



## ***Solutions for Wetlands in the Face of Sea Level Rise***

By Thomas Anderson

“Wetlands in a Time of Change: Strategies to Persist in the Face of Sea Level Rise” was the title of the presentation given by Dr. Christine Whitcraft at the Bolsa Chica State Beach Visitor Center on August 22. Although almost all wetlands now have various degrees of protection, 80%-91% of wetlands in California have been lost to farming and urban development. The threat of sea level rise puts the remaining coastal wetlands in further danger never before encountered. It would be possible for wetlands to keep pace with sea level rise if they all had adequate sources of sediment carrying water from upstream, but almost all wetlands have been cut off from their freshwater sources. Without help, wetlands will become either open water or mudflats that do not support the vast array of life they now do. Zonation—subtle changes in elevation—is critical to life in tidal marshes. How do you plan for the unexpected? We are not without solutions.

At Seal Beach National Wildlife Refuge (SBNWR) experiments are under way. About three years ago, Dr. Whitcraft, with assistance from her Cal State Long Beach graduate students, the U. S. Navy and a coalition of land managers, began testing a process called sediment augmentation. This would raise the elevation of the marsh to withstand a moderate sea level rise. Dredge material from the SBNWR ocean inlet was “donated” and placed in test plots to raise the marsh 10 inches. Achieving the elevation was successful, but whether plant and animals would inhabit the test plots of marsh proved far more challenging.

***Solutions for Wetlands continued on page 2***



*Dr. Christine Whitcraft is a professor in the Department of Biological Sciences and Director of Environmental Science and Policy at California State University Long Beach. Photo by Thomas Anderson*

# Volunteers Needed for BCER Maintenance Projects

By Kim DiPasquale

Interested in helping keep the Bolsa Chica Ecological Reserve a healthier place for its inhabitants and its visitors? Kelly O'Reilly, BCER Manager, needs help with a variety of special projects around the Reserve:

1. Trimming vegetation around the pocket marsh trail. 10-15 people are needed and the work needs to be done soon.
2. Repairing the erosion with decomposed granite at the trail head that begins on the east side of the wooden pedestrian bridge that goes up hill toward the south overlook. The DFW has enough Decomposed Granite to fill in those holes but is in need of help to transfer the DG from storage to the trail head. There may be more erosion to repair, so a donation of a delivery of DG to the South lot for this task may be needed. It would need to be coordinated to the work day. 5-10 people would be ideal for this task, and soon, before the rainy season starts.
3. Applying Thompson's water seal to the wood rail on the pedestrian bridge. 2-3 people are needed for an October and/or November work day.
4. Weeding Nesting Sites 1, 2 and 3 prior to the 2020 nesting in the Spring. 15-25 people would be needed in January/February. Vegetation will need to be cleared from the north and south ends of Nest Site 1; the surface of Nest Site 2; and, the surface of Nest Site 3, which is used by snowy plovers. While the most efficient means of clearing are still being worked out, helpers are definitely needed to pull and remove weeds. Volunteers who help out on NS2 will need to make a short crossing in one of our canoes.

Please contact Kim DiPasquale at [kimdiasquale@gmail.com](mailto:kimdiasquale@gmail.com) to tell him which projects you are interested in and your availability.

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## **Solutions for Wetlands continued from page 1**

Much to the surprise of Dr. Whitcraft, only 10% of common salt marsh plants (cordgrass, pickleweed, saltwort) had returned after two years. Plants were expected to come up through the sediment augmentation but instead were recruited mostly



from the edges of the test plots from runners. Without plants, the temperature of the mud is higher. Invertebrates common to the salt marsh food web—insects, amphipods, polychaetes and oligochaetes—were not as diverse in the test plots, which meant birds and fish were not abundant either.

