THE
MISSION ★ ARANSAS OBSERVER
Newsletter of the Mission ★ Aransas National Estuarine Research Reserve
AUTUMN 2014

CHANGING FACES OF THE RESERVE

by Carolyn Rose, Interim Reserve Manager

The faces at the Mission-Aransas Reserve have changed a great deal since the publication of our spring newsletter. Sally Palmer resigned from her position as Reserve manager in May, after almost 8 years of dedicated and successful management. Kristin Ransom, our former coastal training program coordinator, moved on to a contractor position with the National Oceanic and Atmospheric Administration in July. Suzy Citek, the education specialist at the Bay Education Center, resigned in August to return to classroom teaching. We wish all of our former colleagues the best in their new endeavors.

We are also pleased to welcome new stewardship and coastal training program coordinators who have hit the ground running and who demonstrate the capacity to accomplish great stewardship and coastal training achievements in the upcoming years. A new education specialist at the Bay Education Center will start work soon and we hope to have *Science on a Sphere* programs back on the schedule at the Center this Fall. The Reserve's selection committee is searching diligently to find a new manager to carry on the good work that Sally implemented.

Katie Swanson is the Reserve's new stewardship coordinator. Katie received a Bachelor of Science degree in Biology from Hobart and William Smith Colleges and a Master of Science degree in Marine Science from the University of Texas at Austin. Katie has research experience with harmful algal blooms, phytoplankton culturing, sea grass monitoring and surveying, sea turtle recovery and rehabilitation, and ecosystem dynamics.

Katie Swanson

In the short time that Katie has been the stewardship coordinator, she has been instrumental in attaining a University of Texas Green Fee grant to fund a water-wise wildlife garden on the Marine Science Institute campus.

Colbi Gemmell

Colbi Gemmell is the new coastal training program coordinator for the Reserve. Colbi holds a Bachelor of Science degree in Ecology and Evolutionary Biology from the University of Arizona and a Master of Science degree in Marine Science from the University of Texas at Austin. Colbi formerly served as the Reserve's interim coastal training program coordinator, where she gained valuable experience facilitating workshops on a variety of topics important to coastal stakeholders. Colbi is looking forward to reconnecting with coastal decision makers and helping them access the appropriate resources, trainings, and information to protect and sustain our valuable coastal resources.

You may reach Katie Swanson at (361)749-3106 or katie.swanson@utexas.edu and Colbi Gemmell at (361)749-3156 or colbi.gemmell@utexas.edu. Sally Palmer is the new UTMSI communications coordinator. You may reach Sally at (361)728-1025 or sally.palmer@utexas.edu.

INSIDE

Cedar Bayou Reopens

by Dr. Ed Buskey, Research Coordinator

The lower coast of Texas has a nearly continuous series of barrier islands that separate the coastal bays and estuaries from the open Gulf of Mexico. Between these barrier islands are a limited series of passes where tidal waters are exchanged between the bays and the Gulf. Many species of finfish and shellfish of commercial, recreational, and ecological importance use these passes to move between the productive coastal estuaries and the open Gulf of Mexico. For example, blue crabs, brown shrimp, and white shrimp all use the estuaries as nursery grounds where their offspring can take advantage of the productive estuaries for food and use the structure provided by seagrasses, marshes, and mangroves for protection from predators. As adults, important finfish and shellfish species migrate back into the Gulf of Mexico where they spawn and produce large numbers of tiny planktonic larvae. These larvae must then take advantage of Gulf circulation and currents to carry them back through Texas's widely dispersed and narrow passes into the estuaries where they will grow into adults.

Restrictions on the transport of planktonic blue crab larvae back into the estuary could potentially have negative impacts on the endangered Whooping Crane. Blue crab is one of the preferred foods of the cranes, and the nearest sources of blue crab larvae to the Aransas National Wildlife Refuge, the crane population's winter home, are the Aransas Ship Channel 20 miles to the south and Pass Cavallo more than 30 miles to the north. Historically, Mesquite Bay, adjacent to the refuge, was also connected to the Gulf of Mexico through a third pass, Cedar Bayou.

Tilt current meter stations in Mesquite Bay where circulation changes are being monitored.

Cedar Bayou, however, was purposely closed during the Ixtoc I oil spill (ca. 1980), and several attempts to reopen the pass in the following years were unsuccessful as sedimentation continued to slowly refill the opening, finally closing it again completely during the winter of 2007-2008. In addition to concern over how closure of the pass might affect the Whooping Crane population, Cedar Bayou is locally renowned as a prime fishing spot, and anglers also were concerned about the reduction of circulation in Mesquite Bay and the potential impacts on fish and shellfish populations.

