFWS created eight Standards of Excellence. These standards provide a foundation for engaging urban communities as partners in wildlife conservation, and are used to guide the portfolio of projects featured in the SoCal Urban Wildlife Refuge Project.

1. Know and Relate to the Community
2. Connect Urban People with Nature via Stepping Stones of Engagement
3. Build Partnerships
4. Be a Community Asset
5. Ensure Adequate Long-term Resources
6. Provide Equitable Access
7. Ensure Visitors Feel Safe and Welcome
8. Model Sustainability

# PROJECT PARTNERS & PROGRAMS

To maximize the impact of programs focused on connecting urban communities with the great outdoors, the Project includes the San Diego National Wildlife Refuge Complex at the south end of the Southern California region, the greater Los Angeles area via the Los Angeles Urban Wildlife Refuge Partnership, and Ventura County and portions of Santa Barbara County through the participation of the Hopper Mountain National Wildlife Refuge Complex.

The SoCal Urban Wildlife Refuge Project funded the work of the following nature-based community organizations and projects in 2016 (in alphabetical order).



## Earth Discovery Institute

Engaging Communities in Stewardship and Ecology Meets Technology Programs



## Friends of the Los Angeles

### River–River Rover

Community and School Programs



## Living Coast Discovery Center

Refuge Living Lab, Wildlife Refuge Engaged Careers and SeaPERCH ROV Programs



## Los Angeles Conservation Corps

RiverCorps Program



## **Ocean Connectors** Bird & Habitat Study



## **Outdoor Outreach** Adventure Clubs



## **San Diego Zoo Global** Wildlife Rangers



## **San Diego Zoo Institute for Conservation Research** Outdoor Learning Lab



## **Santa Barbara Zoo** Condor Kids

# **Leveraging the Power of Partnerships, Extending Reach and Impact**

The Urban Wildlife Conservation Program Standards of Excellence provide eight guidelines by which successful programs operate. Standard 3, Build Partnerships, recognizes that successful refuges use formal and informal partnerships with a variety of individuals and organizations within the community to achieve common goals for land stewardship and conservation of natural resources for the benefit of the region.

The organizations featured in this report served as Project partners because they share the goal of connecting people with nature and inspiring them to care about conservation.

## **The following pages describe the contributions of each Project partner and the resulting impact.**

Additional 2016 efforts accomplished with Discover Nature Apps, the USFWS Schoolyard Habitat Program and the Southwest Wetlands Interpretive Association are also detailed.



# EARTH DISCOVERY INSTITUTE

*Engaging Communities  
in Stewardship and  
Ecology Meets  
Technology Programs*

## About

Earth Discovery Institute's (EDI) mission is to build environmental stewardship through innovative, effective science education and community outreach programs that are directly integrated with ecological conservation in San Diego County's foothills and watersheds.



## Meeting the Challenge

The San Diego National Wildlife Refuge (NWR) Complex partnered with EDI to implement two programs, Engaging Communities in Stewardship and Ecology Meets Technology.

Engaging Communities in Stewardship builds public understanding of the purposes and value of habitat conservation at San Diego's NWRs and other conserved lands near urban areas through interpretive events, volunteer stewardship activities, and outreach efforts to new communities.

### Outreach activities included:

- 17 interpretive events including Mother Miguel Trail Education Days, the Spring Valley Library Science Club after-school program, Volunteer Refuge Patrol Training, and refuge-based events with youth from San Diego County Parks and Recreation Teen Centers
- 25 one-time volunteer workday events including working with USFWS Youth Conservation Corps, weeding at the San Diego NWR Par Four area, and planting cactus for cactus wren habitat restoration on the San Diego NWR
- 101 weekly volunteer events focusing on priority species and habitats, which included coastal sage scrub, native grasslands, oak riparian, and Quino checkerspot butterfly habitat



**Ecology Meets Technology is working to build a corps of young technology-savvy environmental stewards and citizen scientists.** This goal is accomplished by combining technological tools, including science based apps, with science curriculum, environmental restoration projects and instruction in civic responsibility. In 2016, Ecology Meets Technology worked with two elementary schools in the South Bay Union School District in the City of Imperial Beach to provide classroom visits and field trips to San Diego Bay NWR and the San Diego NWR.