So many factors needed to be understood, but the main element missing was more variety in the elevations of the mudflats. The initial augmentation had been the result of an even spread of sediment. It was very difficult for the contractors to achieve uneven spreading of the sediment, and it was only in areas that were less even, around the edges and areas where channels had been created, that plants and animals were abundant. It had not been expected that the weight of the sediment would be enough to retard the regrowth of the plants. Salt marsh plants are not easy to reproduce by seed, so this fall Dr. Whitcraft and her students will plant 18,000 seedlings by hand.

Dr. Whitcraft has a second, very different project underway at the Upper Newport Bay Ecological Reserve: living shorelines that use native creatures—Olympia Oysters—in combination with assembled structures to build sediment and prevent erosion. Four experimental design plots were created in Upper Newport Bay. Mounds of ground shells that attract oysters were held in place by biodegradable materials and placed in long rows at varying places at the tide edge. Oysters quickly colonized the structures, and eel grass, vital in sediment stabilization, increased 250% nearby. This attracted many invertebrates and fish. The only drawback appeared to be the beds that were placed too high in the tide level attracted non-native oysters.

Many laws are in place to protect wetlands, but the key is how wetlands are defined. When wetlands are defined to include as much of their upstream runoff sources as possible, preventing development that cuts off the natural replenishment of sediments, wetlands are healthier and more resilient. Under the Clean Water Act, Federal laws have defined what is considered wetlands and how much land is needed to protect them. At a time when wetlands need all the protection they can get, the current administration has rolled back wetland definitions to 1990s levels.

## President's Tern

# Donate to the Amigos When You Shop

By Charles Falzon

Thank you to all those who have recently renewed their memberships. We try not to hammer our members by constantly asking for money even though it is constantly needed. We understand it gets confusing and frustrating. Membership dues and donations: what's the difference? Suffice it to say we are working on ways to keep our membership and donation requests as clear and simple as possible.

But it is worth reminding our readers, members, and donors that the activities of the Amigos de Bolsa Chica are supported entirely from membership dues, private donations, grants and fundraisers. Like any organization or business, the Amigos must meet the costs of payroll for our small, part-time staff, insurance, phones, website, storage unit, newsletter and educational materials printing, and a myriad of other expenses that are necessary to fulfill our pledge to preserve and restore the Bolsa Chica, and to educate people about the importance of wetlands. All contributions to Amigos de Bolsa Chica are tax-deductible (FIN 33-0752003) as allowed by law under IRS Code Section 501(c)3. Although the tax code was recently revised, you can still deduct if you itemize.

In addition to asking for membership dues and donations, there are a few other very simple ways to support the Amigos de Bolsa Chica—donate when you shop.



Donate to Amigos de Bolsa Chica every time you shop on Amazon by using Amazon Smile. Go to <https://smile.amazon.com/> and designate the Amigos as the charity you support. That's it, you are done. You can also go to <http://smile.amazon.com/ch/33-0752003> to start shopping. If you use this link, you can simply keep it in your bookmarks and you will not have to register or designate Amigos de Bolsa Chica as the organization you want to support before you shop. Either way, Amazon will automatically donate .05% of your purchase to Amigos de Bolsa Chica. It could not be easier. Start shopping with Amazon Smile today!



e-Scrip is a year-round way for you to contribute to the Amigos just by using your credit cards when you shop. Here is how it works: Go to <https://www.escrip.com/>. Click on the sign up link on the top of the page. Complete the registration and set up a user name and password. Choose the Amigos de Bolsa Chica as one of the groups you want to support. Register one or more credit or debit cards and that is it. When you use the cards that you registered, e-Scrip merchants make a donation to Amigos de Bolsa Chica. Shop online, buy groceries, or dine out to make a difference for the Amigos. On the e-Scrip website you can look to see what businesses, both online and in the community, help you to support the Amigos.



