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FRONT: Beachcombing can be a rewarding way to spend time at the coast. Shells and other treasures await. For the best beachcombing, hit the beach at low tide or after a storm. Photo © Kendal Larson

BACK: The dunes go on for miles at Padre Island National Seashore, the longest stretch of undeveloped barrier island in the world. Photo © Laurence Parent

PREVIOUS SPREAD: Mark London, a volunteer scientific diver for TPWD's Artificial Reef Program, takes notes at an artificial reef created from an old oil platform in the Gulf Photo by Chris Ledford/TPWD

THIS PAGE: The South Padre Island Birding and Nature Center, on 50 acres near the convention center, contains rich habitats for native and migrating birds. Photo © Larry Ditto



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In the Field

MELISSA GASKILL grew up on the Texas coast, in Port Arthur and Houston, and has many childhood memories involving beaches and water. Certified as a scuba diver in high school, she headed to Texas A&M University for a degree in

zoology, planning to follow it with graduate study in marine



biology and a Jacques Cousteau-like life. After three years of college chemistry, though, she decided to pursue a master's in journalism instead. She and her zusband, Corey, also a diver, took their three now-grown children to the coast several times every year, and this issue's "Get Coastal" reflects her experiences from those frequent visits. Melissa especially enjoys camping, kayaking, hiking and beachcombing along the Texas shoreline.

ROBINSUN has worked for TPWD's Coastal Fisheries Division for more than 20 years and currently serves as the upper coast regional director for fisheries management. He and his staff are involved with fisheries monitoring, marine

invasive species issues, oyster habitat restoration and commercial fishery issues. Hurricane Ike brought professional and personal challenges to the TPWD staff on the coast. Lance lost power for a week and endured damage to his home. He says others fared much worse, and he says he was impressed with the dedication of his fellow TPWD employees in their efforts to manage and protect the state's natural resources in the face of personal hardship.



BRUCE BIERMANN has been involved with broadcast and video productions since 1984 in just about every capacity from sweeping studio floors to writing, producing, directing, editing and distributing his own award-winning documentaries. He learned to scuba dive while in high school and has never taken his fins off since. Bruce's love for nature and conservation are



now reflected in his feature television stories, both above and below the water line, for the Texas Parks & Wildlife PBS series. An avid cook, photographer, camper, hunter, dog owner and bicycle rider (Bruce rode from California to Georgia in 1989), he is always looking for the next back road, greasy burger stand and interesting story to capture and share with others. "Mysteries of the Deep" is his first contribution to the magazine.

AT ISSUE

FROM THE PEN OF CARTER P. SMITH

Good things come in small packages. Chaetura Canyon must be one of them.

To the uninitiated, Chaetura Canyon is a steep, heavily wooded canyon preserve tucked away within a neighborhood just on Austin's western perimeter. It is one of those rare Hill Country gems one could drive by a million times without even knowing it is there.

Situated within a small watershed that feeds directly into Lake Austin, the picturesque canyon was named by its stewards, Georgean and Paul Kyle, after its signature resident, the chimney swift. Chaetura is the genus for the chimney swift, a member of the needletail swift family whose penchant for settling in chimneys earned it its name. More about them later.

The Kyles settled in the area in the late 1960s, when they began acquiring an assortment of 60-by-120-foot lots that had been carved out of an old Travis County ranch. As they could, they purchased additional lots, eventually realizing ownership of the canyon from rim to rim. They have stewarded it with a passion and vigor that are second to none.

Craftsmen by trade, the Kyles own and operate a specialty Austin store that sells their exquisitely designed, handmade toys, a local favorite for decades. Their other "job" for the last 40 some-odd years has been applying that same, meticulous craftsmanship and attention to detail to Chaetura Canyon. Inspired by a desire to tame the cedar that had a stranglehold on the land, the Kyles set out on an ambitious restoration project that is like no other.

As with so many habitat restoration projects in the Hill Country, it began with the deer. There were way too many of them, and anything that wasn't a cedar was eaten. The Kyles' solution was an ingenious one. They couldn't hunt in the neighborhood, so they set out on a different path. As they cleared regrowth cedar by hand, leaving the large, single-trunk trees alone, they used the straight boles and limbs for fence pickets and fashioned a fence that was high enough to keep out the deer and tight enough to keep out a growing population of wayward cats and dogs.

They then went to work with a vengeance, reclaiming those hills with ax, shovel, spade, chainsaw, trowel and any other implement imaginable to prune cedar, to grub out exotic plants like chinaberry and K-R bluestem, and to plant native flowering forbs, shrubs and trees. The diversity is as impressive as any I have seen on a Hill Country property. In particular, the dense stands of red oaks, escarpment cherries and other woody plants that have grown up in small openings cleared by the Kyles and left unmolested by the deer are simply astonishing.

But that's not the half of it. After hearing about declines in the chimney swift population, the Kyles embarked on a journey to learn everything they could about the swifts. Self-taught naturalists and ornithologists, the Kyles have become nationally recognized experts on the birds. Much of their learning has come from the 15 or so carefully designed chimney swift towers that they meticulously built to meet the bird's specialized roosting needs. Each one houses a mating pair of swifts, along with hundreds of other nonmating swifts.

The Kyles have studied the swifts intently for decades, including placing live camera feeds in the towers to observe and document the roosting, mating, nest-building and brood-rearing habits of the birds. Thanks to extensive trapping and banding studies, they have tracked generations of swifts that were born on the property and that returned year after year to occupy the towers in which they were born.

Best of all, the Kyles, through a creative partnership with the Travis Audubon Society, have agreed to protect the land after they are gone. In the interim, they have become tireless, working ambassadors for the land, the swifts and the other native wildlife. Through special guided tours, visitors can come see and learn from the fruits of their extensive research and restoration handiwork.

Texas is filled with stewards, of places big and small. We are most grateful that the Kyles are two of them.

Thanks for caring about our wild things and wild places. They need you now more than ever.

A 50 H

The picturesque

canyon was named by

its stewards.

Georgean and Paul

Kyle, after its

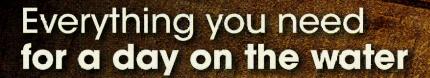
signature resident, the

chimney swift.

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PICKS, PANS AND PROBES FROM OUR

FOREWORD

The allure of a trip to the coast is immeasurable to us landlubbers who pine for the steady thrum of waves on the shore, the salty seaweed smell of the moist air and the sight of once-endangered brown pelicans gliding on sea breezes over our heads. A few months ago, I had the opportunity to revisit one of my favorite coastal towns, historic Galveston, for the annual meeting of the Texas Outdoor Writers Association. Several years had passed since my last sojourn, a nostalgic final trip for my father-in-law to share his childhood home and memories with his grandchildren. I was anxious to see if Hurricane Ike had left permanent scars.

After nearly five years, there were visible changes to be seen, but mostly of rebirth. Where Ike had swept away the Flagship Hotel, a riotous carnival now crowded the pier. An alluring giant Ferris wheel stood out from the mass of colorful lights, twirling in psychedelic glory, seeming to thumb its nose at the massive ocean, daring it to try again. My jaw dropped at the sheer chutzpah, and I marveled at all the new businesses that lined the seawall. As always, folks strolled and biked, skateboarded and surfed, combed the beach for seashells and cast their lines into the surf. Galveston had not only survived another deadly blow from the sea, she was thriving.

The tall ship Elissa, the Texas Seaport Museum and the Strand, with its enticing array of eateries and shops — all stood proud and strong, much to my relief. My heart was in my throat as we headed out to the state park. Thanks to Earl Nottingham's brave foray into that storm, I had seen remarkable photos of the damage, otherworldly images of unimaginable destruction. A new visitors center welcomed us, and we spent a few lovely hours walking the nature trails and cruising through the campgrounds, marveling at the work of park staff and the Friends of Galveston Island State Park. Later, we would learn more about the vast scope of those restoration efforts and the dedication of so many to restore the park to its former glory.

In this issue, Lance Robinson, regional director of TPWD Coastal Fisheries, takes us on a tour of Ike's hidden damage to oyster reefs and salt marshes. The impact of the storm threatened two of the most productive and valuable ecosystems found along the Texas coast, but with grant money and local partnerships, much progress has been made in restoring those lesser-seen treasures.

Of course, Galveston is only one jewel in the crown of the Texas coastline. Melissa Gaskill knows those 350 miles of sandy beaches like the back of her hand, so we asked her to offer up a list of her favorite spots this month. Wade-fishing for redfish in Laguna Madre, bird-watching at High Island, kayaking at Lighthouse Lakes, riding horses in Corpus Christi — there's something for everyone. I can already feel the sand between my toes, can't you?

> Louis Bond LOUIE BOND

LETTERS

ART BY THE WATERCOLOR GANG

We read with fascination the letter about the family who found the art by Clay McGaughy in your magazine. The Canadys and others would be interested in knowing that Clay McGaughy was one of the founding members of the Water-

color Gang, who will be celebrating their 50th year of plein air painting together! A celebration is planned for June 2 at the San Antonio Art League & Museum in the historic King William District of San Antonio.

This is probably the oldest group of plein air painters (artists who paint outdoors) in the United States, and they have enjoyed taking United States, Europe and adventures with others.

trips together for the past 50 years simply to paint. After their trips throughout the Mexico, they have put on exhibitions where they have shared the paintings of their

Clay McGaughy, Ivan McDougal and Finis Collins started painting together 50 years ago with a very interesting trip to Big Bend. There have been many other members over the years and guest artists. E. Gordon West and Lee Ricks now round out the foursome, along with McGaughy and Collins, that is currently the Watercolor Gang.

A few years ago Texas Country Reporter followed them to Big Bend and did a video of the group as they painted. KLRN is doing a video of them painting in San Antonio.

Look for it and for the gang as they continue their travels with paintbrushes in hand!

> **EDITH COLLINS** San Antonio



"Clay McGaughy was one of the founding members of the Watercolor Gang, who will be celebrating their 50th year of plein air painting together!"

EDITH COLLINS San Antonio

MAIL CALL

INTERVIEW WITH AN ARTIST

You should do an article based on an interview with Clay McGaughy, the San Antonio artist who produced such wonderful covers for the magazine before digital photography (true art).

BOB WACHSMUTH
San Antonio

THE OLD HOME PLACE

I was amazed to see my old home place, Grapevine's Heritage Park, in your magazine ("A Vintage Good Time," January/February 2013). My dad, Charlie Mitchell, had the white brick house built for us in 1962. He also built the concrete watering trough by the windmill on Main Street in Grapevine. It was originally located on Keller Road.