## Impact

### Engaging Communities in Stewardship

- Engaged **1,862** participants through **27** events targeted specifically to urban communities, totaling **1,573** hours of participation. Participants included **648** elementary school students primarily comprised of Middle Eastern and African refugees.
- Engaged **209** participants at **20** one-time volunteer events totaling **718** hours of participation.
- Retained twelve long-term (weekly) volunteers working with five partner agencies, who completed **926** hours of conservation service.
- Engaged **887** participants in **17** interpretive events for **738** hours of participation, including four events and **247** participation hours in which users of the Mother Miguel Trail on the San Diego NWR were educated about the habitat damage caused by trail misuse.

### Engaging Communities in Stewardship

**2,958**   
*community  
members engaged*

**170** *events  
that targeted a  
diverse range  
of communities  
and community  
members*



## Ecology Meets Technology

- From fall 2015 - spring 2016, the project served **332** Bayside Science Technology Engineering Arts and Music (STEAM).
- Academy students in grades 3 through 5 participated in **996** unique learning experiences, with all students participating in one inland field trip, one coastal field trip, and one classroom visit.
- Through tablets and science based apps, students were introduced to the use of technology in nature, and opportunities to explore how these skills could also be applied in other areas of science and technology. EDI has developed an app that uses a kid-friendly dichotomous key method to help students identify birds common to the San Diego Bay NWR.



## Ecology Meets Technology

**332**  
*students engaged*

**996**  
*experiences for students*



# FRIENDS *of the* LOS ANGELES RIVER—RIVER ROVER

## *Community And School Programs*

### About

The Friends of the Los Angeles River (FoLAR) LA River Rover is a mobile visitor and education center that “brings the river to the people and the people to the river.” The Rover meets audiences where they are—within their schools and communities—to educate them about the unique wildlife resources that exist just outside their front doors.

### Meeting the Challenge

The San Diego National Wildlife Refuge Complex’s partnership with FoLAR supports education and outreach programs throughout the Los Angeles River watershed. The LA River Rover educates and engages audiences who may not be comfortable going to the River, or are unsure how to get there. During the 2016 funding period, FoLAR:

- Hosted 112 community events including nature walks, bike rides, studies, an art walk, and events at “The Frog Spot,” a community gathering space on the River.
- Hosted 15 cleanups at locations along the River.
- Sent the LA River Rover to 42 community events.
- Conducted a Source to Sea Watershed Education program at 40 elementary, middle, high school, and college campuses, which specifically targeted schools that serve a cross-section of Los Angeles’ diverse community.
- Hosted 15 middle schools from the Los Angeles Unified School District’s Beyond the Bell summer program.
- Created and distributed the “LA River Guide,” an activity book for visitors and schools that includes a native plant and bird field guide and a review of River history.
- Partnered with Los Angeles Conservation Corps on more than nine field trips, including The Nature Conservancy’s habitat assessment release at The Frog Spot with California State Senator Kevin De Leon and Los Angeles City Councilman Mitch O’Farrell.

# Visitors Reached by the River Rover

9,224

5,553

2015 2016



## Impact

- Over **9,000** people participated in 15 cleanup programs.
- **9,224** people visited the River Rover at community events—an increase of **66%** over the previous year's reach.
- **420** people participated in nature walks.
- **2,011** students participated in the Source to Sea Watershed Education Program, where each received nine hours of instruction through two in-class lessons, a River Rover visit and a field trip to North Atwater Park.
- **46%** of students (on average) demonstrated proficiency on a test administered before the program; after completing the Sea to Watershed Education program, **90%** of students demonstrated proficiency with the program's content.



# Percentage of Students Demonstrating Proficiency Before and After Program

*Before*  
Program **46%**



*After*  
Program **90%**





# LIVING COAST DISCOVERY CENTER

*Refuge Living  
Lab, Wildlife  
Refuge Engaged  
Careers and  
SeaPERCH  
ROV Programs*

## About

The Living Coast Discovery Center is a nonprofit zoo and aquarium located on the San Diego Bay NWR. The Living Coast connects people with coastal animals, plants, and habitats and encourages them to explore the coastal region. The San Diego NWR Complex partnered with the Living Coast to develop a Student Scientist Series presented to local schools and organizations, with the goal of building students' science, technology, and engineering skills.