Ralphs Community Contribution Program makes it possible to donate every time you shop at Ralphs. All you need is a Rewards or a Plus card and an online account. If you have a Rewards or a Plus card, go to <https://www.ralphs.com/> and sign in to your account, select the My Account tab to confirm your address and phone number, then select the Amigos de Bolsa Chica as the organization that you wish to support. The Amigos de Bolsa Chica will now display in the Ralphs Community Contribution Program section of your account. Simply use your card every time you shop for Ralphs discounts, and the Amigos will get a small contribution. The Amigos should also appear at the bottom of your store receipts. If you have not yet set up your online account go to <https://www.ralphs.com/topic/community-contribution-2> and follow the instructions.

## Volunteer Spotlight

# What I Did on My Summer Vacation

By Daryth Morrissey

I am entering my 26th year as a local middle school Science/Marine Biology teacher. I have a career that I absolutely love. For the past two summers, I also have had a pretty incredible summer job that is way better than mowing lawns! I am one of the Naturalists for a major cruise line (2500+ passengers) doing trips to the Inland Passage in Alaska. We leave out of Seattle, have a sea day, then Tracy Arm Fjord, Skagway, Juneau, Ketchikan, sea day and Victoria, and then back to Seattle. This summer, I had 5 weeks on board. Four itineraries included Tracy Arm Fjord, and the other was through Glacier Bay.

So how do you get this job? Let me back up a bit. I am a certified Naturalist for: the American Cetacean Society (both Orange and LA Chapters), the Amigos de Bolsa Chica, and have my California Naturalist Credential from UC Davis. In college, I almost had enough classes to minor in Geology. I go to Maui every year for Humpback whale season. I have stayed on San Juan Island and have Orca watched (including Granny estimated around 102 years old before her death). I have flown directly to Juneau to spend all of my time on the water watching humpbacks build back the third of their body weight they lost on that 6,000 mile migration to their winter breeding/calving grounds. Through whale/water world, I became friends with the primary Naturalist. I had asked her if there was a super cheap cabin for 1 under the engine room that I could book, and she offered me the chance to train and be on the Naturalist list. I studied/researched/read/wrote journals filled with notes almost nonstop for three months prior to my first cruise.

What does a Naturalist do on board a cruise ship? I gave three, 1-hour presentations on: "The Nature of Alaska," "Glaciers, Volcanoes and Wildlife," and last but not least "Whales." I spent most of my time up on the bridge spotting wildlife and telling passengers what to look for on their own. I narrated on what we are seeing as well as any geological, historical, and ecological significance of the areas we were cruising through. There was a TV channel that replayed my presentations, and another that broadcasted my voice. I wandered the decks, answering questions and giving information to areas where my voice didn't broadcast. I did a lesson on whales/ecology to the Kid's Club clients,



*Amigos board member and volunteer Daryth Morrissey enjoys a unique summer job - in Alaska.*

all between the ages of 5-11. That was a blast!

What did we see on the sea? Bear in mind that every cruise is different, from the visibility due to weather, wind and swells, to timing-looking at the exact right spot, at the exact right time. The marine mammal species that were fairly common: Harbor Porpoise, Dall's Porpoise, Pacific White-Sided Dolphins, Humpback Whales. Less common marine mammals spotted were: Northern Right Whale Dolphins, Fin Whales, Orca, Sea Otters, Steller's Sea Lions and one Sperm Whale off of Queen Charlotte Sound! Mola Molas (sunfish), Sea Nettle jellyfish and Salmon Sharks were pretty common and visible just off the ship.

