

# UC Santa Barbara

## Newsletters

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# COAL OIL POINT RESERVE

*2018 Year in Review*

**Featuring**  
**COPR Staff**  
**Updates...**

**Plus**  
**Student Stories**  
**at COPR...**

**The Latest**  
**Research**  
**from USGS...**



# News and Highlights from COPR

by *Dr. Cristina Sandoval*

This was our first year working in the new COPR Nature Center and we are thrilled to have this facility. The offices we work in are nice and organized and there is a lab, a classroom, and meeting rooms to support the many classes, researchers, and interns that use the reserve. Even the casual visitor taking a tour can explore the exhibits and watch films about the reserve.

Our Management Plan was finalized and the California Coastal Commission approved new policies that will help us better manage the reserve and its resources. The biggest change is that the reserve now has a no dog policy. In 2019, we will be working with our docents and local dog owners to transition smoothly into this new policy. We are very thankful to the dog owners who have leashed their dogs and hope they will understand that unfortunately, only 50% of the dog owners leash their dogs while visiting the reserve.

With over 10,000 visits from researchers, students, and the community, the reserve continues to offer a wide range of opportunities to study and learn. Approximately 60 student interns had hands on experience in conservation, education, communication, restoration, and research. There is nothing more satisfying than meeting a professional that says "I will never forget my time as an intern at the reserve." Visitors from the community attend the monthly tour or walk around the reserve learning through interpretive signs or chatting with the docents. Researchers make discoveries and share their findings with us. If we can inform our users about the natural inhabitants of the reserve and how they can share the reserve with them, we have contributed to a cultural evolution that is much needed in this time of global changes.



Teens from the Santa Barbara Museum of Natural History program "Quasars to Sea Stars" visiting the Nature Center after a reserve tour with long-time tour leader Bonnie Murdock.



UCSB students viewing exhibits on a field trip with their Conservation Biology class (EEMB 168).



COPR student interns, Kong Vang and Christopher Chan, measuring the water quality of Devereux Slough.



# 1,000 Nests & Counting: Snowy Plover Update

by Jessica Nielsen



The number of Western Snowy Plover nests since the start of the recovery program at Coal Oil Point Reserve in 2001 hit the thousand mark this year. In addition to this impressive milestone, Snowy Plovers had an exceptional breeding season and surpassed several records for Coal Oil Point Reserve! This year, we observed the highest number of breeding adults (54), highest number of hatched nests (61), and highest number of fledged chicks (82). A chick is considered "fledged" after 1 month - once it has survived long enough to learn to fly and become independent from its parents. This year, the number of fledged chicks was 50 more than the average for this location.

Skunks did not cause as much nest loss as in years past. This year, less than 4% of nests were predated by skunks. The primary cause of nest failure in 2018 was high tides. When nests are washed out by tides, buried by wind, or otherwise abandoned, we collect the eggs, determine if they are still viable, and incubate them to raise the chicks in captivity.

Once again, we partnered with Santa Barbara Zoo's rehabilitation program to hatch and rear abandoned plover eggs in captivity. Once the hatched chicks reached the standard age, weight, and health requirements, they were released back at Coal Oil Point. This year, we released 3 chicks that were originally from COPR and one that was transferred from Monterey Bay Aquarium.

We had the pleasure of hosting the annual meeting of Western Snowy Plover Recovery Unit 5 at our Nature Center. At this meeting, plover biologists from San Luis Obispo, Santa Barbara, and Ventura counties shared their plover population results, successes, and challenges. After the meeting, we took a field trip down to Sands Beach to visit the plover habitat and see the docent program in action. Many participants were surprised at how much the beach morphology has changed over the last decade.

I want to express my gratitude to our dedicated Snowy Plover docents and all of the visitors who have been supportive of the reserve's conservation programs. Needless to say, with the high number of plovers, nests, and chicks on the beach this year, our docents were kept busy! We simply could not run this program without your support. Thank you also to UCSB Coastal Fund for funding 40 docent internships for UCSB students this year.



**To Become Involved in This Project,  
Contact Jessica Nielsen**

[copr.conservation@nrs.ucsb.edu](mailto:copr.conservation@nrs.ucsb.edu)



# Habitat Restoration

*by Kipp Callahan*

This past year was an exciting time for me as part of the restoration program. This was my first full planting season at Coal Oil Point Reserve and I had the pleasure of working with many student and community volunteers who came out to help us with our restoration projects. Community members from the Santa Barbara Audubon Society and students from the Environmental Affairs Board, the Community Affairs Board, and Oxfam helped us plant over 500 native shrubs and grasses as part of our efforts to restore coastal scrub habitat at the reserve. I was really impressed by the enthusiasm and work ethic of everyone involved.