## Meeting the Challenge

- Living Coast developed and presented a new program for Refuge Living Lab field trips, which provided a hands-on, interactive experience where students learn why refuges are important and what animals live there, and about the research conducted in the San Diego Bay NWR and other refuges nationwide.
- Wild Refuge Engaged Careers (Wild REC) offered an overnight adventure that introduced students to science-based careers and highlighted refuge-based work through engaging and interactive workshops presented by local scientists.
- The SeaPERCH ROV program provided students in grades 6-12 with the training and skills needed to build an underwater Remotely Operated Vehicle (ROV), which students used to recover lost objects, cap loose equipment, and perform species counts underwater in the Living Coast's 22,000-gallon shark tank.





## Impact

- 77 Refuge Living Lab program field trips resulted in 1,828 people visiting the San Diego Bay NWR.
  - 70% of participating teachers came from Title I schools, where the majority of students come from low income families.
  - 65% of participating teachers were first-time visitors to the San Diego Bay NWR.
  - Leveraging Project funds, the Living Coast Discovery Center received the National Park Foundation Every Kid in the Park grant for \$9,000 to offset the cost of transportation for the Refuge Living Lab program, resulting in transportation for students who otherwise would not have been able to participate.
- The program trained 121 teachers with new strategies and content to facilitate STEM learning for their students.
- Wild REC hosted four overnight adventures involving 150 youth, with a deliberate focus on young women and minorities, who participated through the YMCA, Girl Scouts of San Diego, BeWISE and Mana de San Diego.
- 147 students built and launched ROVs in the shark tank at the Discovery Center as part of the SeaPERCH ROV program, where students learned how ROVs could be used in real world careers.

**70%**  
*of teachers came from  
 low-income schools*



*Title I schools are those with a large percentage of low-income students, as defined by state and federal guidelines. They are especially important to target because these schools often have limited opportunities for out-of-school learning, relative to those in more affluent areas.*



**65%**  
*of teachers  
brought their  
students to a  
refuge for the  
first time*

# LOS ANGELES CONSERVATION CORPS

*River Corps*

## About

Los Angeles Conservation Corps—River Corps provides at-risk young adults with job skills and training, education, and work experience with an emphasis on conservation, ecology, biology, and service projects that benefit the community.



## Meeting the Challenge

To optimize the available natural environment around the Los Angeles River and engage the community in preserving this space, the River Corps hired a crew of 15 inner city, at-risk young adults (ages 18-25) and trained them in environmental education, community outreach, and habitat restoration. The River Corps served as River Ambassadors and led community outreach activities including cleanups intended to connect the community with the natural environment.

## The River Corps crew:

- Restored and revitalized sections of the Los Angeles River.
- Cleaned up seven miles of river corridor by removing litter and graffiti, hauling away bulky items, and removing invasive vegetation.
- Received training in watershed habitat, native landscaping, biodiversity, endangered species, water quality management, invasive species, and conservation, which expanded their understanding of natural systems, and their awareness of careers in conservation.
- Learned about the history of the Los Angeles River.
- Toured sites including the Los Angeles River Center & Gardens, Hyperion Water Treatment Plant, Los Angeles Natural History Museum, and LA Conservation Corps nursery at Griffith Park.



## Impact

### During 2016, the River Corps:

- Hired, trained, and provided work experience to **15** young adults ages 18 to 25 from inner city, low-income neighborhoods.
- Maintained **106,843** linear feet along the Los Angeles River.
- Removed **64,143** square feet of graffiti, **161,909** square feet of invasive vegetation, **323** bulky items, and 60 tons of debris.
- Cleaned out **80** storm drains.
- Led “River Wednesdays” events in partnership with Friends of the LA River, bringing young people ages 7-12 to the Los Angeles River for nature learning activities.
- Led **81** “Paddle the LA River” kayaking trips along the Los Angeles River exposing **981** participating paddlers, including **192** youth participants, to the natural resources present within this urban river.

*Joining the River Corps will always be a significant moment in my life. Without it I would have never known that environmental science is my passion. Learning about the plants and animals and being able to work outside with nature gives you a whole new perspective on the environment. I now am dedicated to pursue a career in the environmental field, to do whatever it takes to help preserve our planet one step at a time.*

*~Ivan Ponce  
River Corpsmember*





# River Corps — By the Numbers

<i>Activity</i>	<i>2016</i>	<i>2014-2016 Project Total</i>	<i>= Equivalent</i>
<b>River shoreline maintained</b>	<b>106,843</b> linear feet	<b>254,512</b> linear feet	Over <b>48 miles</b> of maintained river shoreline
<b>Graffiti removed</b>	<b>64,143</b> square feet	<b>103,443</b> square feet	The surface area of almost <b>two</b> football fields
<b>Storm drains cleaned</b>	<b>80</b> drains	<b>142</b> drains	
<b>Debris removed from river area</b>	<b>69</b> tons	<b>120</b> tons	<b>40 roll-off dumpsters</b>



# OCEAN CONNECTORS

## *Bird & Habitat Study*

### About

The mission of Ocean Connectors (OC) is to educate, inspire, and connect underserved youth living in Pacific coastal communities through the study of migratory wildlife.