After my mother passed away, the Heritage Park land was sold to the City of Grapevine by my family. It is such a tribute to my mother, Bessie Mitchell, because of her love of flowers and trees. Thanks for a memory.

MARSHA MITCHELL CRIBBS
Wapanucka, Okla.

MORE MAPS, PLEASE

Ithoroughly enjoyed your "Natural Treasures" article in the April 2013 issue. I searched everywhere for a map that would show where in the state each of these was located. Not only could I not find one for this article, but also noticed you didn't do one for the Marfa article either.

These little maps are so helpful, especially to those new to this state. They don't take up much room. I hope this doesn't mean you're planning not to use them anymore? But the article was great.

Brenda Beust Smith

Hou

Houston

THE FUTURE OF AQUARENA

I am an 86-year-old who first swam at Aquarena some 80 years ago and many times after. The quality of the water today does not compare with the water quality then or, for that matter, even in the 1960s. Today, the water clarity is much more opaque, the flow has declined significantly, the plant life is no longer healthy and vibrant, and

the "transformation" mentioned ("The Transformation of Aquarena," May 2013) is not for the better.

If the real problem is to be addressed (too much pumping of water above the springs), it needs to happen quickly before the level declines further below the surface. It saddens me to see this happening, and I can only hope that we can preserve this great treasure for my greatgrandchildren. Your publication is a source of continuing pleasure for me.

HARRY HILGERS

Austin

Sound off for Mail Call

Let us hear from you!

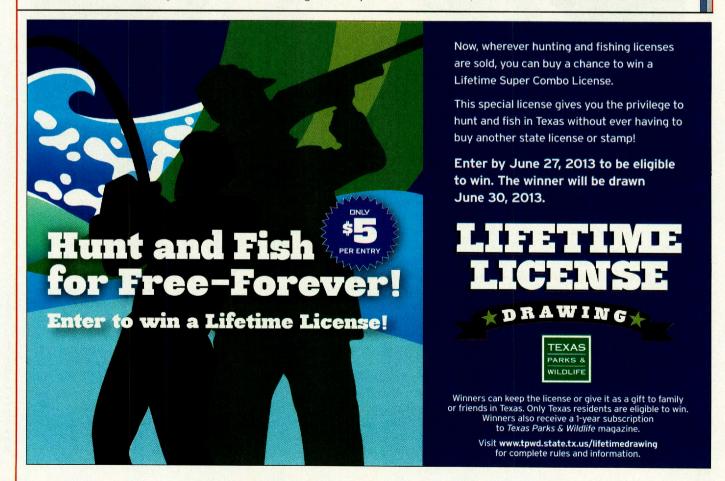
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NEWS AND VIEWS IN THE TEXAS OUTDOORS

GROWING OYSTERS FROM HALF-SHELLS

Galveston Bay eateries recycle used shells to help restore oyster reefs.



In September 2008, Hurricane Ike barreled ashore on the east end of Galveston Island, leaving a wake of devastation all around Galveston Bay and far into East Texas. Although much of the devastation was visible, there was also extensive damage that remained unseen, below the surface of the waters of Galveston Bay. Debris and sediment littered the bay floor, smothering nearly 60 percent of Galveston Bay's oyster reefs (see related story, Page 38).

Before 2008, Galveston Bay accounted for 80 percent of all oysters harvested in Texas. Oyster reefs are essential for maintaining healthy estuaries. They help to clean bay waters — an individual adult oyster can filter up

to 50 gallons of water a day. They also play important roles in the viability of commercial and recreational fisheries by providing habitat and food sources for important species.

In response to the loss of oyster reefs, the Galveston Bay Foundation (GBF) began to solicit the support of local bayside communities to conduct community-based projects such as oyster gardening and reef seeding. One of the limiting factors was a steady (and free) source of shell. In early 2011, local restaurant owner Tom Tollett presented the perfect solution. His restaurant, Tommy's Restaurant and Oyster Bar in Clear Lake, specializes in oysters, and Tollett wanted to find a way to help

restore the reefs in Galveston Bay by "recycling" the discarded shells generated from his restaurant.

Oyster shell recycling is done in other parts of the country but had not been tried around Galveston Bay. Starting in March 2011, employees began separating the discarded oyster shells from food scraps and placing them in special collection bins behind the restaurant. Several times a week, GBF picks up the shells and takes them to a remote property in Texas City, where they are left to bleach in the sun. This sun bleaching, or curing, removes organic material and bacteria from the shells, helping to prevent potential contamination once the shells are

PHOTO THIS PAGE BY EARL NOTTINGHAM/TPWD; OPPOSITE COURTESY OF GALVESTON BAY FOUNDATION





Workers and volunteers create bags of used oyster shells and hang them from piers during the oyster gardening process. The shells are later placed in the bay to create restored reefs.

placed back into aquatic systems.

Once they have been cured for a minimum of six months, the shells can be used in various oyster reef restoration projects around Galveston Bay. These projects create, restore or enhance reefs around the bay, providing an ideal substrate on which oyster larvae can attach and serving as habitat for fish, shrimp, worms, clams and other marine organisms.

Thus far, recycled shell has been used in GBF's oyster gardening program, and has been placed on small reefs near Kemah, San Leon, Offatts Bayou (Galveston Island) and Jamaica Beach.

GBF has started a project in West Galveston Bay to create roughly 335 linear feet of oyster reef that will connect adjacent, natural reefs. The project will result in 40 to 50 tons of recycled cyster shell being put back into Galveston Bay.

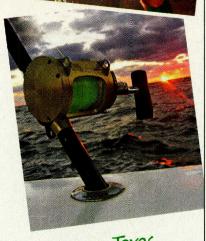
GBF's cyster shell recycling efforts

with Tommy's Restaurant and Oyster Bar resulted in the collection of more than 70 tons of oyster shell by the end of 2012. This pilot project now serves as a model for a more substantial oyster shell recycling effort with other restaurants around Galveston Bay. GBF was awarded a federally funded grant from the Texas Coastal Management Program (administered by the Texas General Land Office) to expand the program to allow for the participation of five to nine seafood restaurants.

The response to the program expansion has been positive. In March 2013, GBF began collecting from two additional restaurants. Hooters in Seabrook and Topwater Grill in San Leon. GBF is also working to secure another location closer to the Clear Lake area to store and cure the additional shells. **

- Matthew Abernathy





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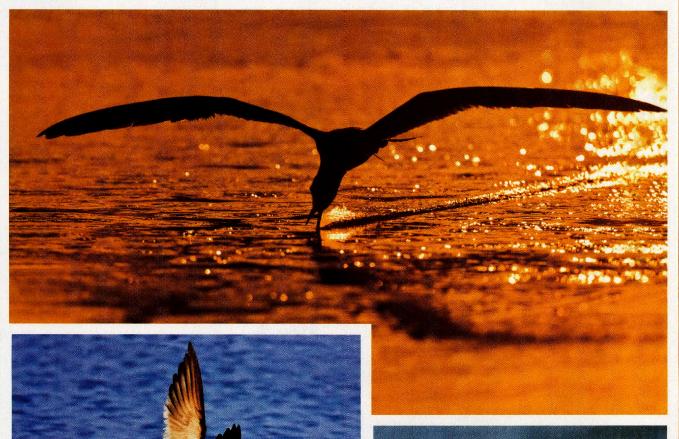


GUTS-GLORY



Surface Gliders

Coastal black skimmers scoop up prey with unusual bills.



As a kid growing up in Corpus

Christi, no stranger to the bays and beaches, I was always fascinated by the odd-looking birds gliding along the surface of the water, with their stark black and white feathers and bright orange and black bills. Those black skimmers (Rynchops niger) are the only American representative of the three skimmer species known worldwide.

Black skimmers are found on open sandy beaches, on gravel or shell bars with sparse vegetation and in salt marshes. With its unusual bill (the lower mandible is longer than the upper mandible) and narrow wings, the black skimmer "skims" across the The black skimmer finds food (typically small fish) by dragging its lower bill in the water. The birds breed in large colonies with other seabirds.

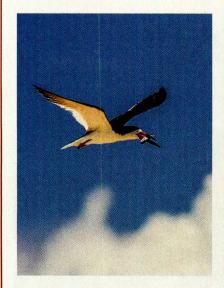
surface of the water, dragging its lower bill. When it makes contact with its prey, the bill reflexively snaps shut.

Black skimmers are thought to do most of their foraging at night (nocturnal) or at dawn and dusk (crepuscular), traveling as far as five miles in search of food.

The primary forage for black skimmers is small fish up to about 5 inches in length, such as herring, killfish and mullet. Small crustaceans may also be consumed.

Skimmers reach maturity between 2

BOTTOM RIGHT AND OPPOSITE PAGE PHOTOS ® KATHY ADAMS CLARK/KAC PRODUCTIONS; OTHERS ® LARRY DITT(



and 4 years of age, with most breeding adults averaging 5 to 9 years old. Breeding adults are monogamous and similar in plumage, but males are typically larger than females. Black skimmers are colonial seabirds, nesting in groups with other species like gulls and terns.

Nests are really nothing more than a few shallow scrapes in the substrate made by both mates, averaging 10 inches in diameter and about an inch deep. A typical black skimmer clutch is about four eggs, with incubation lasting 2I to 25 days (incubation and brood-rearing are performed by both parents).

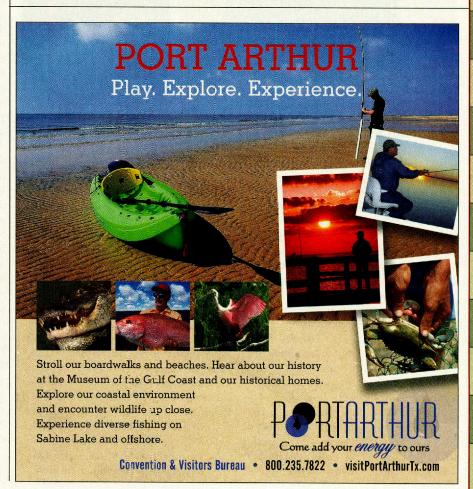
After hatching, chicks can soon stand and move around, but do not begin to leave the nest until after the first week. The nesting period can last up to 30 days, and chicks begin to fly soon after.

Though not listed as federally endangered, black skimmer populations have been on the decline for several decades in Texas; disturbance of nesting habitat is the main threat. Once skimmers are scared off their nests by any number of sources, gulls take advantage of the opportunity and ravage the unprotected eggs.