We also had invaluable help from our land steward assistant, Alicia McCracken and our two restoration interns, Grant Scruggs and Jenny Burks. Jenny and Grant helped extensively with efforts to repair some of the fencing around the reserve this spring and also helped tackle some major invasive species projects. Alicia has been with us since the fall of 2017 and has been a huge help on restoration and maintenance projects. For more about her experiences at the reserve, check out her article in this newsletter.



In addition to our restoration projects we also launched a soils mapping project with Dr. Oliver Chadwick in an effort to better understand the soils on the reserve. Knowledge of the reserve soils will help guide our restoration decision making moving forward. Over 40 students from Dr. Chadwick's class helped us collect soils data in the uplands this fall and we are excited to have a soil intern help continue the project in the winter quarter.

With the rains we have received in December, our next planting season is already under way. We have already planted over 200 grass seedlings and we hope to plant a few thousand more in the coming weeks.

**To Become Involved in This Project,  
Contact Kipp Callahan**  
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# Restoration Experience

by *Alicia McCracken*

Coal Oil Point is full of amazing opportunities for students and the community to engage with their local, natural environment. Throughout the past year, Coal Oil Point Reserve has given me valuable knowledge and experience that I will need for a career in conservation. My experience here has taken my love for nature and developed it into skills that can be used to protect it. As the restoration assistant at the reserve, I have gained hands-on experience specifically on restoration processes in the beautiful coastal sage scrub ecosystem. During my time here, I have assisted in invasive species removal, plant collection and identification, native plant propagation techniques, and grounds maintenance.

The reserve has a deep history with invasive plant species. I am grateful that I have been able to be part of the effort to remove them so native plants can establish and thrive. Plant collection and identification has been a fun part of my time

at the reserve. Being able to assist in the process of creating an inventory of every plant found on the reserve will be useful for students to learn from for years to come. Developing native plant germination and propagation techniques has been an exciting part of working at the reserve as well. Experimenting with different techniques has allowed me to feel even more connected with my work. Grounds maintenance has also been a fundamental aspect of my experience at the reserve. Clearing roadways and fixing fences may be hard physical work, but I have learned that it is also an essential part of what is required for a reserve to function.

My time at Coal Oil Point has been a unique experience that I am so grateful to have. I am privileged to work with so many kind, dedicated people who are passionate about conservation. This opportunity has provided me with skills and confidence that I can carry with me as I move forward in my career.



# Counting Plovers

by Rachel Kenny

If you think your job is hard, you probably haven't tried counting plovers. Running across the beach like cotton balls on tiny chopsticks, they are rarely still. Dashing behind a bush here and over the top of a bluff there and they're gone. Once they finally stop moving, they blend in perfectly with the environment. You could open the dictionary for a definition of camouflage and see a picture of these chicks blending in with the sand.



The Western Snowy Plover is a threatened species of shorebird that inhabits Coal Oil Point Reserve, having returned to breed in the last twenty years after abandoning the site in the 1960s when human use of the beach drove them out. As a graduate student at the UCSB Bren School of Environmental Science, my research is focused on human and wildlife interaction, and it was fascinating to examine the factors that lead to breeding and nest failure in the Snowy Plover population.

While most of my analysis happened behind the computer screen, getting a firsthand look at these creatures while conducting population counts really gave my data context and made the numbers come to life.



However, the plovers aren't the only animals at the reserve - there exist a multitude of other fascinating creatures from the large population of leopard sharks and incredible marine life in the Marine Protected Area to the dune spiders and bobcats that roam the land.

When I wasn't glued to my computer, I had the opportunity to get my hands dirty doing trail maintenance, sampling the water quality of the slough, collecting native seeds for propagation and planting them in the greenhouse. What's great about working at a nature reserve is there's always work of value to be conducted outside, so any time the data analysis started giving me a headache I could clear my head counting plovers. Who would have known that counting plovers would turn out to be the best part of the job?

“*What's great about working at a nature reserve is there's always work of value to be conducted outside, so any time the data analysis started giving me a headache I could clear my head counting plovers.*”



# USGS Coastal Monitoring in COPR

by Dan Hoover & Patrick Barnard, U.S. Geological Survey



## Why does an ATV drive on Sand's beach every year? To measure beach erosion.

Sandy shorelines are dynamic places that change with wind, waves, currents, and sediment inputs from streams and rivers. Sandy shorelines are important for wildlife and recreation, and buffer inland habitats and infrastructure from the impact of waves. Understanding how the shoreline changes helps us protect and live in this dynamic habitat.

Some processes that affect sandy shorelines are slow but persistent, while others are rare but can have big effects (large waves, floods). As a result, we need to track changes over a range of timescales.

Beaches typically have a strong seasonal cycle, eroding in the winter and accreting (building up) during the summer, so you'll usually see us in the spring and fall, using an ATV to map the beach at low tide (with an eye out for Snowy Plovers), and with jet skis mapping underwater sand and rocks at high tide. We map about 10 km of coastline in the Goleta area, from the Goleta Pier to the Sandpiper Golf Course. Mapping in spring and fall provides a record of the seasonal variation in each year, while year-to-year changes provide insight into longer-term processes. We sometimes do additional surveys to document beach response to unusual events.

