



The Pickleweed

The Newsletter of the Huntington Beach Wetlands Conservancy, Inc. (A Nonprofit Corporation)

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A Message From Our Chairperson

By Gordon Smith

As you'll see, the big story in this issue of *The Pickleweed* is our soon-to-be-open interpretive and education center. We are thrilled to finally be able to make available to our local schools, visitors to Huntington Beach, and area residents a sophisticated and engaging place where they can learn about the value of coastal wetlands, about ongoing threats to our coastal ecosystem, and about how we can mitigate society's impacts on native wildlife. Visitors can see the operation of a fully equipped hospital for sick and injured wildlife, and learn about what it takes to rehabilitate animals for return to the wild. Visitors will also learn about the Center's role in responding to oil spills as a member of the state's Oiled Wildlife Response Network.

Working with our designers and exhibit contractor to assemble the photo images, draft the interpretive text, and prepare the facility for installation has been an all consuming undertaking for us these past several months. Opening day, while it will be a cause for celebration and a relief, will begin for the Conservancy a new chapter with new challenges. The Conservancy, in its almost three-decade existence, has focused its efforts primarily on acquiring, restoring and managing its wetland properties. Now with the new visitors' center, we will turn more of our attention to community outreach and education.

In addition to the visitors' center, readers of *The Pickleweed* will recall that there are other matters of concern to the Conservancy that merit a word of updating. The wheels of government turn slowly, and our acquisition of the 44-acre Newland Marsh at PCH and Beach Blvd is still working its way through agency processes. The long-sought-after trash booms in the Talbert and Huntington flood control channels are also still in the planning stage by the County. Lastly, regarding the tank farm just north of Magnolia Marsh, there has been no further movement by the owners to demolish the tanks and sell the property.

We are pleased that that our wetlands have become venues for research and learning as described in two of the articles that follow. We are also pleased to report that our restoration efforts are yielding enhanced habitat for endangered species such as the Belding's savannah sparrow. Finally, please note in particular the article on volunteering for the Conservancy; we are a truly community-based volunteer organization that can always use more support.

Belding's Savannah Sparrows of the Huntington Beach Wetlands Complex

By Dick Zembal

Three endangered species currently call the Huntington Beach Wetlands (HBW) home. All three are birds: the California Least Tern is only here during the spring and summer spending the winters much further south; the Light-footed Clapper Rail and Belding's Savannah Sparrow (BSS) are year-round residents.

One of the major concerns associated with large scale restoration projects is the potential effects on residents, particularly endangered species. HBW supported a major population of BSS prior to restoration and the goal during restoration and recovery of the wetlands has been to do everything possible to maintain the viability of the BSS population. To that end, long high berms were built into the



Belding's savannah sparrow

marsh design that were not included in the original plans with the expectation that suitable higher marsh habitat would thrive thereon; the berms were planted with thousands of pickleweed plants grown in the

Conservancy native plant nursery; an irrigation system was installed to boost the survival and growth of the marsh plants; replanting was done regularly to fill in bare areas;

major pickleweed stands were avoided in the restoration design; and the majority of the restoration work particularly with heavy equipment was done outside the breeding season when the BSS are more mobile and less vulnerable.

The most recent range-wide survey of BSS in California was done in 2010 and the next is scheduled for 2015. A count was done of the HBW population in April 2013 to check the status

of these diminutive marsh denizens in the interim. The HBW population from Beach Boulevard to the river was documented at 123 breeding territories in 2010 and 83 territories in 2013. The most recently restored marsh parcel, Magnolia Marsh, was down by 10 territories to 16; Brookhurst Marsh at 4 years post-restoration was only down by 6 territories to 31; and Talbert Marsh at 24 years post-restoration had increased by 2 territories. Most of the decrease from 2010 to 2013, with a loss of 26 territories, was observed in the Newland Marsh parcels which have not yet been touched for restoration, but are manifesting the results of drought. About 30% of the pickleweed cover there has been desiccated, the soil is mostly cracked and dry, and invertebrate production (BSS food) is predictably down.

BSS are best accommodated in a wetland with ample high marsh and a full tidal prism. Full post-restoration recovery of a wetland can take many years, even decades, but eventually the HBW will support a larger BSS population than that documented in 2010. This is easily predictable because HBW is under management by a band of dedicated volunteers who strive to: enhance the entire wetland complex; control trash and non-native plants; plant pickleweed; nurture participation by a caring public; and remain vigilant and reactive to potential threats.