"Black skimmers are very sensitive to disturbance," says Owen Fitzsimmons, coastal bird biologist for the Coastal Bend Bays and Estuaries Program in Corpus Christi. "The best thing to do when out enjoying the beauty of Texas' bays and beaches is avoid those areas with nesting colonies of birds. This way we can enjoy the beauty much longer."

— Jason Estrella

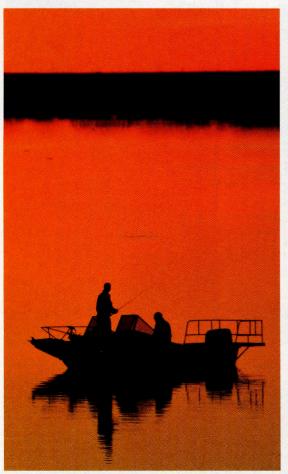






Rolling Plains Recreation

Lake Arrowhead State Park offers prairie dog towns, disc golf, horse trails and great fishing.







Equestrians and anglers can pursue their interests at Lake Arrowhead. Wildlife watchers have a chance to see prairie dogs popping in and out of their holes.

Just south of Wichita Falls, Lake Arrowhead beckons residents who want to get outdoors and enjoy a relaxing day in nature.

Many local anglers know that crappie, catfish and white bass are plentiful and enjoy Lake Arrowhead State Park's lighted pier year-round. The park participates in the Texas Parks and Wildlife Department's program to lend fishing poles and tackle to park visitors. Youngsters can learn how to fish through the angler education programs offered throughout the year and earn awards at Lake Arrowhead State Park's annual fishing tournament on the first Saturday of June.

What many people don't know is that Lake Arrowhead is the only state park in Texas with a disc golf course. The 18-hole course, strategically situated in the mesquite plains of the park, offers challenges to both novice and advanced disc golfers. Park Super-

intendent Keith Gauthier started playing disc golf in college and has made it his mission to improve the course. Park staff cleared some invasive mesquite growth to create a more open and friendly fairway. The park hosted the first Lake Arrcwhead State Park Disc Golf Championship last September. Gauthier hopes more disc golfers from around the state will participate in the 2013 event on Sept. 14.

Horseback lovers can saddle up for a mounted exploration of the Texas Rolling Plains on 5.5 miles of equestrian trails. The park offers a special equestrian campground that features four campsites, each with a picnic table and fire ring for the riders, and a corral with four covered stalls and hitching posts for their horses. Recent campers from South Dakota enjoyed a ride on the Onion Creek Trail, experiencing their first sightings of prickly pear and armadillos.

For a true Texas nature experience, visit Lake Arrowhead's prairie dog town. Towns of these lively "barking dogs" of the prairies and plains covered much of West Texas and the Panhandle before the 1900s. Find a viewing spot and watch as the prairie dogs pop in and out of their mounds. Scientists have found that prairie dogs use at least 12 distinctive calls to communicate with each other.

You'll be able to locate the sentry that calls out danger alerts to the prairie dog colony if you get too close. If you're lucky, you may see a prairie dog do a "jump-yip," launching straight into the air and making a wee-oh sound. This is one of the few public places in Texas where you can see an active prairie dog town, so don't miss the chance to have your own memorable "jump-yip" wildlife watching experience.

Lake Arrowhead State Park is located southeast of Wichita Falls. From Wichita Falls, go eight miles south on U.S. 281, then eight miles east on FM 1954. From the Dallas area, take U.S. 287 north to the Jolly exit (FM 2393), travel 10 miles south until you reach FM 1954, then travel southeast for three miles. **

- Karen Watson



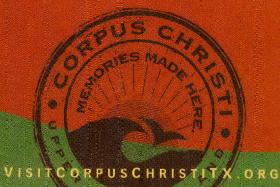


MEMORIES MADE HERE



They dip, dive and soar above the blue skies over the marshes, beaches and channels of Corpus Christi/Upper Padre Island. Spot Herons, Wrens, Woodpeckers, Thrashers, Kingbirds, Flycatchers, Cranes, Egrets, Pelicans and more. We've been named America's Birdiest City for a decade.

Natural beauty can be found everywhere at the Texas State Aquarium and the South Texas Botanical Gardens & Nature Center. You can view famous warbirds on the deck of the USS Lexington Museum. You'll find plenty of nests for you to stay in, so migrate down to make some lifetime memories.





A Honey of a Wildflower

Fragrant basket-flowers attract a multitude of insects, particularly bees.

The basket-flower (Centaurea americana), also known as star thistle, is undoubtedly one of the showiest wildflowers in Texas. The name refers to the rigid, straw-colored bracts (special leaves) that sit just below the flower head and resemble an intricately woven basket.

When you encounter a prairie or old field dotted with this white, lavender or brilliant pink member of the sunflower family, take a close look at the insect visitors it attracts. Basket-flower is native to tallgrass and midgrass



Basket-flowers can be found throughout most of Texas, mainly in prairies and pastures. The plant looks prickly but lacks spines.

prairies of the central and southern Midwest as well as Arizona, New Mexico and Mexico. Basket-flowers can also be seen in pastures, woodlands, savannas and roadsides.

During spring and summer of 2012, Texas Parks and Wildlife Department invertebrate biologist Michael Warriner and I conducted several flora and insect surveys of tallgrass prairies in northern and coastal Texas. We encountered bountiful numbers of bumblebees attracted to basket-flowers.

Warriner is an authority on bees, specifically bumblebees, and is documenting the current status of the nine bumblebee species in Texas (www.texasbumblebees.com) with the goal of enlisting citizen "bumble-watchers" to evaluate the state's bumblebee fauna.

Warriner has learned that bumblebees are major visitors to basket-flowers and prairie ecosystems. In one North Texas prairie, he recorded four species of bumblebees as well as several other solitary bee species.

Basket-flowers grow big and tall. The colorful blooms reach 4 inches in width; the plants grow from 2 to 6 feet tall. The 4-inch-long lanceshaped leaves are rough to the touch. Basket-flowers are annuals, blooming from May through August. Plants favor full sun in mostly well-drained soils.

The blooms of basket-flower attract not only bumblebees but also butterflies and a host of other insects. Many species of birds, including bobwhite quail and sparrows, devour the seeds.

This plant resembles a prickly thistle (Cirsium spp.) but does not have spines. A sweet fragrance makes it desirable as a cut flower for floral arrangements.

The basket-flower is found throughout most of Texas (except deep East Texas) and can be observed at places like McKinney Falls State Park, Bonham State Park, Brazos Bend State Park, Caddo National Grasslands, Cedar Hill State Park, Eisenhower State Park, Granger Wildlife Management Area, Lake Brownwood State Park, LBJ National Grasslands, Lake Somerville State Park and Lake Ray Roberts State Park. ★

— Jason Singhurst

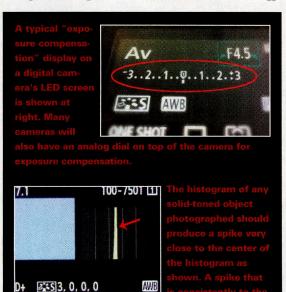






Getting Exposure Right

Images too light or too dark? Correcting your camera's light meter can solve the problem.



Your camera's built-in light meter is the brain that determines the proper exposure needed for any given lighting situation by varying the camera's shutter speed and lens opening (aperture).

With the accuracy of today's light meters, most photographers tend to rely on the various automatic metering modes found on virtually every camera made. In addition to the exposure function of the meter, most cameras will also offer mode options such as evaluative, matrix, center-weighted or spot metering. For most users, the evaluative or matrix mode will produce the most consistent results.

However, exposure meters can be like people; some are just a little bit off one way or the other. Sometimes photographers will notice that many, if not all, images are coming out too dark or too light. Luckily, there is a quick way to see if your camera's meter is accurate, and, if not, correct it.

Using any automatic or programmed mode, take a few pictures of solid-toned objects such as a wall, clean concrete or a clear blue sky (on a DSLR make sure the auto-focus is off; otherwise the camera won't shoot while searching for an object to focus on). After shooting, review the histogram from each image. If you aren't familiar with the histogram, consult your camera's user manual to show you how to view it. You should see a spike at the very center of each histogram (see photo). If the spike is either to the left or right of center, it is an indication that your camera's meter is consistently off and needs to be corrected.

Most digital cameras provide an "exposure compensation" dial or screen. It allows you to override the meter with incremental amounts of either over- or under-exposure, usually indicated by fraction amounts such as .3, .5 or .7. If your histogram spike is slightly to the right of center (indicating overexposure), try changing the exposure compensation by -.3. If the spike is to the left (underexposure), try compensating in increments of +.3 or more if needed.

Now shoot additional solid-toned objects, review their histograms and see if the spike is closer to the center. If so, you are now in the ballpark for a technically proper exposure.

In the next Picture This, I'll discuss how to compensate the exposure for artistic purposes. *

- Earl Nottingham

SIGHTS & SOUNDS TEXAS PARKS & WILDLIFE TV AND RADIO

OOK FOR THESE STORIES IN THE COMING WEEK

May 26-June 1: Family of birders; bikes and hikes at **Davis Mountains State** Park; hunting dogs; Double H Ranch; Indian Lodge.

1.68MB AdobeRGB

June 2-8:

Texas' Caribbean connection; Lake Whitney State Park; rifle sighting tips; D-Day remembered; snow day at Pedernales Falls.

June 9-15:

Pier fishing; airboat excitement; Texas'

coral reefs; interpretation expert Chris Holmes: Abilene State Park yurts.

June 16-22:

Tracking mountain lions; fishing at Atlanta State Park; deep-sea fishing off the Texas coast; spider webs.

June 23-29:

Teal on the grill: beginning duck hunters; the life of a butterfly; Irma Sanchez profile; buffalo in the snow.



The spectacular – but all-too-brief – life cycle of a butterfly. Watch the week of June 23-29.

TEXAS PARKS & WILDLIFE

Winner of 12 Emmy Awards, our television series is broadcast throughout Texas on local PBS affiliates. In stereo with closed captions.

www.tpwd.state.tx.us/tv



YOUR RADIO GUIDE TO THE GREAT OUTDOORS

Passport to Texas is your guide to the great Texas outdoors. Any time you tune in, you'll remember why you love Texas. Go to www.passporttotexas.org to find a station near you that airs the series.