## Meeting the Challenge

OC and USFWS share the commitment to connect youth to nature and inspire the next generation of conservation stewards. Using a canvas of coastal open space, and through the lens of the wildlife that inhabits these areas, OC's programs engage young people in hands-on, authentic experiences.



### During 2016, OC:

- Provided over **100** class presentations in the National City School District—a region adjacent to the San Diego Bay National Wildlife Refuge (NWR).
- Led **20** 4th grade field trips to the San Diego Bay NWR - Sweetwater Marsh Unit.
- Organized **20** youth-led habitat restoration outings at the San Diego Bay NWR - South Bay Unit.
- Led students in producing video delivered environmental messages, artwork, and letters in Spanish describing their learning experiences and sharing them with their peers in Nayarit, Mexico.



## Impact

- The program engaged **1,177** National City students, **47** parents and **40** teachers in field trips to the National Wildlife Refuges in San Diego County.
- Sixth grade students planted **686** native plants, removed **75** pounds of litter, and **200** cubic feet of invasive plants, and applied **3,594** pounds of mulch at restoration sites within the San Diego Bay NWR.
- The program realized a **98%** program satisfaction rating from the **40** teachers who engaged in the programs.
- Through learning afforded by their OC programs, students realized an eight (**8**) percentage point gain in knowledge of coastal conservation, environmental science, and stewardship, a seven (**7**) percentage point improvement in conservation behaviors, and a seven (**7**) percentage point improvement in their awareness of the environment.

A photograph showing two children, a girl and a boy, standing on a dirt path overlooking a coastal landscape. The girl, on the left, is wearing a white shirt and dark pants, and is looking through binoculars. The boy, on the right, is wearing a green shirt and dark shorts, and is also looking through binoculars. In the background, there is a large body of water, likely a bay or estuary, with some low-lying vegetation and a clear blue sky.

**Action,  
followed  
by impact**

# Sixth grade OC students...



planted

**874** *native plants*

---

removed

**70** *pounds of litter*

---



removed

**200** *cubic feet of invasive plants*

---



applied

**3,594** *pounds of mulch*

*Ocean Connectors Photo Credit: Anna Mar*



# OUTDOOR OUTREACH

## *Adventure Clubs*

### **About**

Outdoor Outreach (OO) provides youth in San Diego County with opportunities to experience the outdoors through recreation, education, and stewardship. The organization focuses on youth from lower income households, with demographics that demonstrate a diverse population: 44% Latino, 14% Multiracial/other, 13% African-American, 11% Caucasian, 10% Asian/Pacific Islander, and 8% Middle Eastern. These youth, who would otherwise not have the opportunity to experience nature, try mountain biking, paddle boarding, hiking, surfing—among other activities—and participate in team building activities, leadership training, and stewardship projects including cleanups, native species plantings, and storm drain stenciling.

## Meeting the Challenge

During the reporting period, OO:

- Offered 92 programs in local refuges and adjacent areas.
- Connected 540 urban youth to local wildlife refuges and the educational experiences they provide.
- Trained and engaged more than 60 community volunteers.
- Partnered with 27 schools and community organizations to access youth participants—including eight organizations that had not previously partnered with OO.
- Publicized the USFWS collaboration through social media, the organization's annual report and a feature in the print publication, *San Diego Voice & Viewpoint*.



## Impact

OO surveyed participants before and after each outing to measure the project's success in increasing their knowledge of and attitudes towards National Wildlife Refuges. The survey results reported:

- A 10% increase in the number of respondents who agree they enjoy nature and being outdoors, as measured by a comparison of pre- and post-survey responses.
- 95% of participants responding that protecting the environment is extremely important or important to them personally.





