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News and Highlights from COPR

by Dr. Cristina Sandoval

This year, the UC Natural Reserve System celebrated its 50th year anniversary with a series of events, symposiums, and workshops. COPR, now 45 years old, was one of the first reserves established by the UC Natural Reserve System. For a while, COPR was not well known as a resource for researchers and faculty. Today the Reserve is well recognized for its active conservation, restoration, and education programs, and hosts an average of 20 research projects and college classes each year.

We have reached 85% of our \$1,250,000 fundraising goal for a new Nature Center! With an additional \$81,000 for the building and \$115,000 for landscape, furnishings and equipment, we will be able to open

the doors of the Nature Center. The Center will have a classroom, laboratory, and exhibits that highlight our ongoing programs and research, and will provide better facilities for staff, visitors, K-12 programs, and researchers.

Since the 1920's, Coal Oil Point Reserve has been a site that attracted researchers. This accumulated knowledge of those research projects is now the Reserve's greatest asset, and we plan to utilize the Nature Center to disseminate this knowledge. One great tool to do that is a documentary titled "Bringing Back the Wild" by movie director Michael Love. Michael made this movie for the Reserve with his own resources, a demonstration of how much people care about our Reserve.

Michael was able to cover the effects of the Refugio Oil Spill at COPR in his documentary. The Refugio Oil Spill brought more tar to Sands Beach than has been seen since the 1969 Santa Barbara Oil Spill. COPR staff, researchers, and volunteers worked long hours to protect the Reserve from cleanup disturbances and to collect data that will help assess the damages.

Our achievements have been a result of collaborations with a number of organizations as well as the support of volunteers, donors, and UCSB. I would like to thank all of them and name a few that were especially generous in the last year such as UCSB Coastal Fund, the California Coastal Conservancy, Wildlife Conservation Board, US Fish and Wildlife Service, Santa Barbara Audubon Society, the Steinmetz Foundation, the Santa Barbara Foundation, Darlene and Sam Chirman, and Julie and Mark Kummel.



2015 Snowy Plover Breeding Season

by Jessica Nielsen



Photo Credit: Bill Caudill

2015 was a great year for Snowy Plover nesting at Coal Oil Point Reserve. One of the ways we measure success of the breeding season is the number of chicks that fledge, which means that they reach the age that they can fly and be independent (one month). The 2015 breeding season ended with a total of 45 fledges - about 15 more than average!

One big problem early on this season was egg predation by skunks. In early May, we lost nine nests in two weeks to skunk predators. Thanks to repairs to the skunk fence and skunk traps, the problem was resolved and the nests that followed had a much better chance to hatch. Overall, 52% of nests hatched and, of those clutches, 78% fledged at least one chick.

This year, with the help of the Wildlife Care Network, we hand-raised a plover chick until he was ready to fledge. We found "Buster" as an egg in an abandoned nest that had been washed out from a high tide. After 2 months in captivity, he was ready to join

the other Snowy Plovers at Sands Beach. Immediately after his release, Buster took to the skies and flew around the dunes seeming very happy in his new home!

Thank you to our Snowy Plover Docents for all of their hard work dedicated to protecting the plovers at Sands Beach and educating the public about our conservation program. It has been a pleasure meeting and working with the docents, tour guides, and restoration volunteers that play such a huge role in the success of the Reserve!

Current Research at COPR

An Opportunistic Study of Western Snowy Plover Behavior

By Jessica Nielsen



Photo credit: David Levasheff

Several days after the Refugio Oil Spill, we began seeing large amounts of oil on the beach at Coal Oil Point Reserve. Cleanup efforts began on Sands Beach on May 24, right in the middle of Western Snowy Plover breeding season. During the first six days of cleanup in May, staff biologists and



dedicated volunteers helped supervise the cleaning crew and suggested modifications to reduce the impact of disturbance to the nesting birds. The biologists observed nesting plovers and asked the crew to move away if the females incubating the nest left the nest for more than five minutes. During the last three cleanup days in June, Cristina Sandoval and I decided not to interfere with the cleanup efforts, and instead researched how the cleanup activities affected the behaviors of the Snowy Plovers.