PASSPORT TO TEXAS

Join host Cecilia Nasti weekdays for a 90-second excursion into the Texas outdoors. Find a station near you, or listen on the Web, at

www.passporttotexas.org



Please send questions and comments to Earl at earl.nottingham@tpwd.state.tx.us.
For more tips on outdoor photography,
visit the magazine's photography page at
www.tpwmagazine.com/photography



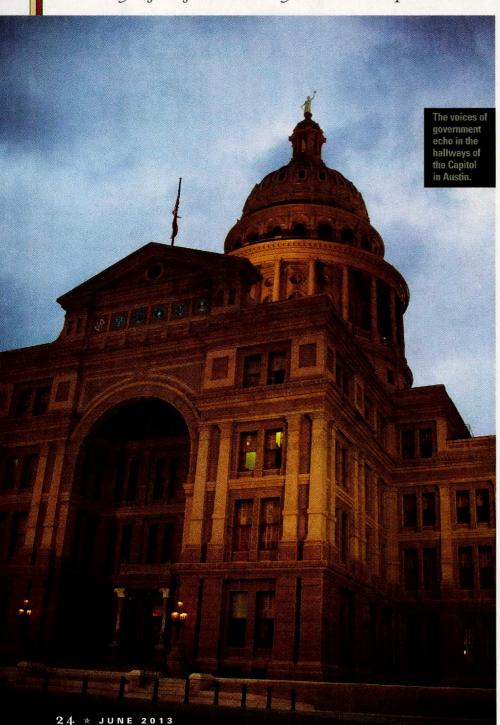
DESTINATION: AUSTIN

TRAVEL TIME FROM:

BROWNSVILLE — 5 hours / DALLAS — 3 hours / HOUSTON — 2.75 hours SAN ANTONIO — 1.25 hours / LUBBOCK — 6 hours / EL PASO — 8.25 hours



Divided by a fun-filled waterway, Austin is steeped in Texas history.



Like most Texans, I love to travel and see the sights. Sometimes I have to remind myself that it isn't always necessary to hit the road to have a great little vacation.

Take our capital city of Austin, for example. It's a place steeped in history and blessed with natural beauty. It's a city everyone should visit now and then — even folks like me, who live here. So I've set aside a few days to be a tourist in my hometown.

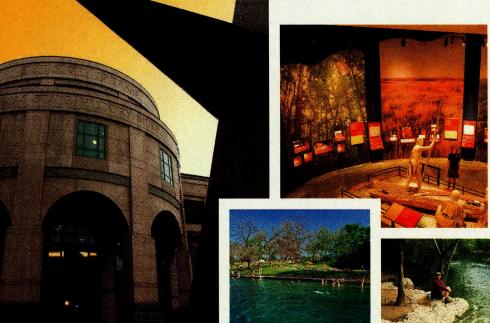
Day I, 11th Street & Congress Avenue

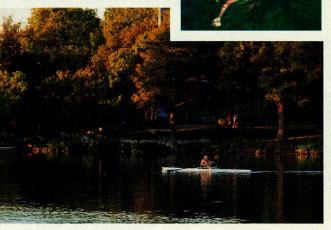
I've heard there are people who live in San Antonio and never have visited the Alamo. Maybe there are people in Austin who never have been to the Capitol. If so, I'm not one of them. I've been inside that massive domed building plenty of times, dating back to school and family outings when I was a kid growing up in Burnet County. My recent visits have been associated with the Texas Book Festival, which occupies the Capitol and its 22-acre lawn for a weekend every fall.

Speaking of Burnet County, the rock to build this edifice came from the Granite Mountain quarry in Marble Falls. It's been our statehouse since 1888, surviving 125 years of rowdy Texas politics.

I stroll through the south foyer, giving a nod to the statues of Sam Houston and Stephen F. Austin created by Austin sculptor Elisabet Ney at the turn of the 20th century. I pass through the Renaissance Revival arches into the Rotunda, plant myself on the terrazzo seal and gaze up at the dome. I visit the Senate Chamber on the second floor. It's unoccupied at the moment, but I can almost hear echoes of the many voices that have debated legislation over the decades. I wander

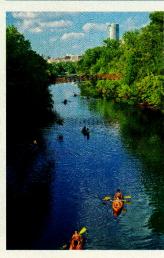












to the fourth floor of the Rotunda, perusing portraits of past governors. There are elevators, but I don't use them. I love going up and down the wide staircases with their polishedwood banisters.

Some things have changed since I was a kid. There's an airport-style security screening station at each public entrance. I vaguely recall a time when you could, if you were brave enough, take a guided tour to the top of the dome; today, visitors aren't allowed above the fourth floor. A twostory extension, all underground, was added to the north side of the building in 1993. Banks of skylights give it an open feel, and there's an open-air rctunda where a person can step outside and check the weather. After the extension opened, the State Preservation Board oversaw a restoration of the original building, shoring up the structure and returning many interior spaces to their pre-1915 décor and condition. You could say the Capitol is

both older and newer than it was when I first saw it. I hope it survives for generations to come.

Day 2, Congress Avenue & Martin Luther King Jr. Boulevard

The Bob Bullock Texas State History Museum looks like a young cousin of the Capitol with a stubby granite dome and a mini-retunda in the lobby. Open since 2001, the museum tells the "Story of Texas" in three floors of walk-through exhibits, many with interactive features. There are artifacts from the 17th-century wreck of La Salle's ship La Belle, letters and diaries from soldiers and settlers and a fullsize windmill looming from a secondfloor balcony Six themed theaters offer audiovisual presentations. My favorites are the Comanche tepee downstairs and the oil tank theater on the third floor, where seats are made from oil drums and the walls are hung with vintage signs.

Leaving the main exhibit space, I

find a new gallery on the top floor of the rotunda with a display about the Civilian Conservation Corps and its work building Texas state parks in the 1930s and '40s. It's there through June 30; after that, another temporary display will be installed.

My spouse agrees to meet me for dinner at nearby Scholz Garten. This, too, is a historic site; in fact, it's older than the current incarnation of the Capitol. August Scholz, a German immigrant and veteran of the Civil War, opened the bar and restaurant in 1866. Since 1908, it's been owned by the Saengerrunde, a German singing society that bills itself as the oldest ethnic organization in Austin.

We walk through the laid-back biergarten with its huge shade trees and find a booth in the front dining room. My partner orders wiener schnitzel with tangy German potato salad. I opt for a corned-beef-and-Swiss sandwich on rye. The menu also offers barbecue, chicken-fried steak,

IF WE SAVE THE SEAGRASS,



Seagrass is critical to good fishing. Marine organisms depend on it for survival—for food, shelter, and oxygen. But boat propellers are destroying Texas seagrass, which is seriously impacting saltwater fishing in the coastal shallows. When boaters do not lift their propeller in shallow water, the prop cuts and uproots the seagrass beds—leaving long barren trenches or "scars" that may take years to heal … if ever.



Stop Prop Scarring – Lift, Drift, Pole, Troll



Here's what you can do to keep seagrass and fish populations healthy: when in shallow waters, lift your motor and drift, pole, or troll through it.

And know your boat's limitations for running and take-off depths.

After all, there's nothing like a redfish on light tackle in shallow water. Let's keep it that way!

For more information visit: www.tpwd.state.tx.us/seagrass





Life's better outside.

jambalaya and 15 brands of draft beer.

With state government and the University of Texas within easy walking distance, generations of Texans have gathered here to unwind, celebrate, watch football games and presidential inaugurations, and argue the issues of the day. Scholz Garten, or a place very much like it, is featured in *The Gay Place*, Billy Lee Brammer's 1961 novel about Texas politics. I finish my meal with an apple strudel, two layers of not-too-sweet filling in a crisp braided crust.

Day 3, Watery Wonders

On the final day, I meet up with Ron Smith, a co-worker at the Texas Parks and Wildlife Department, who has offered to show me a section of the TPWD paddling trail on Lady Bird Lake.

This 460-acre reservoir sits downstream from the Highland Lakes chain on the Colorado River. It was called Town Lake until 2007, when the Austin City Council renamed it in honor of the late Lady Bird Johnson, former first lady, who played a key role in the beautification of the lake shore and construction of the hike-and-bike trail that runs along its shores.

We unload Smith's canoe at the Cesar Chavez Street launch behind Austin High School. I watch the gear while he parks the truck. The hike-and-bike trail crosses at the top of the gently sloping ramp. A couple of joggers go by, then two women walking with baby strollers. A sculling team appears on the lake, barely rippling the water with synchronized strokes.

Smith is a member of the TPWD paddling trails team, which worked with local partners to launch this paddling trail in 2009. It's a loop trail, actually a series of connected loops with eight public access points around the lake. Today, we plan to explore the Barton Springs Loop.

We paddle up past the Austin Rowing Center, one of several places on the route that offer boats for rent. Motorboats aren't allowed on this lake, but it's open to human-powered craft of all types. Smith explains the traffic rules: when heading upstream or downstream, paddlers like us are expected to keep to the right, leaving the center lanes for rowboats.

As we approach the MoPac Boulevard (Loop I) highway bridge, he steers us into a couple of quiet coves, hidden behind a wall of trees and

brush. I've crossed that bridge hundreds of times and had no idea these secret spots were here. A great egret stands in the shallow water, apparently undisturbed by our approach.

Back in the main channel, a snowy egret watches from a tree limb on the bank. We ease within 10 feet before it spreads its wings and takes off, coasting low over the water.

We cross the lake and head downstream along the south bank, skirting a huge bald cypress that stands several feet out in the water. Turning right at Lou Neff Point, we go up Barton Creek, cutting through a flock of coots. A family with small children is watching the birds from the bank, tossing out tidbits of food. We paddle under a footbridge, then the wider bridge of Barton Springs Road. The water turns clear and blue-green. On the south bank, a cascade from the Old Mill Spring tumbles into the creek. We keep going until we see the outflow from Barton Springs Pool, which I plan to visit later today.

Back at our launch point, Smith checks his GPS unit and says we've traveled 3.35 miles. The complete paddling trail runs about II miles.

No weekend in Austin would be complete without a visit to Zilker Metropolitan Park. It's a place of many traditions. The Hillside Theater hosts a free musical each summer, dating back to 1959. A big kite festival takes place the first Sunday in March; that's been going on for 85 years. I'm here for the oldest tradition of all: a dip in the artesian water of Barton Springs.