*“The youth served through the Urban Refuges initiative came from 27 partner schools and youth-serving organizations across San Diego County, with a special focus on southeastern San Diego, an area recently designated a ‘Promise Zone’ by the federal government because of its low educational attainment, concentrated poverty, rising crime, and youth unemployment rate, which is double that of the City of San Diego as a whole.*”

*The sense of belonging, academic enrichment, and connection with peers and mentors that these programs provided encouraged students to attend school, made them less likely to engage in risky behavior, and can lead to positive career and civic engagement outcomes later in life.”*

*~Ben McCue  
Executive Director  
Outdoor Outreach*

# SAN DIEGO ZOO GLOBAL

## *Wildlife Rangers*



### **About**

San Diego Zoo Global is a conservation organization dedicated to the science of saving endangered species worldwide by uniting its expertise in animal care and conservation science to inspire passion for nature. San Diego Zoo Global's Education Department offers summer camps, wildlife sleepovers, programs for kids and teens, teacher workshops, and a wide array of outreach programs for pre-school to high school students throughout San Diego County.



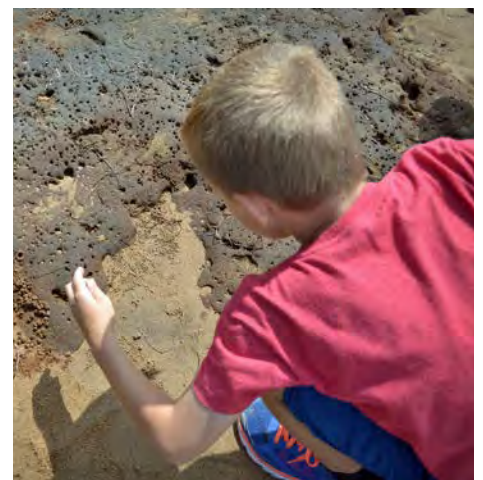
## Meeting the Challenge

Wildlife Rangers is a multi-session summer and year-round program resulting from collaboration between San Diego Zoo Global, South Bay San Diego Elementary Schools, South Bay YMCA, and San Diego Bay NWR. The program promotes commitment to strengthening the relationship of urban wildlife refuges to the communities that surround them, by teaching children about stewardship, responsibility, and engagement.

The “Wildlife Rangers” program targeted grades K-6 at South Bay elementary schools and YMCA sites. All children participated in an assembly where they learned about the importance of local wildlife refuges and participated in activities to test their Wildlife Ranger skills.

### Older students took a field trip to the San Diego Bay NWR and:

- Experienced a guided tour with USFWS Rangers and Zoo staff.
- Restored habitat by planting milkweed for Monarch butterflies and pollinator-friendly native plants on the refuge.
- Rotated through four discovery stations—plankton trawl investigation, habitat restoration, mock radio telemetry tracking and beach clean-up.
- Discovered firsthand some of the job responsibilities of Refuge Rangers.
- Learned to help protect wildlife by recycling and growing native plants.





## Impact

- 3,500 children attended assembly programs presented by a Zoo Educator and the Zoo's zany researcher character, "Dr. Zoolittle."
- Of those 3,500 children, over 700 participated in the field trip to San Diego Bay NWR - Sweetwater Marsh Unit.
- After attending the YMCA program, 21% more of participating students were able to identify joint conservation efforts of San Diego Zoo Global and USFWS, and, following school programs, 14% more students were able to correctly identify the definition of biodiversity.

## Percentage of Students Correctly Defining the Term "Biodiversity"

*Pretest* 53%

*Posttest*  
67%

+14%



**Percentage of Students Correctly Identifying the California Condor as a Local Species that San Diego Zoo Global and USFWS are Working Together to Save**

*Pretest* **59%**



**+14%**

*Posttest* **73%**

# SAN DIEGO ZOO INSTITUTE *for* CONSERVATION RESEARCH

*Outdoor Learning Lab*

## About

San Diego Zoo Global's vision is to lead the fight against the extinction of species. Within the organization's Institute for Conservation Research (the Institute), the Conservation Education Division fosters ecological literacy and stewardship by building capacity within communities to support species conservation and coexistence between humans and nature. The Division is connecting teachers and students to conservation science through hands-on, innovative research experiences in the lab and in the field.



## Meeting the Challenge

The Institute's programs for teachers and students inspire and train new generations of conservation scientists. In 2016, 20 high school science teachers from schools throughout Southern California experimented with sophisticated scientific tools and techniques with experts in wildlife conservation. These teachers then brought 554 students to the San Diego Zoo Safari Park to observe endangered species and see current field research in action.