We collected the following observational data in the presence and absence of cleanup crew: (1) the number of times an incubating plover fled their nest, (2) once disturbed, the amount of time a parent remained off of their nest, and (3) focal observations of plover behavior: brooding, feeding, flying, fighting, standing, walking, or mating.

We are currently working on the results of this study. We think it is important to consider how oil spill cleanup affects the natural behavior of local fauna so that these disturbances can be mitigated in the future.

Catching Clouds at COPR

By Nate Emery

During the hot, dry summers of coastal California, plants become water stressed and more susceptible to wildfires. Meanwhile, the cold upwelling currents offshore build up a thick marine layer and air pressure pulls this cloud layer onto land, providing moisture to coastal shrub plant communities. These cool fog events occur periodically along the California coast and provide relief for many different plant species. To better understand how fog affects

plants, I have measured fog and plant physiology at Coal Oil Point Reserve over the past five years.

How do you catch a cloud and measure it? I built fog collectors originally developed by a former graduate student in the Geography department at UC Santa Barbara (Fischer and Still 2007). These collectors use fishing line strung up like harp strings to condense fog water and funnel it into a collection container. I have used this water to quantify fog patterns at COPR and also track this water into shrubs! One project with a former undergraduate, Josephine Lesage, was recently published and showed that California sagebrush, *Artemisia californica*, at COPR uses fog water in the late summer (Emery and Lesage 2015). This fog use can boost water content in shrubs and potentially reduce flammability.

In addition to measuring the water going into the shrubs, I am also interested in the chemistry of the fog water as it interacts with plant leaves. When fog, a low-lying cloud, hits a plant, it condenses on the leaves and drips down into the soil below.



Photo of fog collector

Emery, NC and J
Lesage *Madroño*
(2015)
Fischer DT and CJ
Still Water
Resources Research
43 (2007)



Habitat Restoration Yearly Update

by Tara Longwell



We have come to the completion of a four year habitat restoration project that was funded through the California Coastal Conservancy! It has been very rewarding to see all of the improvements that have occurred over the past few years. One of the most exciting changes that I have seen is the increase of bobcat and coyote sightings in areas where we have successfully closed trails that were previously frequented by the public. Since these trail closures we have protected 35 acres of the Reserve from the impacts of foot and bike traffic! This area can now better support larger mammals that may have previously been discouraged by trail users.

These trail closures come at a great time, as the benefits of these habitat improvements are amplified with the planned restoration of the neighboring North Campus Open Space (formally Ocean Meadow Golf Course), and the decommissioning of the Venoco tanks at the Ellwood Marine Terminal. The combination of all of these events has significantly

reduced the amount of noise pollution and human activity. The protection of such a unique and biologically rich natural area is a valuable resource for UCSB classes, researchers, and students. Just a few miles from the main UCSB campus you can find a unique section of the California coastline that offers a sanctuary for wildlife and quiet retreat from the surrounding urban areas.

The most recent project area that we have been working on encompasses three acres of iceplant that has heavily invaded the coastline and displaced the native coastal dune vegetation. The iceplant has impeded the formation of dunes by stabilizing sand and preventing the dynamic process of sand transportation that characterize dune systems. I look forward to restoring this ecosystem back to a functional coastal dune habitat that can provide better nesting habitat for the Western Snowy Plover!

To get involved with the restoration program at Coal Oil Point Reserve please contact Tara Longwell at longwell@lifesci.ucsb.edu

Education Highlight

By Jessica Nielsen

This October, I visited Cappy Culver School in Paso Robles to meet an outstanding group of students and give an assembly about Western Snowy Plovers. A team of six 7th graders at the school had taken the initiative to raise money for the conservation of Western Snowy Plovers. They created posters to hang up around their campus, gave educational presentations to their classmates about the threatened status of Snowy Plovers, and organized a bake sale fundraiser. We were so impressed with their hard



work and honored that they chose to donate the money they raised to our Snowy Plover program at Coal Oil Point Reserve!