Exploring “Blue Carbon” in the Marsh

By Prof. Jason K. Keller, Chapman University

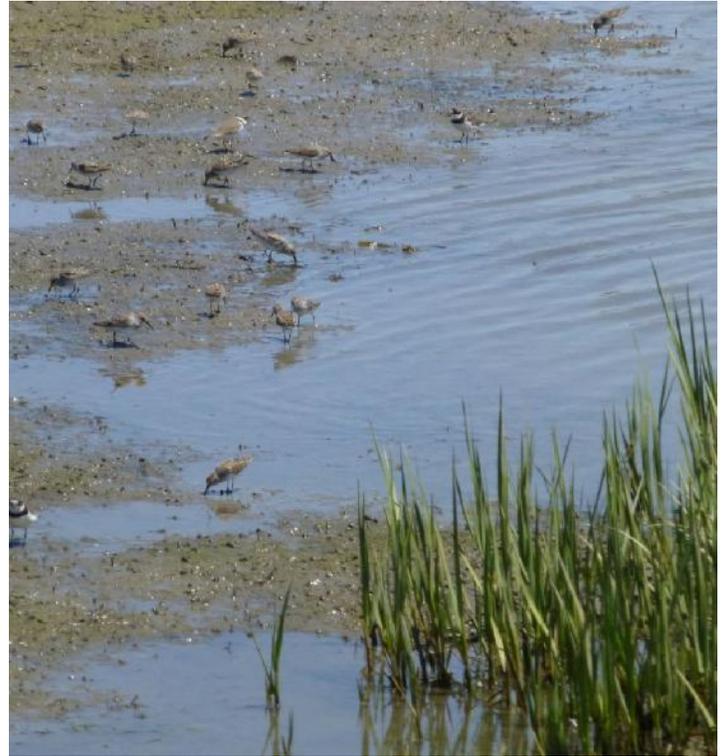
Mention “blue carbon” at a cocktail party and you will likely turn the heads of coastal managers, economists, and wetland ecologists. What is it about this colorful term that has captured the attention of such a diverse audience?

Blue carbon describes the carbon stored in coastal ecosystems, including salt marshes, mangroves and seagrass meadows. Carbon enters into these ecosystems when plants convert carbon dioxide from the atmosphere into organic matter (leaves, roots, and other plant biomass). When these plants die, a fraction of this organic matter (now dead plants) is left behind in the soil. Coastal systems, including the Huntington Beach Wetlands, are particularly adept at storing large amounts of organic matter in their soils because they are constantly accreting soil – they must build up new layers of organic-rich soil to keep their “heads above” sea level. A recent estimate suggests that salt marsh soils may store up to 40-times more carbon in a given area than soils in even the lushest tropical rainforest!

At this point, you have the attention of wetland ecologists, but what draws the economists and coastal managers into this conversation? The movement of atmospheric carbon dioxide into longer-lived carbon pools such as soil organic matter is termed carbon sequestration. As a number of groups explore carbon markets and carbon cap and trade systems, there is an economic value for carbon sequestration because it removes greenhouse gases from the atmosphere. In theory this means that one could sell the carbon stored in a wetland and, perhaps, help offset the cost of marsh restoration projects.

Obviously the utility of this mechanism will be linked to the value of carbon in the future and, to be fair, there are a number

of important scientific and policy questions to be answered before this becomes practical. Despite those caveats, the idea of capitalizing on blue carbon to enhance coastal conservation is intriguing.



Magnolia Marsh at low tide

Undergraduate students at Chapman University have begun exploring blue carbon in the Huntington Beach Wetlands. As part of an Ecosystems Ecology course, we measured organic matter in soil collected from the upper 20 inches of both Talbert and Brookhurst Marshes. We initially hypothesized that soil organic matter should accumulate following successful restoration, and expected to see higher carbon content in Talbert Marsh than in the 20-year “younger” Brookhurst Marsh. We were surprised to find the exact opposite – in general, there is more carbon in Brookhurst Marsh soils than in Talbert Marsh soils. This suggests that in addition to time since restoration, initial site conditions will be important for understanding blue carbon dynamics in salt marsh soils. These results, as well as others from our work, have been published in the *Bulletin of the Southern California Academy of Sciences*.

Wetlands Climate Change Study Concludes

by Prof. Christine Whitcraft, CSU Long Beach

After two years of hard work, it was with a celebratory smile that Anastasia disassembled her last experimental PVC structure and removed it from the salt marsh. A grad student at CSU Long Beach, Anastasia Shippey has been conducting an experiment in Brookhurst Marsh to test the effects of increases in precipitation, decreases in precipitation, and increases in temperature on a high marsh berm. Climate change projections for southern California include increased frequency of severe storms, longer periods of drought, and increases in

temperature. Thus, Anastasia constructed 70 PVC structures that served as small environmental chambers to modify temperature (increased approximately 2 degrees Celsius, 3.6 degrees Fahrenheit) and to alter precipitation (either blocking all rain or adding water).