If you are into pelagic birds, go on this cruise! Tufted Puffins, Black-footed Albatross, Storm Petrels, Pelagic Cormorants, Murres, Loons, Murrelets, Gulls, Artic Terns, Kittiwakes, and Pigeon Guillemots can usually be seen. There was even a dog travel kennel in the Naturalist cabin to rehab any/all birds that blew on to the ship. I could get a call, and would respond to a bird 24 hours a day. Storm Petrels seemed to be the most common in need of a day to recoup. It is a bit terrifying when they were ready to be released, and they would fly out of your hands, then drop 100+ feet (along with my heart) down to sea level, and then fly off. Whew! Each one of these species deserves their very own article, and I haven't even started on what my eyes

**Volunteer Spotlight continued on page 5**

# Educators: Schedule a FLOW Field Trip Today!

By Jill Lemon

Summer is winding down, and schools are back in session; it's time now for FLOW Field Trips! The FLOW Program has extended the education options for students to visit Bolsa Chica State Beach and the State Ecological Reserve with the award of a California State Parks Foundation grant. We now offer middle and high school students the opportunity to engage in an extended FLOW program where they visit us twice. After the first visit this fall, they will take what they learned about phytoplankton and water quality as well as their plankton sample back to their classroom. By using variables such as different kinds of nutrients they will conduct Citizen Science experiments growing plankton in the classroom, and maybe even replicate an algal bloom.

This experimentation allows the students to make more Next Generation Science Standards (NGSS) connections while asking their own unique questions and conducting their own investigations. Then in the spring they can return to Bolsa Chica State Beach to report their findings, collect more data, or use the microscopes to progress their scientific learning further. We're excited for middle and high school students to begin making these connections with science and the natural world here in their community.

Also, over the summer, we created an NGSS aligned curriculum for elementary students. This is an age group that has not previously had access to the FLOW program. Students will learn about the diversity of life within a drop of water, the adaptations needed by organisms to be so small and yet successful. We designed two levels of curriculum to K-2 and 3-5 grades and utilized NGSS standards for each level as a backbone to the trip. The students will learn that organisms use structures and parts of their bodies to solve problems in their environments (e.g. phytoplankton use spines and other external structures to stay within a certain level of the water column). Students can then express what they have learned with creativity. We have included opportunities for students to problem solve for themselves and design their own plankton (either by drawing or by using crafting materials) and using the info they learned on the trip to influence their designs.

We are anticipating welcoming four of these uniquely

engaging field trips this year but have yet to commit Kindergartners through fifth-grade teachers to the program. If you are an elementary school teacher or know of one who is in need of a brand-new educational field trip that involves the ocean and its food web, send an email to Jill Lemon, [flow@amigosdebolsachica.org](mailto:flow@amigosdebolsachica.org) today and tell her you want to participate!

The generosity of California State Parks Foundation will ensure that the FLOW Program continues to grow and expose more students, and ultimately the community, to the wonders of Bolsa Chica, the wetlands, and the ocean.



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## *Volunteer Spotlight continued from page 4*

witnessed on land: Black Bears, a Brown Bear, Mountain Goats, Sitka Deer, Porcupines, Bald Eagles, one very funny American Dipper, a female moose swimming through Glacier Bay, and the salmon!

Then we have the geology, and the fjords, and the glaciers, and the trees and forest succession, and the wildflowers! The absolute and breathtaking beauty. You are just sailing through a post card. I woke up one morning with my eyes swollen, confused, remembering that I didn't even eat dinner. Then I remembered. We were going through an area with at least 75 Humpback whales, a calm sea, a golden sky, and I was just up on the bridge with tears flowing. They were tail-slapping, seemingly to be in response to each other, and this lasted for two hours. Incredible.

The one thing I tended to forget until I had this "job" was to be grateful for my proximity to the ocean. I have lived in California since birth. Here I was meeting so very many people, from other countries and states that have never seen an ocean, let alone cruised on one. It was humbling. My intention was not only enhancement and education, but to have passengers fall in love with the unspoiled beauty of this land. As I was preparing for this season, I realized that Alaska fills a part of your soul that you didn't even know was empty. I am forever changed for having this experience.

# Educators Learn about the Amigos' Education Programs

By Thomas Anderson

On Tuesday, August 13, nine teachers and informal science educators joined Naturalist Kim DiPasquale and FLOW Program Manager Jill Lemon at the south parking lot at the Bolsa Chica Ecological Reserve to learn how Amigos de Bolsa Chica's education programs can help them meet their Next Generation Science Standards needs. These educators came from Huntington Beach, Long Beach and Newport Beach, and from as far away as El Segundo and Riverside. They were all drawn to learn about the education opportunities the Amigos provide.