### Through these programs, teachers:

- Performed lab testing explored the global wildlife implications of climate change and habitat destruction, learned about microtrash and lead poisoning problems in California condors, and explored field-based research techniques.
- Monitored biodiversity in the Institute's Eddy Family Outdoor Learning Lab, getting a firsthand look at the many conservation projects in Southern California.
- Applied what they learned to teaching Next Generation Science Standards and incorporating fields such as engineering, computer science, bioacoustics, and environmental studies into lessons in biology and conservation.

### Teachers returned to their classrooms and integrated their new skills and knowledge into their instruction. As a result:

- 554 students from Title 1 schools engaged in hands-on, real-time conservation research.
- Students learned about how science is used for conservation, and observed scientists at work; saving endangered species through learning experiences that included polar bear bioacoustics, African elephant reproductive endocrinology and California condor genetics.



## Impact

- Teachers gave the program an overall rating of **9.6** on a 10-point scale.
- Teachers' content/objective knowledge averaged an overall increase of **31** percentage points in between pre- and posttest.
- Students of participating teachers realized a statistically significant increase in their knowledge and understanding of presented conservation topics, with an average content knowledge increase of **48** percentage points.

## Teacher Perspectives about their Experiences

*For science and non-science teachers alike, conservation is an important topic that should be addressed in all classrooms—writing, reading, data collection, analysis, etc. Thank you for one of the most inspirational professional development opportunities of my career.*

*I have grown so much in the last four days and can now make connections to concepts that are important and relatable to our students, hopefully helping to preserve the future.*



**Gain in Teacher Content Knowledge for Participating Teachers and Their Students**

**Teacher Impact**

*Pretest* **49%**

*Posttest* **80%**



**+31%**

**Student Impact**

*Pretest* **25%**

*Posttest* **73%**



**+48%**

# SANTA BARBARA ZOO

*Condor Kids*

## About

Condor Kids joins the SoCal Urban Wildlife Refuge Project, Hopper Mountain National Wildlife Refuge Complex, Ventura Fish and Wildlife Office, Santa Barbara Zoo, and Cornell Lab of Ornithology to teach urban students and surrounding communities about conservation efforts for the California condor.



## Meeting the Challenge

Through research and collaboration between Fillmore Unified School District (FUSD) teachers, Ventura Fish and Wildlife Office staff and Santa Barbara Zoo staff, the CondorKids project:

- Developed a mobile app called Condor Country, to showcase management strategies that have helped the California Condor Recovery Program succeed (2,600 downloads of the app were made between the October 23 launch and year's end).
- Conducted a series of teacher trainings, site visits, and teacher follow-ups to prepare these educators to implement the curriculum developed in 2015 as part of the Project's work.
- Oversaw teachers implementing the curriculum in 3rd grade classrooms.







## Impact

- All **3rd grade** students in FUSD completed a Field Experience at the Santa Barbara Zoo focusing on condors, including simulated nest entry (rock climbing), telemetry practice, observation of feeding, and telescope practice.
- A total of **13** classes, and over **350** students participated, which more than doubled the previous year's participation rate.
- Through focus group interaction with teachers, team members completed an evaluation of the curriculum and identified new needs for future curriculum and program efforts.
- FUSD established Wi-Fi connectivity for all schools, which allows students to engage with live condor nest cams and other curriculum-relevant material available online.



# *Pasadena Audubon Society Young Birder's Club becomes official Condor Ambassador*

On August 17, 2016, members of Pasadena Audubon Society's Young Birder's Club were recognized by the Hopper Mountain National Wildlife Refuge Complex and the California Condor Recovery Program for their dedication and outstanding efforts in environmental education and conservation of the California condor.

*"Members of the Young Birder's Club are enthusiastic ambassadors for the California condor and have conducted volunteer outreach education with their peers and community members at various events around Southern California," said Susan Gilliland, Young Birder's Club mentor.*

*"These kids are true conservation heroes, educating the public about why it is important to keep common birds common as well as explaining why it is important to conserve species like the California condor," said Project Leader Michael Brady.*



Twenty-five young birders received certificates of appreciation and recognition. Ten-year old Emmie Cloughetry accepted the plaque presented by Project Leader Brady on behalf of the club members. Brady said, "There are 25 kids currently in the Young Birder's Club, which is more kids than the 22 condors that were left in 1982. The young birders are an inspiration because some may follow the path to become wildlife biologists and continue the California condor recovery efforts."