Climate change experiment

Small continuous data loggers placed within each experimental plot indicate treatments were effective. Since May 2011, we have been taking quarterly samples to look at changes in organisms, such as worms and snails, changes in plant growth, and changes in sediment algae. Overall, we saw the largest changes in the most extreme plots (increased temperature/decreased precipitation). These plots were hotter and drier than the other treatments which resulted in an overall decrease in plant cover of all species. We believe that the reduced plant cover let more sunlight hit the soil surface which led to an increased amount of microalgae (an important food source for some animals, particularly insect larvae). This alteration of plant cover (and thus plant material) and algae represents an important change to the habitat conditions and food availability for invertebrates in the increased temperature and decreased precipitation treatments. In these treatments, we saw fewer invertebrates than in the treatments with increased precipitation and an altered insect community. Treatments that combined increases in temperature with increases in precipitation had the highest abundances and diversity of insects among all of the treatments. Hotter temperatures and drier temperatures in the high marsh habitat will have important changes for the plants and animals that live there. Future restoration planning should include both active planting and access to freshwater sources in order to quickly create shade and a moist environment for the soil dwelling invertebrates. These invertebrates will ensure food for the higher trophic organisms such as fish and birds that we all love to watch use the marsh.

Interpretive Center Nearing Completion

The interpretive displays of the Wetlands and Wildlife Care and Education Center are nearing completion and are scheduled to be installed this coming August. The displays, presently being fabricated by Alameda-based Group Delphi, will include a large wetlands diorama, twenty large interpretive

panels, a display on the 1990 American Trader oil spill, and interactive displays on wildlife care and rehabilitation. The diorama will include a boardwalk and a hand-painted background mural. An impressive hand-painted mural will also serve as background for the American Trader display.

The Center's interpretive panels will include more than 75 high-resolution photographic images depicting coastal wetlands ecology, wetlands restoration, human impacts, and wildlife care. The panels, which include educational narratives, are being designed by the Tustin-based Acorn Naturalists.

The Center's fish webcam will also be incorporated into the displays to give visitors a live underwater view from Talbert marsh. Alternating with the fish webcam live view, the video monitor will also display a dramatic time-lapse "movie" of the restoration of Magnolia Marsh. A camera installed high on the AES generating station superstructure recorded the time-lapse video; it captures the entire process of restoration from dry ground to incoming ocean tides.



Wetlands diorama under construction

The displays in the center of the room will be on wheels and movable to accommodate setup for large group meetings and training classes for volunteers. A smaller area to the side of the main room will serve as a meeting room and research library. The meeting room will be separated by a sliding partition.

The overall design for the Interpretive Center can be found on the Huntington Beach Wetlands Conservancy website at <http://hbwetlands.org/pdfs/Report06.17.08.pdf>.

Watch for our Grand Opening announcement this summer!

Volunteering at the Wetlands

The Huntington Beach Wetlands Conservancy is a volunteer-based organization. Even though the Conservancy owns and manages 120 acres of coastal wetland habitat, we rely on volunteers to serve on our board of directors, and members of the community to help us maintain and enhance our property. The Conservancy has no paid employees.

We are fortunate that the citizens of Huntington Beach have a rich tradition of volunteering when it comes to protecting the environment. That tradition goes back to the early days of the fight to protect the Bolsa Chica Wetlands, a fight where

several of us in the Conservancy got our start as activists. Over



Golden West College Volunteers

the Conservancy's 28 years of existence we have benefited from the interest and dedication of many groups and individuals who have given their time and energy to serve on our board, help us clean up trash, pull invasive weeds, and dig holes in order to plant native species from our nursery.

Most recently, we have been pleased to host hard-working volunteers from the local LDS church and the Golden West College Service

Learning Program. Those groups accomplished tasks including fence painting, weeding and planting.

Our need for volunteer help is ongoing and year-round. Trash and weeds are persistent maintenance challenges for us, and there are always more areas that can benefit from re-vegetation. Moreover, once our new Interpretive Center is open for business, we would like to establish a cadre of volunteers who can act as docents for visitors to the Center and our Magnolia Marsh.

Anyone interested in volunteering should give us a call or send us an email. And don't forget to mark your calendar for the annual California Coastal Cleanup Day, the third Saturday in September.

Our Board of Directors

- | | |
|----------------------------------|--------------|
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------(CUT HERE)-----



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My interests include:

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