



FINAL REPORT

# USACE GIS Corps



2017

Sacramento District

Program Dates: 10/9/2016 – 1/27/2017

Leader(s): Matt Duarte

# Executive Summary

The mission of SCA is to build the next generation of conservation leaders and inspire lifelong stewardship of our environment and communities by engaging young people in hands-on service to the land.

SCA was founded in 1957 by Liz Putnam, a college student who believed that the passion, talent, and hard work of young people could be a force for tackling the challenges facing America's public lands. Today SCA provides opportunities for thousands of young people to develop conservation values and explore pathways to green careers, strengthen their leadership skills, and deepen their sense of responsibility to others and to the world. Young people emerge from SCA with fuel for their continuous growth and with a sense of empowerment to take action for the issues that they care about, in conservation and beyond. SCA nurtures thriving youth and thriving landscapes.

While SCA and the US Army Corps of Engineers (USACE) have partnered in the past, the 2017 GIS Corps was a pilot project signifying a new opportunity for both organizations. Perhaps surprising, USACE recreation sites receive some of the highest visitation of any areas in the federal system. With this in mind, the agency recently became eligible for Federal Lands Transportation Program (FLTP) funding to support improvement of USACE public roadways and parking areas. Further, USACE utilizes Recreation.gov, an online reservation service for federal land agencies designed to streamline the visitor experience. As geospatial data is critical to both of these programs, USACE is in need of an expanded and improved database representing its varied transportation and recreation assets.

USACE turned to SCA and the GIS Corps team to begin fulfilling this need, using ten recreational project sites throughout California's Sacramento District as the testing ground for a data acquisition model that can be replicated throughout the nation. Project sites spanned the Central Valley and Sierra Nevada foothills from as far north as Chico (Black Butte Lake) to as far south as Bakersfield (Success Lake). The team travelled to each location, establishing a basecamp for approximately a week at a time, while using survey grade GPS receivers to collect project data. While on site, the team worked closely with USACE personnel to better understand the location, extent, and characteristics of relevant assets, as well as to obtain access to otherwise restricted areas.

While field-collected data was the foundation of the project, as it ensures a high level of data integrity, additional efforts were needed before arriving at a finished product. After importing and refining the data using specialized desktop software, review meetings were held at each project site to guarantee that the database accurately represents USACE transportation and recreation assets down to a level of fine detail.



*Englebright Lake*

# Conservation Impact

Through SCA, young people have the opportunity to complete meaningful work that makes a positive impact on the world around them. SCA projects make tangible and positive impacts to the land, protecting and restoring parks and public lands, educating visitors about conservation, and increasing access to urban green spaces.

Summary of Accomplishments	
Certifications	<b>9 certifications</b>
Collecting Data	<b>3,335 features</b>
Creating Reports & Products	<b>3 items</b>

The 2017 GIS Corps was able capture, organize, and deliver an invaluable spatial database for the USACE Sacramento District. With this wealth of information at their disposal, the district can view, analyze, and share data in ways – not previously possible – that will better public access and experience of recreation offerings.

As mentioned in the previous section, geospatial data is a necessary component for two programs supporting USACE recreation – FLTP and the Recreation.gov website. With a comprehensive spatial inventory of the district’s road and parking network, the agency is eligible for FLTP funding to maintain and improve public transportation facilities. USACE roads are heavily traveled, especially in peak seasons, and the quality of such facilities invariably influences visitor access and ease of navigating recreation sites.



*Beaver dam at Martis Creek Lake*

Further, for many recreationists hoping to visit public lands, the Recreation.gov website is part of the pre-trip planning process – site-specific information, campsite and picnic reservations, trail permits, and more are available for the twelve partner agencies including USACE. The spatial database of district-wide recreation assets will allow USACE to expand their website presence, thereby streamlining visitor preparations with new offerings and information. This is also sure to attract individuals previously unfamiliar with the variety USACE offerings, thus boosting the agency’s reputation for managing recreation destinations.