Source: USFWS Field Notes  
California-Nevada Offices, August 31, 2016

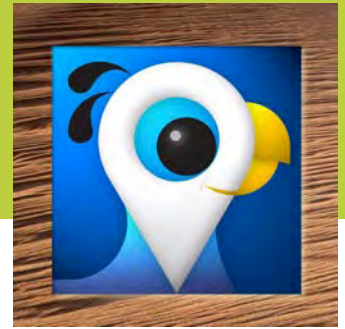
# *Additional* **ACCOMPLISHMENTS** *Realized through* **2016 PROJECT SUPPORT**

## Celebrate Shorebirds Internships Program

The Project provided support for the Celebrate Shorebirds Internship Program, which trained two interns to monitor shorebirds and conduct outreach to the local community. Interns **Anita Sanchez, 18**, and **Katelyn Gomez, 21**, worked together and with USFWS staff on many shorebird-related endeavors, which included:

- Conducting nesting shorebird surveys.
- Leading habitat restoration projects.
- Creating educational materials to teach visitors about the Centennial of the Migratory Bird Treaty.
- Working with local schools to create garden spaces.
- Leading interpretive walks along the Bayside Birding and Walking Trail to teach local community members about the shorebirds on the San Diego Bay National Wildlife Refuge.

## Discover Sweetwater & South Bay Multilingual Apps



New smartphone apps are a result of the Project's work with Discover Nature to provide an exciting multilingual mobile interpretation strategy. In collaboration with the San Diego Bay NWR, Wild Eyed Creative Services' Discover Nature App set out to create a smartphone tool that would appeal to the refuge's diverse visitors, and offer an engaging way for the public to learn about and appreciate the Refuge's unique wildlife and habitat. The goal was to create bilingual modules for the Refuge's Sweetwater Marsh and South Bay units that would be built on Discover Nature App's award-winning, GPS-guided, interactive game platform. The apps were developed, pilot tested with refuge visitors, and then released for use in 2016.

# Habitat Restoration Projects

Project funds increasingly are supporting schoolyard habitat restoration projects. The following three school sites provide examples of supplemental funding accomplishments.



## *Esperanza Elementary School Los Angeles*

Esperanza Elementary is a Title 1 school located along Wilshire Boulevard near MacArthur Park in Los Angeles. The school serves 773 students in grades Kindergarten through 5. Working with a range of local organizations including the Los Angeles Audubon Society, the school community set out to create a natural habitat within an urban school-yard that could serve as an outdoor classroom. The habitat is filled with native plants, insects, pollinators, lizards, and birds that teachers and students can observe and study.



On November 12, 2016, students, parents, and community members gathered at the school to complete the installation of native plants at the new schoolyard habitat at Esperanza. The Project provided the funding for materials—including pathway borders and mulch, plants, and the temporary irrigation system—to support Esperanza Elementary School’s ongoing schoolyard habitat work.



Just weeks later, an Esperanza Elementary student spotted a burrowing owl examining the new habitat. Creating habitat for wildlife and using that space for experiential learning is what the schoolyard habitat program is all about.

**Source:** Excerpted from *Los Angeles Audubon Society Blog*

<http://losangelesaudubon.org>

## Anza Elementary School, El Cajon



The Anza Schoolyard Habitat project began in March 2015 when more than 100 students and their families built trails, created mounds for different ecosystems, and cleared weeds called “goat-heads.” Since then, the school’s dirt lot has become a welcoming habitat for birds, butterflies, and bees.

Students who have been there for a few months or years enjoy learning together with students who are brand new. Yousif, a new first-grader at Anza this year, experienced this first hand. “Being in a new place is already kind of scary,” she said. The school site was “like a big sand box,” said Mary Duffy, EDI instructor. “The students loved moving dirt! The joy of being outside and getting their hands dirty, and the freedom to giggle and laugh. Learning out here and actually creating the habitat makes students feel super empowered to know that they can do it.”

The immigrant children who have settled in El Cajon with their families are altering the course of their lives. From never attending school or playing outside, to teaching each other and even other adults about native nature, these students are creating a sense of place here on American soil.

**Source:** Excerpted from *USFWS Pacific Southwest Region Blog*, January 12, 2017



## Clara Barton Elementary, Long Beach



On May 26, 2016, Clara Barton Elementary School had a reason to celebrate. Not only was it their open house night, but a time to cut the ribbon on a new schoolyard habitat. About a year in the making, the ~1/16th of an acre dirt patch laden with compacted asphalt chunks has transformed into a blossoming California native plant garden. It is indeed an oasis amid a concrete and blacktop jungle. Teacher Paula Spenker led the school team to create the garden, working with Project staff to make it possible.