On Thursday, September 25, 2014 Cedar Bayou was finally reopened, renewing the connection between the Gulf of Mexico and Mesquite Bay. Through the support of Aransas County and many partners, the $9 million dollar project was first approved in 2009, and dredging operations began in May 2014. There is now great interest in how the reopening of the pass will change the ecology of Mesquite Bay and the surrounding area.

The Reserve has a permanent monitoring station in Mesquite Bay that has been collecting water quality data since January 2008 (coincidentally, right when the pass closed). We also collect monthly nutrient, phytoplankton, and zooplankton samples that can characterize the changes in water quality and the plankton populations in Mesquite Bay. Comparing these monitoring data before and after the opening of Cedar Bayou will help us understand any changes that might be observed in the system.

Cedar Bayou (A) February 22, 2014 before dredging began and (B) October 5, 2014 after dredging was completed (photos by Lisa Laskowski).

In March 2014, before the dredging of Cedar Bayou began, we also began a study of the circulation patterns in Mesquite Bay. "Tilt" current meters were placed at 11 stations throughout the bay so that baseline circulation patterns could be measured while the pass was still closed. The meters were collecting data as the connection to the Gulf was reestablished on September 25, and deployments will continue over the next several months so that changes in circulation patterns can be fully characterized.

A Water Wise Wildlife Garden

by Katie Swanson, Stewardship Coordinator

This past May, the Mission-Aransas Reserve (Reserve) and the University of Texas Marine Science Institute (UTMSI) were awarded funding to develop a native species xeriscape demonstration garden that utilizes water-wise plants that attract wildlife, such as birds, butterflies, and dragonflies. This Water Wise Wildlife Garden will help visitors learn about the importance of wildlife gardens and water conservation. The garden will enhance the educational programs currently offered by providing new pathways to explore along with interpretive signage.

The Reserve headquarters are located on the UTMSI Campus in Port Aransas, Texas, which is situated in the Central Flyway, a major migratory route for birds and butterflies traveling between Mexico and the Northern part of North America. The butterflies will be able to use the garden as they migrate to and from Mexico. Port Aransas is also known for its world-class birding. Located on the busy flyway, it is an area where approximately 380 species of birds have been documented. Native plants selected for the Water Wise Wildlife Garden will provide habitat for a number of migrating and non-migratory butterflies, birds, and dragonflies.

Plants used in the Water Wise Wildlife Garden will provide new habitat for the thousands of birds and butterflies that fly over this area each year during their migrations. Photo by Linda Fuiman.

The primary goal of the garden is to reduce the water demands of the UTMSI campus, while also teaching the general public and school groups about the benefits of utilizing native species to attract wildlife and conserve water in drought-prone areas of the country, such as South Texas. By selecting native and/or adapted plants for our garden, everyone can enjoy beautiful flowering plants, shrubs, and trees year-round while saving our local water supply. Typically, native and adapted plants, once established, require 80% less water than non-adapted species. Even during drought periods, these species will continue to thrive and bloom with minimal watering. A native landscape will require less mowing, maintenance, and care, resulting in time and cost savings. Native plants are more adapted to this harsh, coastal environment, and will be able to survive during severe drought times. Additionally, they are more resistant to wind and salt spray damage, which afford them a greater likelihood of surviving in South Texas.

The current grass lawn that requires lots of water will be transformed into the Water Wise Wildlife Garden on the UTMSI Campus.

Currently we are in the design phase of the project, and and are hoping to have an opening ceremony next spring. Local community groups, such as Keep Port Aransas Beautiful and the UTMSI Green Team are helping with plant selection and design. Be on the lookout for an invitation to come and assist with the planting of our Water Wise Wildlife Garden. The Reserve's volunteer community will play an integral role in helping the garden come to life!

Teachers on the Estuary: Experiencing Hands-on Estuary Science

by Colbi Gemmell, Former Education Specialist

This past summer, the Reserve hosted a three-day Teachers on the Estuary (TOTE) teacher training. The goal of the workshop was to enhance teachers' ability to educate students about the ecological value of estuary habitats, how humans can negatively impact estuaries, and how they can help protect estuaries. Seventeen teachers participated in hands-on field experiences at three sites within the Reserve during the summer workshop. The participating teachers are invited to return to conduct the same activities with their students during the 2014-2015 school year.

Teachers spent the first day of the workshop at the University of Texas Marine Science Institute (UTMSI), where they boarded the R/V Katy to learn how organisms are adapted to living in estuary and marine habitats. After the boat trip, Dr. Brad Gemmell, UTMSI Research Associate, discussed aspects of his current oil spill research with the teachers, including how marine plankton interact with oil. Teachers then conducted a plankton lab, where they learned how to take a plankton sample and use identifying features to differentiate between phytoplankton (plant-like plankton) and zooplankton (animal plankton).

Teachers investigating restored oyster reefs at Goose Island State Park.