Fed by the fourth-largest spring system in Texas, this urban oasis has been called "the soul of the city." The main spring, gushing up from the Edwards Aquifer, sends out some 30 million gallons per day. It's always about 68 degrees — breathtakingly cold on a summer day; warmer than the air on chill winter mornings. The swimming pool was built in the 1920s, but Austinites — and others — came to this spot for recreation and renewal long before that. Archaeologists have found evidence of human activity dating back 10,000 years.

We've learned that the springs are not indestructible. In the 1990s, as population expanded into the surrounding Hill Country, scientists found that chemicals dumped on lawns and parking lots upstream can wash into the aquifer, polluting the water that emerges at the springs.

Around the same time, the three-inch salamanders sometimes seen in the pool were determined to be a distinct species found only in this spring system. The Barton Springs salamander is on the federal endangered species list, which means the city must have a conservation plan and a permit from the U.S. Fish and Wildlife Service to continue operating the pool.

We still have a lot to learn about those salamanders, how aquifers work and how to protect these resources for future generations. A kid-friendly exhibit in the pool bathhouse shares some of what we know. The Barton Springs salamander is a "neotenous" species, which means it hangs onto juvenile characteristics. Like all amphibians, they start their life cycle in water; unlike frogs, they don't fully metamorphose into air-breathing land animals. If something goes wrong with their habitat, they can't just hop away and find a new place to lay their eggs.

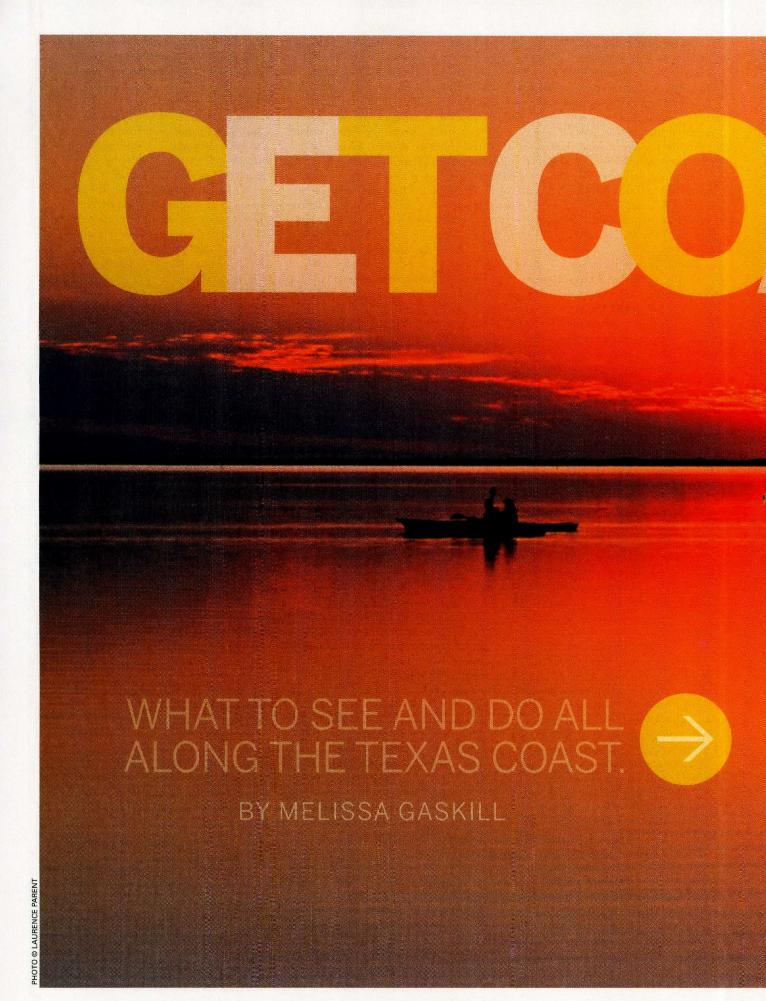
I descend the steps to the pool and dive in. As always, the icy water is a shock, and I have to do some vigorous swimming to get my body working again. I keep thinking about those salamanders that live, reproduce and die without ever really growing up.

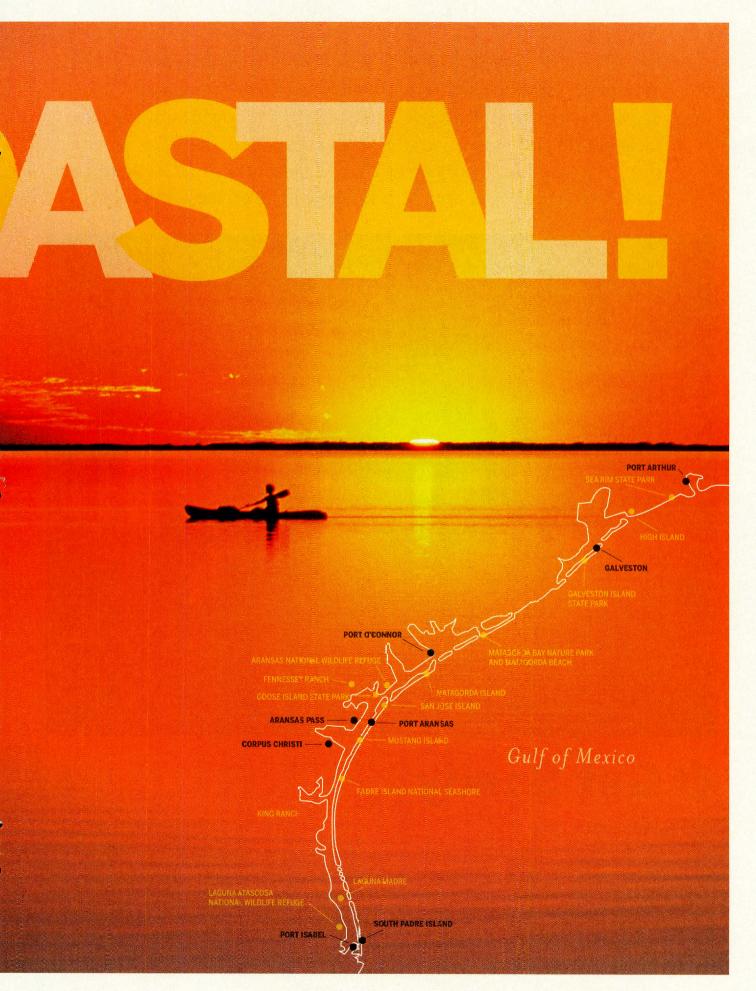
Floating on my back, I survey the fellow travelers here with me. I see older Austinites who've been swimming laps for decades, college students reading books on the grassy bank, young parents at the shallow end teaching their babies to love water and fifth-graders wearing looks of wonder because they've just found the spot where the spring gushes out of the rocks.

I'm so happy that the salamanders share their habitat with us. And I suspect growing up is overrated. ★

DETAILS

- Texas Capitol & State Preservation Board, www.tspb.state.tx.us/spb/capitol/texcap.htm
- Bob Bullock Texas State History Museum, www.thestoryoftexas.com
- Scholz Garten, www.scholzgarten.net
- Lady Bird Lake Paddling Trail, www.tpwd.state.tx.us/fishboat/boat /paddlingtrails/inland/lady_bird_lake
- Zilker Park, www.austintexas.gov /department/zilker-metropolitan-park
- Zilker Theatre Productions, www.zilker.org
- Salamander facts, www.austintexas.gov /department/salamanders





From windswept beaches to tangled oak mottes,

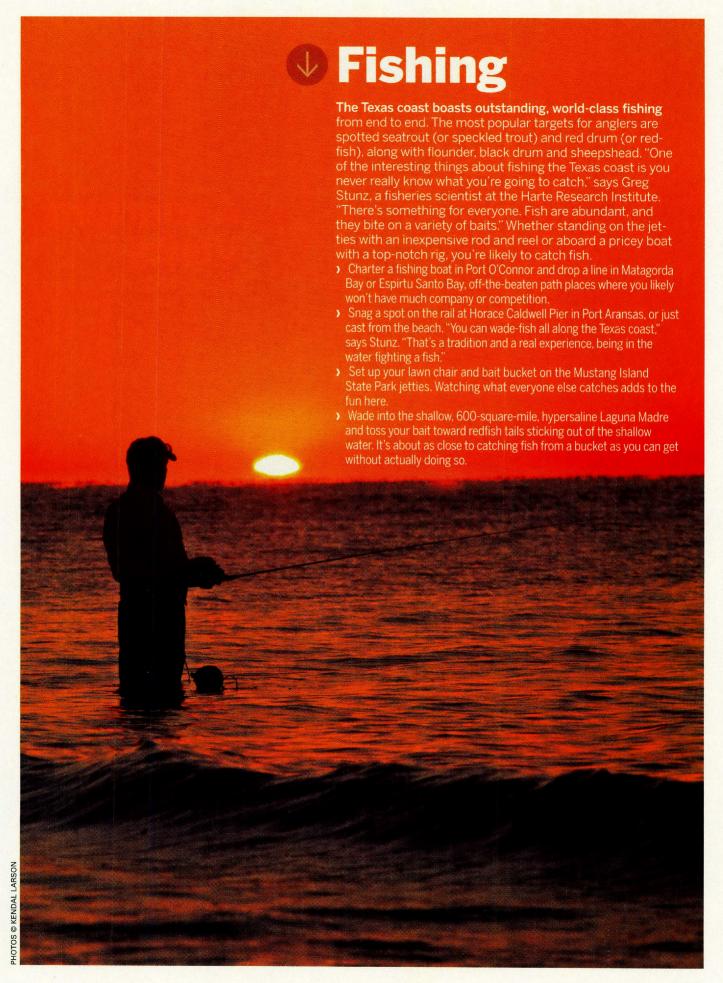
remote islands to bustling cities, alligators to whooping cranes, the Texas coast runs the gamut. It also runs some 350 miles, edged by one of the most diverse and vibrant bodies of water in the world. That adds up to so many chances for a good time, you may wonder where to start. Here's our guide to the best of what to do and where to go on the Texas coast.