Over the past two springs, the elementary school has visited the Seal Beach National Wildlife Refuge to learn about native plants and birds, and how to track them, thanks to the outreach staff from the San Diego NWR Complex and Friends of Seal Beach volunteers. Buses were funded by the Project to make these trips possible for each fourth grader at the school in 2015 and 2016.

It's only the beginning of a very bright future for Barton Elementary School. Throughout the next year, the school is undergoing a million-dollar redesign of their playground and will install a new state-of-the-art health center.

**Source:** Excerpted from *San Diego NWR Complex Weekly Highlights*, May 21 – June 3, 2016



# *New* PARTNERS JOINING THE PROJECT'S 2017 WORK

Throughout 2016, the Project's leaders have monitored existing partners' programs and their impact, and received proposals from prospective partners interested in joining the program. In 2017, the Project's work will be enhanced by the addition of the San Diego Audubon Society and Southwest Wetlands Interpretive Association.

## San Diego Audubon Society Becomes a Project Partner

San Diego Audubon Society's mission is to foster the protection and appreciation of birds, other wildlife, and their habitats through education and study, and advocate for a cleaner, healthier environment. Sharing common mission elements with USFWS, San Diego Audubon Society will join the Project in 2017. The organization will offer two programs to reach new audiences and enhance the Project's existing portfolio:



- **Sharing our Shores:** South Bay will conduct 17 programs with approximately 600 4th-6th grade students within the South Bay Union School District. The program is a science, art, and habitat restoration project that teaches elementary students

about the biology and threats to migratory shorebirds through in-class lessons and field trips to the San Diego Bay NWR's Bayside Birding and Walking Trail.

- **OutdoorExplore!** is an after-school enrichment program that introduces students to natural spaces in their local communities and inspires them to develop a stewardship ethic for their neighborhood's natural environment. The program will be offered in two configurations that include nine, four-week environmental education programs and two family hikes—for a total of 38 program days. The program is being offered to San Diego County elementary and middle school students and will provide approximately 1,200 visits to nearby nature spaces.

## Southwest Wetlands Interpretive Association Funded to Reach Imperial Beach Students

Southwest Wetlands Interpretive Association (SWIA) is dedicated to the acquisition, preservation and restoration of wetlands. In 2016, the Project provided grant funding for SWIA to provide transportation to students in Imperial Beach. This funding for buses will enable students to participate in educational tours at the Tijuana Slough NWR and increase the number of students who visit a refuge in coming years.



## Cross-Program Evaluation Strategy Effort Launched

From the outset, the Project has been committed to working with partners to monitor and document results by checking progress along the way, and at the conclusion of each funding cycle. This report, the second in a series of annual reports, demonstrates one effort to meet that commitment. In 2016, Project leaders collaborated with Dr. James Marshall, Professor at San Diego State University and expert in informal science education evaluation, to develop an evaluation strategy to enhance individual partner program evaluations and assess the collective impact of this work across all partner programs. The goal is to collect information to understand the Project as it unfolds, and describe progress toward defined goals. These new evaluation efforts began in 2017. It has been said that the whole is greater than the sum of its parts. This evaluation work investigates that proposition, and will inform the continuous improvement of the SoCal Urban Wildlife Refuge Project.



In its third year, the SoCal Urban Wildlife Refuge Project sustained and expanded partnerships with organizations, directly impacting over 32,000 Southern California residents with programs highlighting conservation and opportunities to connect with nature.

The sum total of these funded efforts has made an indelible mark on the Southern California region. Among the outcomes: students are learning about the California condor's environment and conservation efforts for the majestic bird; teachers are bolstering their knowledge about conservation as they teach our next generation of conservation stewards; at-risk youth are engaged in conservation work around the Los Angeles River and making a difference for their community and their futures.

The SoCal Urban Wildlife Refuge project continues today and into the future with a commitment to continuously evaluate and improve the work being done, and to monitor the outcomes achieved through this important, future-oriented work.



**urban  
wildlife  
refuge**

*The SoCal Urban Wildlife Refuge Project staff can be reached at:*  
**San Diego National Wildlife Refuge Complex**  
1080 Gunpowder Point Drive Chula Vista, CA 91910  
619-476-9150 ext. 105