While these are the most important and anticipated benefits, there are other ways in which USACE sites will benefit from the GIS Corps data collection project. For example: road network data can be shared with Emergency Management Agencies to improve public safety and response times; maps can easily be made with internal and/or public relevance; and context will be available for additional spatial datasets (e.g., the location of other USACE assets will be easier to interpret when overlaid on a map containing the provided road network and recreation assets).

## Participant Impact

In every SCA experience, participants complete projects that solve real conservation challenges and see the tangible results of their labor. Through this work they learn how to conserve resources and protect the planet, learn why their conservation work projects are critical to that effort, and discuss with teammates and leaders what they could do to address environmental issues after SCA; including exploring possible careers in conservation or green jobs and discussing their academic and career goals. SCA experiences provide participants with opportunities to lead their peers, engage in problem-solving, conflict resolution, and group decision-making, and ultimately reflect on the ways the experience is impacting them.

The 2017 GIS Corps, from the outside appearing to simply represent a data collection effort, was well-rounded in many of the ways just described. Most significantly, the team was able to develop invaluable skills on account of this being a pilot project. Members were not afforded (what at times felt like must be) the luxury of assuming already defined roles within an established project. From day one till the last, problem-solving, resourcefulness, and teamwork were necessary in developing protocols and strategies for acquiring essential data. This led to a less common, yet appreciated, level of project ownership for individuals still early in their career explorations.

This sense of ownership was further reinforced through leadership development tactics. As a matter of expectation, each member (on a rotational basis) assumed the role of hitch leader. For an entire work week at a time, individuals carried additional responsibilities that supported project functioning: developing and communicating work plans, holding primary contact with agency partners, as well as overseeing workday and basecamp logistics. In addition to honing these skills, hitch leaders received peer-feedback regarding performance which was integrated into successive attempts at the role. While challenging, members unanimously felt that this position was instrumental in their growth as part of the crew.

Finally, members engaged with community-building practices, as the odds of four people successfully living and working together for four consecutive months are greatly improved when approached with intention. Soon after meeting one another, the team collaboratively created a group agreement – a document stating an agreed-upon set of communal expectations. To ensure the agreement remained relevant, weekly meetings included time to assess the health and well-being of the community. In these sessions, though certainly not limited to them, members were able to practice skills in communication, conflict-resolution, and personal accountability that are broadly transferrable.

As a testament to the strength of this experience, each member had intentions – or already established plans – for continuing in the fields of conservation and geographic information systems in the months following his or her departure.



Team Roster (from left)

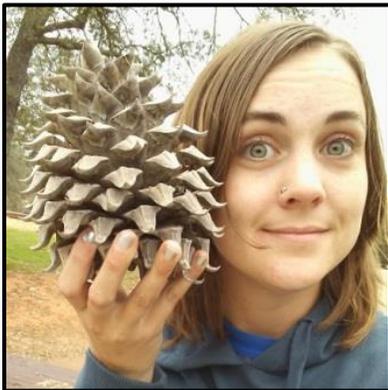
<b>Matt Duarte</b>	Davis, CA	<i>Leader</i>
<b>Rebecca Schaub</b>	Lombard, IL	<i>Member</i>
<b>Ben Campbell</b>	Cherry Valley, NY	<i>Member</i>
<b>Leah Chelsky</b>	Happy Valley, OR	<i>Member</i>
<b>Sam Wentworth</b>	Morgan Hill, CA	<i>Member</i>

## Great Stories



### Ben Campbell – Member

“Working with the Army Corps of Engineers was a highly rewarding experience. I've worked with SCA multiple times since my graduation in May of 2016 but never in this capacity. This experience provided a much needed service to the Army Corps and broadened my understanding of public lands.”



### Rebecca Schaub – Member

“Our field season working with the US Army Corps of Engineers was fun and rewarding. I was able to learn about advances in federal positions, as well as make connections with Corps rangers. The SCA allowed me to strengthen my leadership skills and learn to be a supportive crew member.”



### Sam Wentworth – Member

“My time with SCA was very rewarding. I was able to travel California, explore public lands, and gain valuable skills and experience. The sense of community and teamwork was very motivating.”