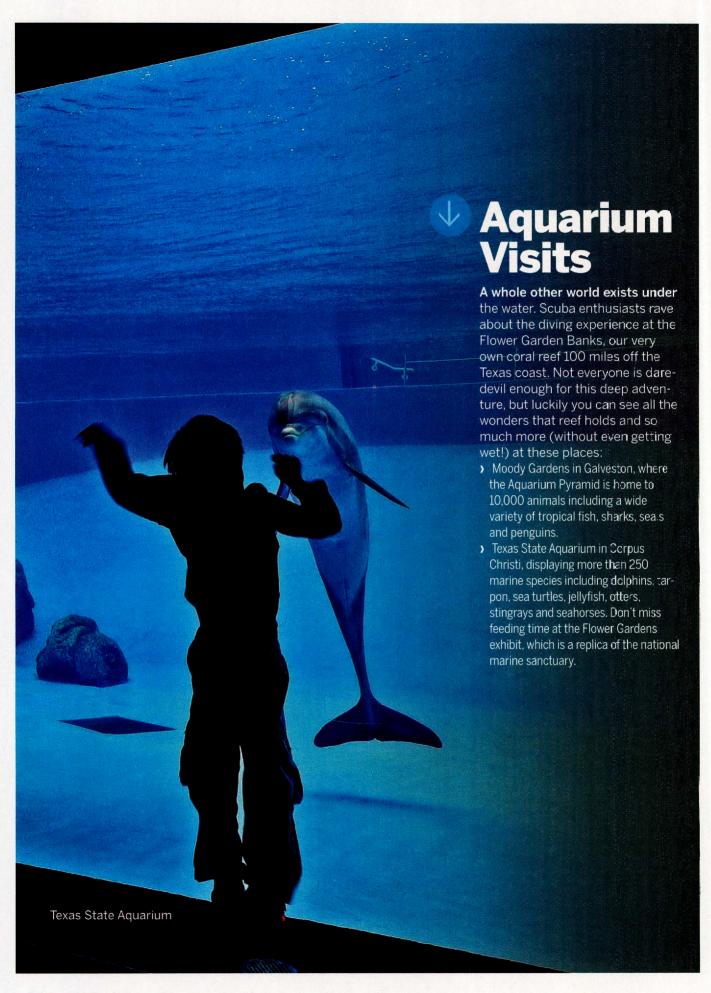


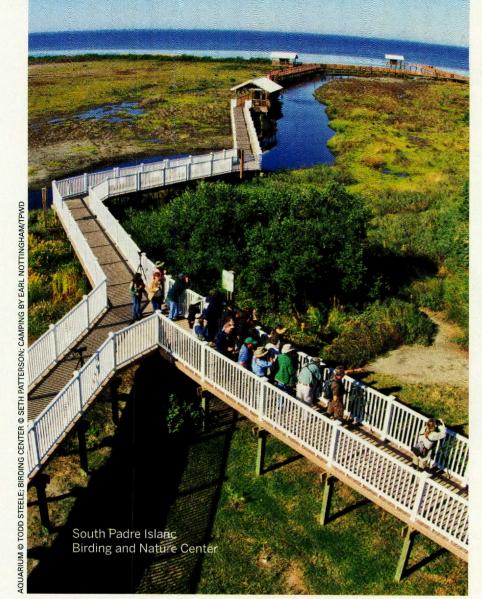


For many people, "coast" means "beach," and beaches mean sand. Ours contains about 90 percent unpolished quartz with a dash of minerals such as feldspar, hornblende and garnet, a combination that creates its tan color, says Jim Gibeaut, a geospatial scientist at the Harte Research Institute for Gulf of Mexico Studies at Texas A&M University-Corpus Christi. Access to that sand is a constitutional right in Texas, so exercise yours one of these ways:

- › Beachcomb on five mostly deserted miles in Sea Rim State Park near Port Arthur, or 21 miles on mostly uninhabited San Jose (or St. Joe) Island, a short ferry ride from Port Aransas.
- Turn sand into castles or other amazing creations with a lesson under the tarp of jovial castle-master Andy Hancock, next to Boomerang Billy's on South Padre Island.
- Venture past the first three maintained miles on 20-plus-milelong Matagorda Beach in Matagorda County.
- Explore 60 miles of sand, 55 of them four-wheel-drive only, on Padre Island National Seashore, the longest undeveloped barrier island in the country, great for shell hunting. In spring and summer, watch out for nesting sea turtles!







Birding

Texas sits smack in the Central Flyway for migratory birds, and its wealth of coastal habitats attracts a variety of avian species, routinely producing winning national bird counts. The Great Texas Birding Classic offers a chance for competitive birding each spring, or you can just quietly enjoy the thrill of seeing a rainbow of feathered wonders as they soar above you or perch on nearby branches. Whip out your

High Island, near Winnie, to spot vireos, warblers and more in the Houston Audubon Society's sanctuaries; migratory woodland species peak mid-March to May and late September to mid-October.

binoculars at these spots:

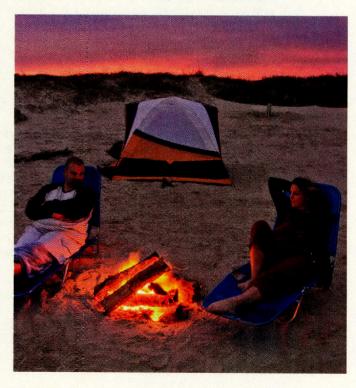
- Fennessey Ranch, just outside Refugio, where birding tours sight as many as 100 species, from hummingbirds to hawks.
- Aransas National Wildlife Refuge, winter home to the only wild flock of endangered whooping cranes.
- Laguna Atascosa National Wildlife Refuge, for the chance to see rare and endangered Aplomado falcons along with many other birds.
- South Padre Island Birding and Nature Center, with 4,800 feet of boardwalk and seven bird blinds.



Camping

Whether you like to fully rough it by pitching a tent when you camp or opt for the more comfortable accommodations in your own recreational vehicle, there s nothing like falling asleep to the sound of waves. Food always tastes better when it's cocked and served outdoors, and you'll enjoy great stargazing from most beaches, too. Pitch your tent at:

- Galveston Island State Park, which has camps tes with water and electricity on the beach and pay.
- Matagorda Island National Wildlife Refuge and State Natural Area, or an uninhabited island 38 miles long and one to four miles across, a place to truly get away from it all. No public access, water or electricity – get here by private or charter boat and bring everything you need to hike, fish, bird, watch wildlife and stargaze to your heart's content.
- Matagorda Bay Nature Park, where the Colorado R ver flows into the Gulf of Mexico, with general and RV campsites, restrooms and showers, picnic areas and a small store.
- Padre Island National Seashore, where camping is allowed anywhere along its 60 miles of beach (restrooms and showers at the Malaquite Visitor Center) and at Bird Island Basin on the bay side.





OSwimming

A visit to the coast isn't complete without getting wet. Thanks to shallow depths and warm waters, the Gulf offers plenty of excellent spots for a dip. Whether you like to dive under the waves or skimboard the tops, swim with tons of tanned tourists or submerge yourself along an isolated stretch of beach, Texas' long coast has it all. Some favorites:

- > Near Malaquite Visitor Center at Padre Island National Seashore, which has showers, shade and a store.
- On Galveston Island's family-friendly Stewart Beach, where lifeguards staff the stands May through September.
- At South Padre Island's Isla Blanca Park, with a mile of waterfront and two pavilions with showers and restrooms.

Kayaking

A kayak offers a great way to explore the coast, whether you're birding, fishing or just pacilling. You can forget the cramped, confining, tipping watercraft of old, too; kayaks now let you sit in ergonomic comfort, paddle with your feet, navigate by fully wired electronics and enjoy a plethora of other improvements. Try one out in these kayaking destinations, either on your own (rentals available) or with a guide:

- Lighthouse Lakes Paddling Trail near Aransas Pass, several oops from 1.25 to 6.8 miles long through a mangrove estuary and seagrass flats, and past the historic Lydia Ann _ighthouse.
- Mustang Island Paddling Trail, where the 8.5-mile North Trail, 5.24-mile Shamrock Loop and 6.8-mile As num Trail explore the back s de of the island and offer views of the Corpus Caristi skyline.
- The Laguna Madre off South Padre sland, v a a glass-bottom kayak rented at South Padre Island Watersports, to take in the sights below and above the water.



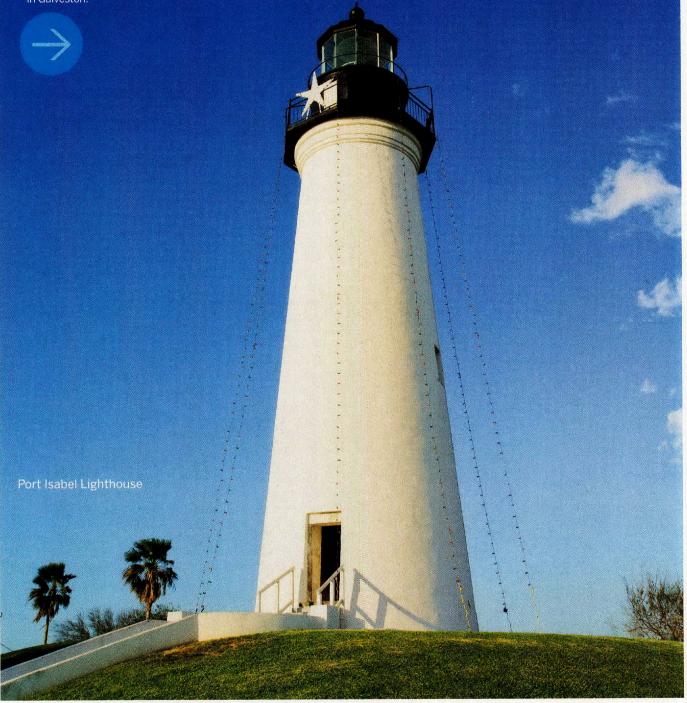
History

The Texas coast has seen its share of historic events, from shipwrecked Spanish explorers to deadly hurricanes and even Civil War battles. When you stand on any shore, you feel the timelessness of the sea, and that's especially true on ours. Imagine yourself in the days of old, perhaps an immigrant family landing for the first time in this country at Indianola or a crusty old seadog bringing in the catch of the day a century ago. Learn juicy details at these spots:

Texas Seaport Museum, home to the 1877 tall ship Elissa, in Galveston.

- The Great Storm at Galveston's Pier 21 Theater, a film depicting the hurricane that hit Galveston on Sept. 8, 1900, the deadliest natural disaster in U.S. history.
- Corpus Christi Museum of Science and History, which houses artifacts from shipwrecks, the Karankawa tribe and early French and Spanish explorers, plus a replica of Columbus's ship Pinta and natural history exhibits.
- Port Isabel Lighthouse, built in 1852 and a guide for ships until 1905 (except for a brief hiatus during the Civil War), restored as a state park in 1952 and renovated in 2000. It's the only one of 16 Texas lighthouses open to the public.