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Since the project started in 2005 there has been a lot happening on Santa Barbara beaches. We've been in a persistent drought, which is "starving" beaches by reducing sediment input from local streams; we had a major westerly wave event (March 2014); we had one of the largest El Niños on record (winter 2015-16); and we had the Thomas fire and subsequent mudflows and flood discharges to coastal waters in January 2018. Impacts from all of these events can be seen in our data. For instance, the March 2014 wave event produced dramatic erosion along Goleta Beach Park, which still has not recovered (Figure 1) and in COPR, as did the large El Niño waves of 2015/16 (Figure 2). In COPR, the March 2014 wave event moved the shoreline roughly 15 meters (50 feet) landward from where we measured it just 2 weeks before.

Because beaches will continue to change (especially with climate change and sea-level rise), we plan to keep monitoring in the future. One of the major uses of our data is to calibrate our CoSMoS (Coastal Storm Modeling System) computer models that predict shoreline change and coastal flooding due to sea-level rise and storms. We've already built models for most of the California coast, including Santa Barbara. Model results are being used by agencies across the State to better manage and plan for changes to our coastline.



Figure 1. Scarp erosion in Goleta Bach Park after the El Niño winter of 2015/16.

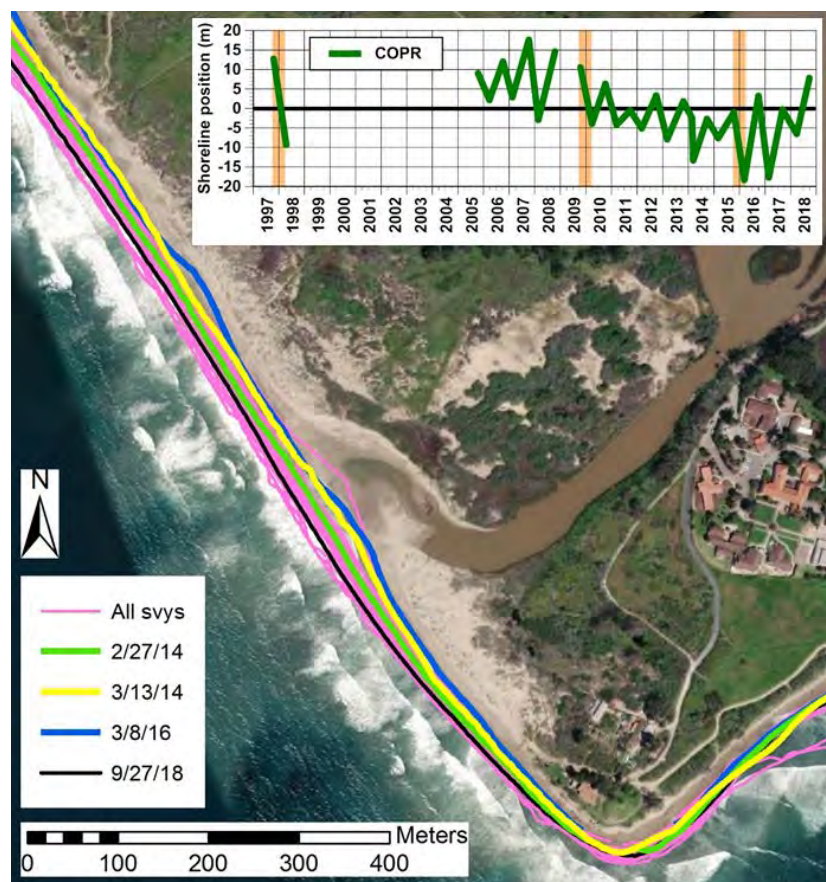


Figure 2. Shoreline (Mean High Water - MHW) contours in COPR since October 2005. Contours associated with major erosion events are highlighted, as is the contour from the most recent survey on 9/27/18. Inset shows movement of the shoreline over time (positive seaward, negative landward) relative to the mean position for all surveys. Orange bars highlight El Niños in 1997/98, 2009/10, and 2015/16; the COPR shoreline retreated steadily from 2009-2016, but now appears to be recovering.

To access model results and an online viewer , go to the "Data and Tools" tab on the CoSMoS website at:

<https://www.usgs.gov/centers/pcm/science/coastal-storm-modeling-system-cosmos/>



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## GUIDED TOURS

First Saturday of every month 10:00 am - 12:00 pm

Tours focus on history, ecology, and wildlife.

RSVP required: email [copr.conservation@nrs.ucsb.edu](mailto:copr.conservation@nrs.ucsb.edu)

## NATURE CENTER VISITING HOURS

Public Visiting Hours at the Nature Center

The first Saturday of every month 9:00 am - 1:00 pm

## SUPPORT COAL OIL POINT RESERVE

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