## Acknowledgements

The 2017 GIS Corps would like to thank everyone who played a role in making this project possible: Meredith Bridgers for her leadership and expectation setting early in the season; Ben Silvernail for his patience with process and thoughtful feedback regarding an evolving dataset; Jenna Peterson for her assistance in coordinating field site visits and meetings; and to countless others throughout the USACE Sacramento District who were welcoming and offered assistance critical to our efforts.

# Appendix

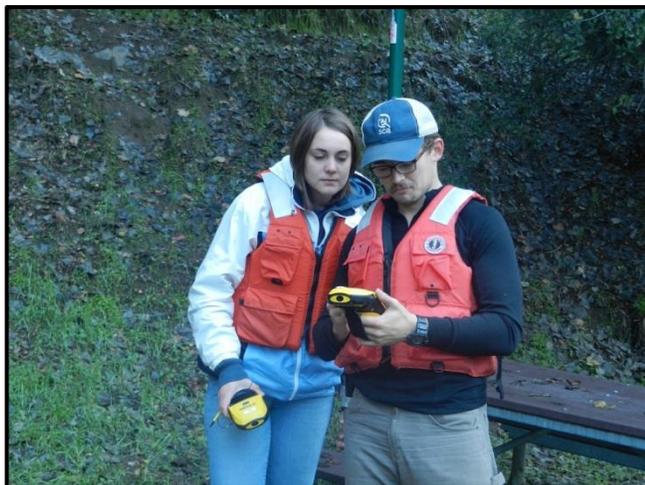
## Photographs



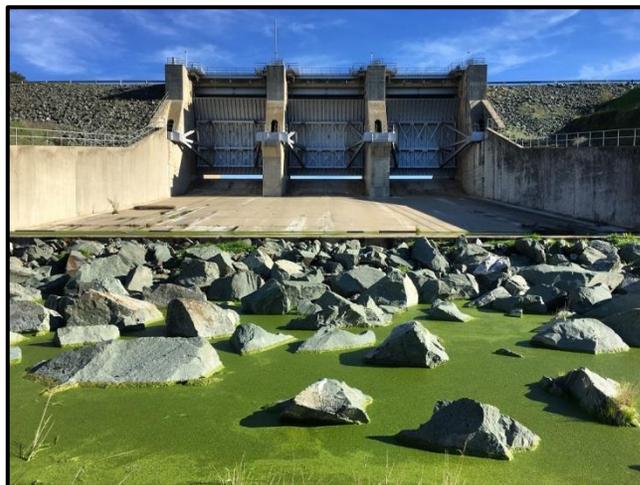
*Ben Campbell stepping out of the communal tent during sunset at New Hogan Lake*



*Matt Duarte collecting data at Martis Creek Lake*



*Rebecca Schaub and Ben Campbell at work*



*New Hogan Lake tainter gates*



*Sam Wentworth capturing amphitheater coordinates at Success Lake*

## Detailed Project Outputs

Category of Work Amount Completed

<b>Certifications</b>	
<b>CPR</b>	3 certifications
<b>Wilderness First Aid</b>	3 certifications
<b>ESRI Learning ArcGIS Desktop</b>	3 certifications
<b>Collecting Data</b>	
<b>Geospatial Features (Total Captured)</b>	3,335
<b>Boat Ramps</b>	40
<b>Buildings</b>	263
<b>Campgrounds</b>	36
<b>Campsites</b>	953
<b>Fishing Features</b>	11
<b>Marinas</b>	6
<b>Picnic Sites</b>	453
<b>Recreation Features</b>	225
<b>Trailheads</b>	68
<b>Recreation Access Points</b>	100
<b>Structures</b>	4
<b>Traffic Counters</b>	66
<b>Roads</b>	817
<b>Parking Areas</b>	293
<b>Roads (Total Length of Features Captured)</b>	142 miles
<b>Parking Areas (Total Area of Features Captured)</b>	4,077,401 sq. feet
<b>Creating Reports &amp; Products</b>	
<b>Presentation Posters (Including Maps)</b>	3 created