The King Ranch, where 825,000 acres – more than Rhode Island – and 60,000 cattle add up to one of the world's largest ranches, offering guided tours daily, and birding, wildlife and nature tours by reservation.

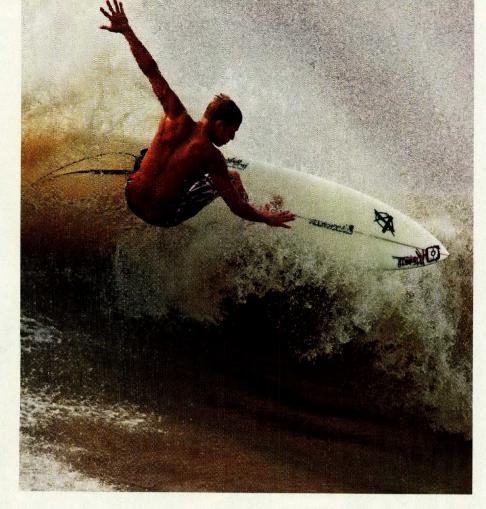


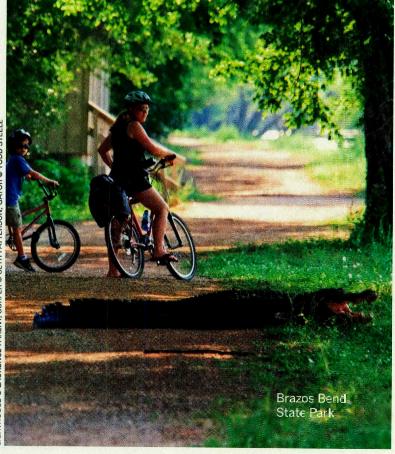


Recreation

The coast is a great place to have some outdoor fun. Bring your own gear or rent it at any number of sites, whether you love to paddle a kayak or pedal a bike, ride a horse, catch a ferry or don a snorkel or scuba gear. Put these Texas activities on your bucket list:

- Ride a ferry, between Galveston Island and Bolivar Point, or Aransas Pass and Port Aransas (both free).
- Learn to surf in Port Aransas or kiteboard on South Padre Island.
- Ride a bike on the beach in Port Aransas or along the seawall in Galveston (rentals available).
- Ride horseback along the shore, with Horses on the Beach on South Padre and in Corpus Christi, or S-n-G in Galveston.



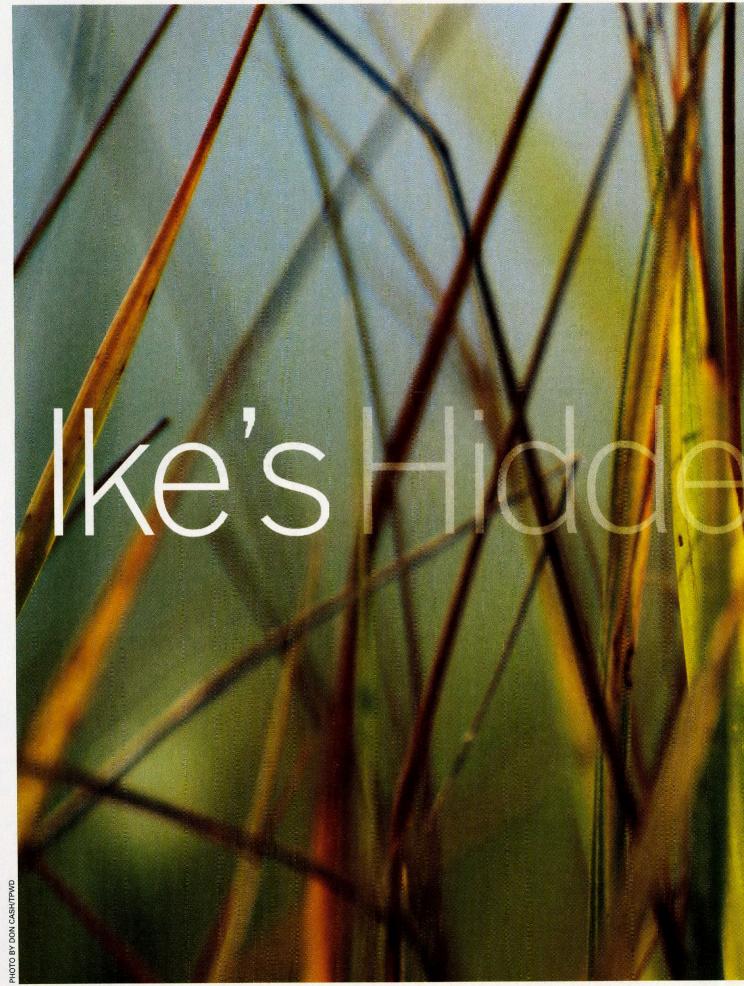




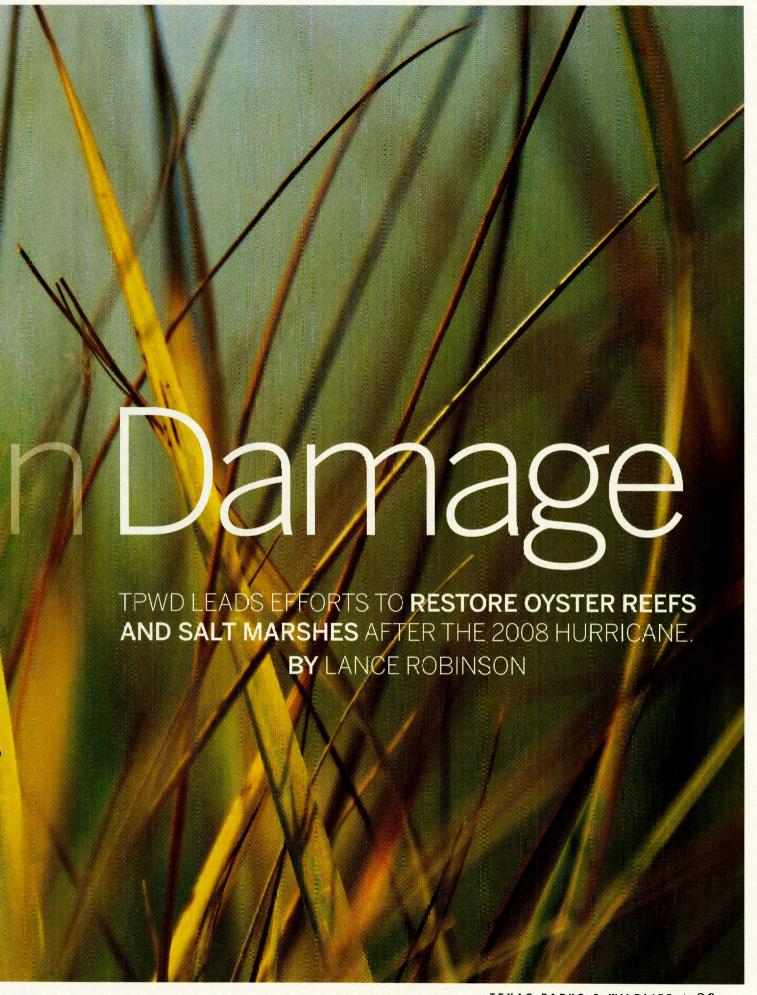
Nature Viewing

Anywhere you go on the coast, you can see plenty of iconic Texas wildlife and hardy coastal plants. Close to shore, once-endangered brown pelicans keep a close eye on the water for the r next meal while elusive whale sharks provide a thrilling but rare sight out in the depths. A few must-sees:

- American alligators in Aransas and Brazoria national wildlife refuges, or at Brazos Bend and Lake Texana state parks.
- The Big Tree, an enormous, 1,000-year-olc oak at Goose Island State Park near Rockport.
- Delphins, up-close, on dolphin watch cruises from Port Aransas and South Padre Island.



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Hurricane Ike, the costliest hurricane in Texas history,

the costliest hurricane in Texas history, made landfall across the east end of Galveston Island on Sept. 13, 2008. A storm surge of 15 to 20 feet above normal tide levels was reported along the Bolivar Peninsula and part of the Galveston Bay area. In Chambers County, to the north of Galveston, the tidal surge reached more than 11 miles inland.

The aftermath of Hurricane Ike was very visible to those living in the area and, through extensive media coverage, to the rest of the country as well. As devastating as the damage was to homes and businesses in the coastal communities of the upper Texas coast, less visible but significant damage also occurred to coastal habitats in the region and below the waters of Galveston Bay.

Emergent saltwater and brackish water marshes along the upper Texas coast were heavily eroded or inundated with high-salinity waters from the Gulf of Mexico. The Salt Bayou Marsh, the largest emergent marsh system in Texas, lost more than 700 acres. Erosion of the dune ridge along the beach adjacent to the McFaddin National Wildlife Refuge in Jefferson County exposed 45,000 acres of brackish water marsh to an influx of salt water.

As the high tidal surge and waves moved across the Bolivar Peninsula, thousands of cubic yards of sand and debris were swept into East Galveston Bay. Much of this material settled onto oyster reefs in Galveston Bay, smothering the reefs with up to a foot or more of sediment and burying the hard substrate necessary for oyster larvae to attach and grow.

The Texas Parks and Wildlife Department began mapping submerged habitat in 2007 (as a result of impacts from Hurricane Rita in 2005) using sidescan sonar technology. Comparing bottom habitat maps made before Hurricane Ike to those made after the storm revealed losses of more than half the oyster habitat in Galveston Bay. East Galveston Bay, between Smith Point and the Bolivar Peninsula (where the strongest quadrant of the storm made landfall), had oyster habitat losses of at least 80 percent. TPWD estimates that more than 6,000 acres of oyster habitat were lost in Galveston Bay as a direct result of Hurricane Ike. The estimated cost to restore this habitat to pre-hurricane condition is \$300 million.

Through a special appropriation by Congress, a \$7 million fishery disaster grant was made available to Texas in 2009 from the National Oceanographic Atmospheric Administration (NOAA). These funds were earmarked for oyster and marsh habitat restoration in the affected area.