I had a great time meeting the ambitious students at Cappy Culver and learning about their project. They are now contestants in the Lexus Eco Challenge, a scholarship contest for kids who have great ideas for tackling environmental issues. Big thanks and good luck to Elizabeth Mariot, Gwenyth Gray, Victor Smith, Madi Tosti, Reily Lowry, and Joseph Marmolejo!

Coal Oil Point Reserve -An Opportunity to Make a Difference

by David Brunn

Coal Oil Point Reserve (COPR) is an incredible environment in UCSB's backyard. Students are offered an opportunity to participate in the continuing success of natural restoration. Efforts to mitigate the negative effects of man-made encroachments on the beautiful coastal strand are showing signs of success. Following many years of work, one can finally visualize the area as it existed hundreds of years ago.

COPR offers many unique opportunities for UCSB students to learn about the adverse impact of humans on the environment, and the possibilities of returning the environment to its natural state. Student intern activities include restoration of the coastal environment, monitoring the natural species, and recording human activity.



I have been an intern at COPR as a Snowy Plover docent for eight months. During that time, I have gained an appreciation for the need to protect endangered species in their natural environment. More importantly, I have learned that the hard work and perseverance of concerned students and residents can make a significant difference. Visitors to COPR are willing to heed polite reminders in order to make a positive difference on the environment.

The Snowy Plovers are a local example of a threatened species that are positively responding to human restoration efforts. The Snowy Plovers are tiny, fragile birds whose existence is threatened by human encroachment. These little shorebirds are native to the sandy beaches of western North America. Unfortunately, they are competing for some of the most desirable and expensive real estate on the planet. Like golfers, homeowners, and



surfers, the birds enjoy scenic beaches with sandy dunes. The Snowy Plovers utilize the sand dunes as nesting spots in order to protect themselves and their eggs from predators. However, there are very few of these locations left for the Snowy Plovers that are undisturbed human beachgoers, so their population is seriously threatened. Sands Beach at COPR is one of the few remaining sanctuaries for the Snowy Plovers to flourish.

Sands Beach can be an amazing recreational spot for the community to enjoy. However, we must first respect COPR's native inhabitants. We need to preserve the environment for many generations to come. Aldo Leopold, an acclaimed environmentalist, once said "When we see land as a community to which we belong, we may begin to use it with love and respect" (*Sand County Almanac*). Our actions today shape the environment of tomorrow. We must be conscious of the consequences of how we use the environment. Sacrifices ought to be made in order to benefit the survival of other species.

The time I spent on Sands Beach has taught me a lot about the environment. I now appreciate the beach and its inhabitants. More importantly, I understand the fragility of this beautiful landscape and the importance of preserving it. The Snowy Plovers demonstrate that we must respect and protect nature

if future generations are to have an opportunity to enjoy the natural environment at places like COPR. Coastal ecosystems are threatened by powerful forces, such as climate change and human development. In the absence of constant vigilance, we are certain to lose such delicate coastal habitats. Sands Beach instilled in me an appreciation for the opportunity to preserve and protect the natural environment.

Support Coal Oil Point Reserve!



Donations are tax deductible. Checks should be made to **UC Regents**. Mail your gift to:

Coal Oil Point Reserve
Attn: Deby Puro
Marine Science Institute
UC Santa Barbara
Santa Barbara, CA 93106

Upcoming Events

- **Tours of Coal Oil Point Reserve:** First Saturday of each month from 10am-12pm. RSVP: copr.conservation@lifesci.ucsb.edu
- **Habitat Restoration Workday:** Saturday, January 9th, January 30th, and February 27th 9am-12pm. RSVP: longwell@lifesci.ucsb.edu
- **Snowy Plover Docent Training:** Saturday, January 23rd 9am-12pm. RSVP: copr.conservation@lifesci.ucsb.edu