Starting with a wetland tour, Kim demonstrated key talking points the Amigos Naturalists can incorporate into a typical tour, and how these talks can be customized for different grade levels and accommodate most educators' needs. These talking points not only tell the story of Bolsa Chica's unique history and thriving biodiversity, but they speak to scientific concepts all students must know.

The Amigos de Bolsa Chica's volunteer Naturalists have been trained since the 1980s to engage students and scouts with interactive discussions about their observations of the living and non-living components of the ecosystem, the physical setting and zones of the salt marsh, the bird, plant and animal adaptations to the saltmarsh habitat, food chain and energy flow, different species of birds present at different times of the year, migration and life cycles, human uses and effects upon the ecosystem throughout history . . . and on and on. One cannot visit Bolsa Chica without seeing many scientific principles at work. It is the Amigos Naturalists job to point them out and imbue a deeper understanding of the importance of the salt marsh ecosystem.

At the end of the wetland tour, Jill demonstrated how to

cast the plankton net for the group to preview what the group would learn about FLOW when they reconvened at the Visitor Center. Once across the Coast Highway inside the Bolsa Chica State Beach Visitor Center, everyone was shown the basic water condition tests for pH, nutrients and salinity. They were each given a microscope and treated to a lively array of Phytoplankton.

Jill was joined by FLOW Citizen Scientists Linda Fillet and Judy Huck who shared their insights into



Jill Lemon shows educators contents of water sample from the BCER footbridge. Photo By Thomas Anderson

the importance Phytoplankton and its role in the basis of the ocean food web as well as how the typical FLOW classroom visit works. Students compare and contrast organisms of the plankton community, explore energy sources, trophic levels and ecological relationships, water quality, algal blooms and nutrient recycling in coastal ecosystems, and the role plankton plays in Earth's oxygen and carbon cycles. After the demonstration, attendees were treated to lunch.

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## First Saturday of the Month Tour

Free tours of the Bolsa Chica Ecological Reserve led by Amigos docents.  
9:00 a.m. to 10:30 a.m.

## Last Saturday of the Month Bird Walk

Free bird walk led by Amigos docents. 9:00 am.  
Reservations are encouraged,  
714-840-1575

Free monthly tours are on a first come, first served basis. Carpooling is encouraged as parking at the Bolsa Chica Ecological Reserve is limited. All tours begin at the south parking lot, PCH between Warner Ave. and Seapoint St.

# Solutions for Tidal Inlet Maintenance Costs

By Shirley Dettloff

I don't think that the Amigos will ever forget that wonderful morning in August, 2006 when we watched as the ocean waters flowed into the Bolsa Chica Wetland. This meant health and life were brought back to the degraded wetland. When we started our efforts to save the Bolsa Chica, the only ocean waters flowed in through Huntington Harbour, a trip lasting over 28 days. The water never got farther than the muted tidal inner bay. As of that momentous day 13 years ago we could be assured that an additional 500+ acres of wetland would again flourish, and that all our efforts over 40+ years would be successful. We stood on the new bridge, first in the dark, and then as the sun started to rise, the bull dozers removed the last of the sand blocking the water and then the flow began with cheers from the Amigos. And, of course, the opening of the champagne bottles and a never to be forgotten speech by Vic Leipzig.

Some thought that our job was now done, but we knew that we must remain vigilant. Over 300 acres of wetlands have yet to be restored, and that will not happen until the oil operations come to an end. We also knew that there could be future problems with a restoration project this size. We are now facing one of those problems and Amigos are watching it closely, working with the Bolsa Chica Steering Committee to do all we can to address the issue.