The next morning, teachers headed to the Bay Education Center in Rockport to investigate salt marsh plants, monitor water quality in Little Bay, and experience the species richness and diversity found in a seagrass bed ecosystem. That afternoon, Dr. Jennifer Pollack, Texas A&M University-Corpus Christi Assistant Professor, discussed oyster reef restoration with the teachers. They then traveled to Goose Island State Park, where Dr. Pollack led them in a hands-on activity that focused on oyster reef species diversity.

Teachers spent the last morning of the workshop at Fennessey Ranch investigating the important ecological functions provided by riparian woodlands. During an early morning Habitat Hike, teachers identified animal skulls that were strategically placed beside riparian plant species that provide food or shelter for wildlife. Participants also took water quality measurements in the Mission River and compared their findings to the water quality measurements previously taken from Little Bay, Rockport. After hearing an overview of the environmentally friendly management practices at Fennessy Ranch, the teachers headed back to the Bay Education Center, where the workshop wrapped up with a presentation of Science on a Sphere.

Teachers taking water quality measurements in Little Bay.

Reserve staff were pleased and honored to learn that some of the participating teachers thought that TOTE workshop was the best teacher workshop they had ever attended. The workshop evaluations revealed that the teachers enjoyed learning about estuary science by conducting hands-on activities in an outdoor setting. Starting this fall, each attending teacher will have the opportunity to bring some of their students to the Reserve to participate in the workshop field experience of their choice.

If you are a teacher that is interested in participating in future TOTE workshops or if you would like further information, please contact the Reserve's Education Coordinator, Carolyn Rose (361)749-3152, carolyn.rose@utexas.edu.

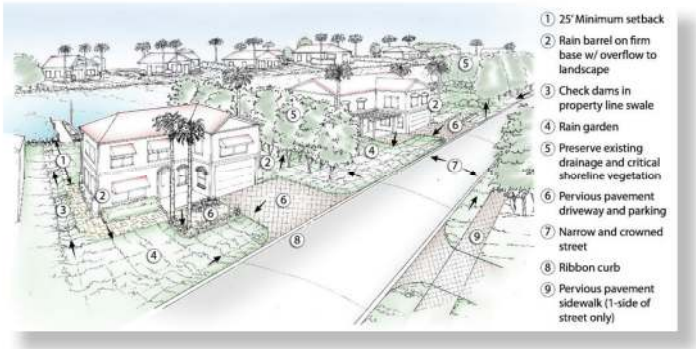
Coastal Stormwater Best Management Practices

by Danica Adams,
Center for Research in Water Resources
University of Texas at Austin

One evening, during a recent visit to Port Aransas, I ended up at a wonderful restaurant chatting with a fishing guide. He grew up 15 miles away, and lived near Port Aransas his whole life. He makes a living taking tourists out on the water, sport fishing in Redfish Bay and the Gulf of Mexico. As we talked, I realized this man's livelihood, and many others', depended on the health and cleanliness of these waters.

Although clearly important in residents' lives and economies, Redfish Bay is an impaired waterbody. During routine water testing, the Texas Commission on Environmental Quality found that the bay has unusually high levels of bacteria. Aquatic life, water recreation, and oyster harvesting are all negatively impacted by high bacteria counts.

How did the bay become impaired? Can we prevent future impairment? When it rains, the water may land on trees and evaporate; it may land on fields and soak into the soil; or it may land on rooftops, roads, or other impermeable surfaces where it cannot soak in. Rain that doesn't soak in, but instead runs across the land into a waterway, is considered stormwater runoff. When stormwater runoff travels across a surface, it picks up pollutants along the way. These pollutants include bacteria, oil, or litter - all of which eventually end up in a receiving waterbody, such as Redfish Bay.



Sketch of Waterfront Development - This conceptual sketch illustrates elements of sustainable stormwater design in a residential waterfront development.

New development, and the increase in impervious surfaces often unintentionally increases pollutants, such as bacteria, in a waterbody. Unfortunately, kayaking, oyster harvesting, sport fishing, and swimming are negatively impacted. These impairments are not unique to Redfish Bay, and the story is similar in bays, resacas, and rivers throughout the coastal zone.

New development doesn't have to increase pollutants in waterbodies. With input from small cities in the coastal zone, and using funds from the Coastal Impact Assistance Program (CIAP), the Center for Research in Water Resources at UT Austin developed a guidance document, Guidance for Sustainable Stormwater Drainage on the Texas Gulf Coast, which outlines ways for municipalities to reduce pollution from new development. It includes variations on current green practices, tweaked to improve filtration.

On **December 2nd**, the Coastal Training Program at Mission-Aransas Reserve is partnering with the Center for Research in Water Resources to host a stormwater workshop. This workshop will go over the sustainable stormwater management guidance manual in detail and discuss programs to help small cities implement effective and attractive stormwater controls. Visit our website www.txcoastalbmp.org/documents to download the Guidance Document, BMP Maintenance Sheet, and Resident's Guide to Keeping Water Clean. More information will be available soon on how to register for this workshop. In the meantime, if you have any questions, please contact Colbi Gemmell (361)749-3156 or colbi.gemmell@utexas.edu.

Special Visit from GLO

The coastal division of the Texas General Land Office visited the Reserve on September 23rd and 24th to learn more about our exciting program and brainstorm about future collaborations. We look forward to a continued partnership with our coastal stewards for the great state of Texas.

Recent doings at the Animal Rehabilitation Keep (ARK)

by Amanda Terry, Animal Rehabilitation Keep Volunteer Supervisor

Things have started to slow down at the ARK after the spring's rush of babies. So far this year over 1,200 birds, 130 mammals, 35 reptiles, and 626 sea turtles have been admitted. We welcome the small break!!!

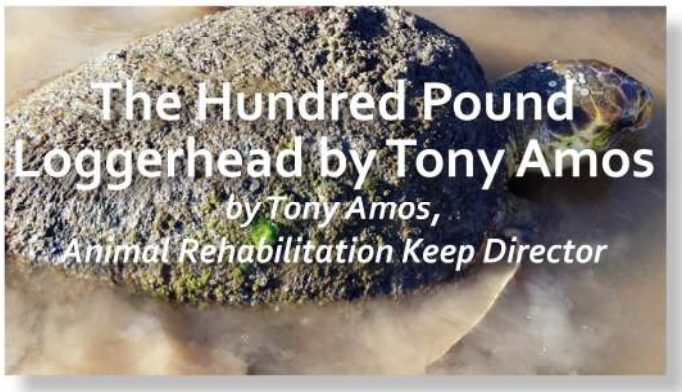
Numerous pelicans with torn pouches have come in recently. The tears may come from the pelicans eating hardhead catfish that have been discarded by fishermen. These types of injuries luckily heal quite well. Five have come in and all but one have been released.

Among mammals, we have taken in several Virginia opossum and eastern fox squirrel babies. Almost all of these have been raised and released. We have released 176 animals since July, including hawks, songbirds, herons, gulls, and various others. Things will start to pick up as many birds are migrating through the area now. We will also start to see birds affected by various hunting seasons and turtles by the cold weather that will be here eventually.

We have held eleven large green turtles with fibropapillomatosis since the early months of 2014. This virus causes invasive, but benign tumors to grow on the turtles and was unknown in the Gulf of Mexico until recently. Tumors must be removed and the wounds healed before the turtles can be released. One by one they have gone to our consulting veterinarian Dr. Tim Tristan for surgical tumor removal and returned to heal.

We released eight "fibropap" and three other green sea turtles from Mustang Island Gulf Beach on October 11, 2014, before a crowd of several hundred people. ABC TV aired an episode of Sea Rescues that featured the ARK and its role in housing and releasing of cold-stunned green sea turtles earlier this year.

Mustang Island turtle release.



The Hundred Pound Loggerhead by Tony Amos

by Tony Amos, Animal Rehabilitation Keep Director

In late August, the ARK rescued and is now rehabilitating an unusual sea turtle. The rescue of a big Loggerhead turtle (*Caretta caretta*) itself is not that unusual, but the location of its stranding is: Carancahua Bay in Matagorda County almost 100 miles from here. It was reported floating offshore by Leann and Tom Presley, residents of Cape Carancahua, who went out in a small boat and somehow got the 101-lb turtle to shore. We had to buy a large kiddie pool in Port Lavaca for the transport as the ARK's big tubs were all full of various creatures. With the help of the folks of this bayside community (and the Tommy Lift gate on my truck) we got the turtle in the back and the 87-mile one-way trip home was, as usual carrying a big active turtle, tense: one time I saw it rear its head above the truck bed side and did feel it shake the truck as it moved around in the back. Phew! I said to myself when we rolled into the ARK. The ferry crew and passengers were thrilled to see this wonderful animal.

It didn't take long for ARK animal rehabilitator Amanda Terry to discover that this turtle had several marine leeches (*Ozobranchia*) attached. These parasites are occasionally found infesting large loggerhead and green sea turtles and a 24-hour soak in fresh water usually kills these bloodsuckers. Somewhat disturbing is that this marine leech may be a carrier of the fibropapilloma virus. For weeks the turtle was floating or swimming at an odd angle in his tank at the ARK. Just recently he was found resting at the bottom and can now swim and dive normally. We will release him soon before the sea temperature gets too cold and invite the public to see him go back to the wild (he will have his coating of barnacles removed before going home).

Capturing a loggerhead turtle.