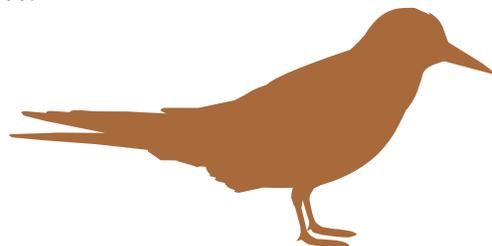
When the wetlands were acquired by the State, part of the agreement was that funding to keep the ocean inlet open for the future was a part of the agreement. Sadly we faced a nation-wide recession in 2008-10 and the original interest on the fund was much lower than previously anticipated. Also, dredging of the inlet had to be done on a yearly basis which was not a part of the original plan, and of course costs kept going up. We are now faced with the issue of who will pay for keeping the tidal inlet dredged and open. The Bolsa Chica Land Trust has engaged in studies to find alternatives to costly annual dredging, but the results (and their costs) have not yet been determined.

There are currently two options. First, the State of California, the owners of the property. But California is faced with many issues on the environmental agenda. Many State facilities are in need of repair, other environmental issues are pressuring legislators

for funding. We would have to fight for every dollar and do this every budget year.

The second option is the proposed mitigation for a major Huntington Beach project called Poseidon. This project is a desalinization facility to be built at the site of the AES plant. Poseidon is proposing, as mitigation for their project, that all mitigation be done at Bolsa Chica. They have put forward a plan, which, if the Poseidon project is approved by all necessary agencies, would keep the tidal inlet open for the life of their project. Poseidon has gone through many of the steps needed for approval and has two more to go through. Remaining is approval by the Santa Ana Regional Water Quality Control Board and then the California Coastal Commission. The Amigos de Bolsa Chica has not taken any position on the Poseidon project itself, but we do support that any mitigation be done at Bolsa Chica if the Coastal Commission approves the project. This would ensure that for many, many years we could be confident that the wetlands would be healthy.

Just imagine what a degraded wetland would mean to our community. I think that the word "swamp" might be appropriate. Many areas would have reduced tidal circulation, deterring the birds and fish that are now abundant, and inviting certain insects, mainly mosquitos, which could cause health issues. Losing the healthy tidal water that provides nurseries for fish would dramatically impact the fishing industry. The site would no longer be attractive to visitors which is a great source of revenue for our City. Hundreds of school children visit the wetlands every year. Bolsa Chica is an outdoor laboratory, and they are learning about the importance of a healthy wetland and its connection to a healthy ocean. We can't lose any part of this that we worked so hard to preserve from development and undergo restoration. The Amigos will continue to be vigilant, protective, and we will always be the voice of truth based on the best available science.





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## THE TERN TIDE

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## AMIGOS DE BOLSA CHICA MEMBERSHIP APPLICATION

I support the specific and primary purpose of Amigos de Bolsa Chica, which is to advocate the preservation, restoration and maintenance of the Bolsa Chica, to encourage the public acquisition of all the wetlands and sufficient surrounding open space to create a viable ecosystem, and to provide education about the importance of wetlands.

### ANNUAL DUES

\$ 10 Student

\$ 25 Individual

\$ 40 Family

\$100 Sustaining

\$1000 Life Member

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

### Additional Contribution:

\$ \_\_\_\_\_ Fund operational expenses    \$ \_\_\_\_\_ Fund education projects    \$ \_\_\_\_\_ Total enclosed

### Please check if you are interested in volunteering for:

FLOW Citizen Science \_\_\_ Docent training/wetland tours \_\_\_ Wetlands cleanups \_\_\_ Fundraising \_\_\_ Grantwriting \_\_\_

All contributions to Amigos de Bolsa Chica are tax-deductible as allowed by law under IRS Code Section 501(c)3.

No goods or services were provided in consideration of this gift.

Return application to: Amigos de Bolsa Chica, P.O. Box 1563, Huntington Beach, CA 92647