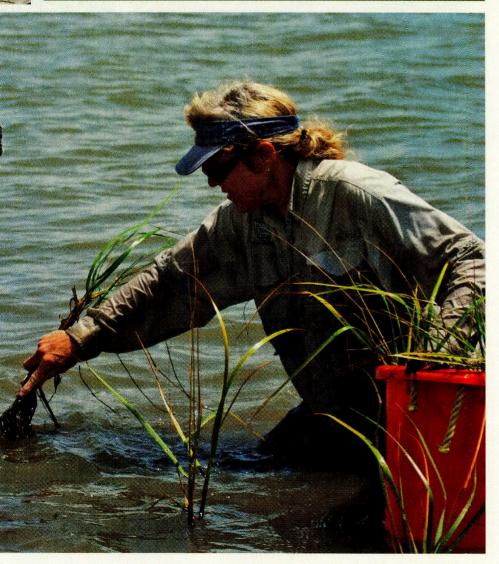
Hurricanes are natural events that have been occurring for thousands of years, and similar losses to habitat have occurred in other areas of the Gulf, so the question arises: Why restore these features? The answer:







TPWD employees and volunteers on the upper Texas coast have been planting grasses to restore marsh areas. Jan Culbertson, below, helps lead a planting at Galveston Island State Park. Similar work to restore lke-damaged marshes has taken place at J.D. Murphree Wildlife Management Area and McFaddin National Wildlife Refuge.



Salt marshes and oyster reefs are two of the most productive and valuable ecosystems found along the Texas coast. The benefits that we receive from these ecosystems are priceless.

Salt marshes

Marshes provide many valuable ecological services to coastal ecosystems and have been described as one of the most biologically productive habitats on Earth, often compared to tropical rainforests. Marshes function as biological filters by slowing runoff and allowing contaminants to settle, so excess nutrients are absorbed and utilized for plant growth. As plants die, the accumulation of decaying plant material provides critical nutrients for a variety of small invertebrates at the bottom of the food web. In turn, these tiny creatures are consumed by juvenile shrimp, crabs and fish.

Functioning as a nursery, marsh edges also provide refuge for these feeders. In fact, the majority of the inshore commercially and recreationally important species — shrimp, blue crabs, flounder, red drum and spotted seatrout — spend a portion of their life cycle in these habitats. Salt marshes help reduce coastal erosion by dissipating wave energy and serving as sediment traps. The effects of coastal flooding can be minimized by marshes, which slow runoff and absorb rainwater.

The upper Texas coast is dominated by marshes that range from freshwater marsh to intertidal salt marsh (covered at high tide, uncovered at low tide). A portion of the Salt Bayou Marsh system is located at the J.D. Murphree Wildlife Management Area, where marsh loss is at a rate approaching I percent per year. Hurricane Ike changed upwards of 700 acres of the system from vegetated marsh to shallow open water from scouring due to the storm surge.

Oyster reefs

Most people know oysters as an ingredient in gumbo, as the namesake

in Oysters Rockefeller or simply in raw splendor on the half-shell, but oysters are so much more than a delicious source of food.

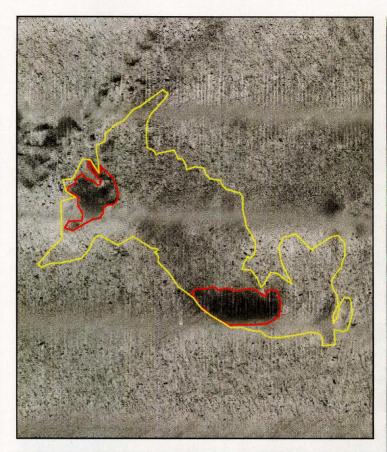
Marine biologists often refer to oysters as "ecosystem engineers" or "foundation species." An ecosystem engineer is a species that creates or modifies habitat, while a foundation species is one that has a strong role in structuring a community. Oysters, by attaching and growing upon cultch (any substrate upon which juvenile oysters cement themselves) and other oysters, create reefs. These reefs are habitat for numerous other reef organisms. The reef community is structured around the oysters.

The importance of this reef-building ecosystem service cannot be underestimated, as it is linked to nearly all other oyster ecosystem services. For example, oysters improve recreational fishing. Large, predatory fish like to gather around three-dimensional structures, and there's an abundance of small prey species for larger fish to feed on within crevices in the reef structure.

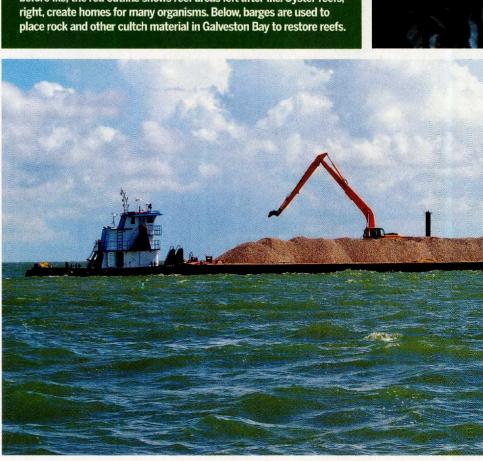
Oyster reefs also function as natural bio-filters. A single adult oyster can filter about 50 gallons of water in one day, removing small, suspended particles from the water and improving water quality and clarity.

Consider the scale of this operation. A 130-acre oyster reef with 10 adult oysters per square meter will filter approximately 260 million gallons of water in a day. By comparison, it takes 39 wastewater treatment plants in Houston to filter a comparable amount.

In addition to improving water quality and clarity, the filtering activities of oysters also have a positive effect on the aquatic food web. The tiny particles removed from the water by oysters include many microscopic plants and animals (collectively known as plankton). Oysters are selective about which filtered particles they actually ingest, and they reject much of the plankton that they capture as something called "pseudofeces." Since these psuedofeces contain many undigested planktonic organisms, they are a valuable food source for many small



Sidescan sonar imagery, above, shows the dramatic loss of oyster habitat in East Galveston Bay. The yellow outline indicates a 14.7-acre reef before Ike; the red outline shows reef areas left after Ike. Oyster reefs, right, create homes for many organisms. Below, barges are used to place rock and other cultch material in Galveston Bay to restore reefs.







worms, crustaceans, fish and other reef-dwelling organisms.

Oyster reefs can serve to stabilize shorelines and reduce erosion when they occur parallel to shore as fringing reefs. Fringing reefs can intercept incoming waves and greatly reduce their energy, minimizing erosion and damage.

And yes, in addition to these ecological services, oysters are a popular and valuable seafood item. The Texas oyster fleet harvests about 5.8 million pounds of oysters annually, valued at about \$17 million. The commercial oyster industry provides significant economic benefit to coastal communities and certainly contributes to the wonderful quality of life on the Texas coast.

Marsh habitat restoration

By using sediments dredged from the nearby Golden Pass Liquefied Natural Gas ship terminal, the shallow open water and subsiding marsh areas at Salt Bayou were raised to an elevation conducive to healthy marsh growth. Thanks to the partnership with Golden Pass, funds intended to restore about 40 acres of marsh were leveraged to restore about 1,600 acres of intertidal marsh within the Salt Bayou Marsh system, over 40 times the original goal. The areas were also planted with marsh species, such as smooth cordgrass and saltmeadow cordgrass, to accelerate revegetation.

Disaster grant funding is also being used to protect more than 45,000 acres of marsh within the Salt Bayou system by replacing a four-mile section of the beach ridge at McFaddin National Wildlife Refuge. This beach ridge suffered erosion from Hurricane Ike and now receives overwash during high tide events, allowing sea water into the Salt Bayou marshes. The berm construction will protect the coastal marsh system from the high salinities of the Gulf.

Once completed, these projects will result in the enhancement, protection and restoration of approximately 54,000 acres of coastal marsh.

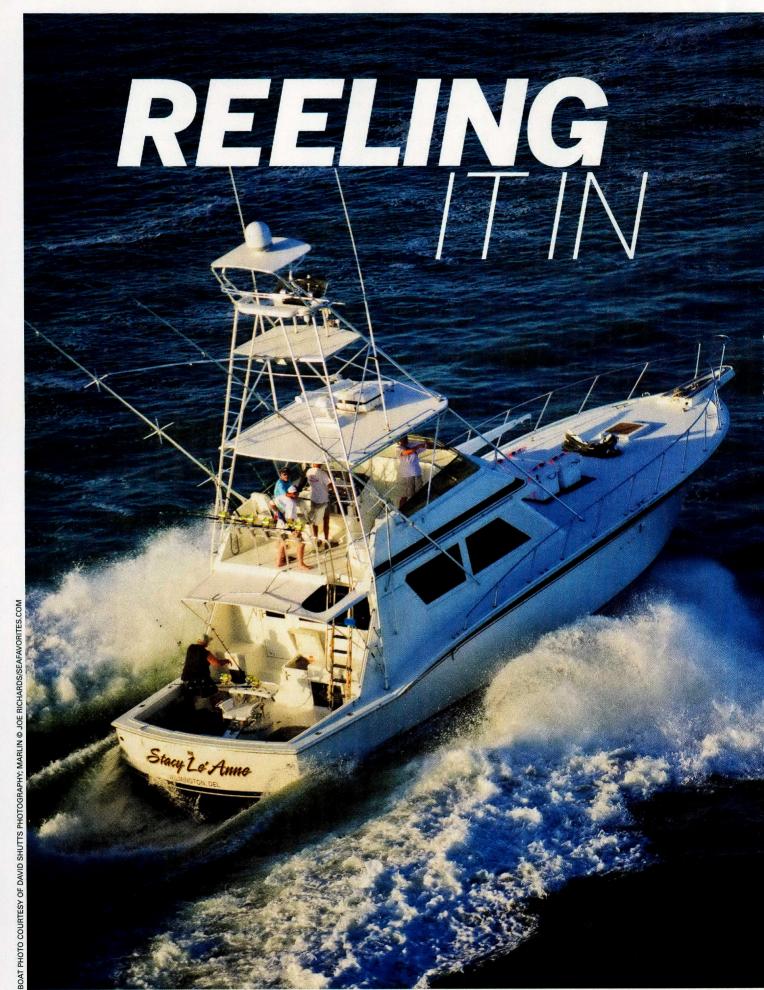
Oyster habitat restoration

Since September 2009, more than 1,300 acres of oyster habitat have been restored in Galveston Bay. These oyster restoration projects were ranked based on the thickness of sediment overlaying the reef. More than 174,000 tons of cultch — materials such as oyster shell, river rock or crushed concrete - have been placed onto 200 acres of sediment-covered reefs. For areas where sediment depths were less than three inches, more than 160 commercial oyster fishermen were contracted to pull dredges to bring buried shell to the surface, re-exposing the hard substrate. This oyster habitat will become available for harvest in a couple of years.

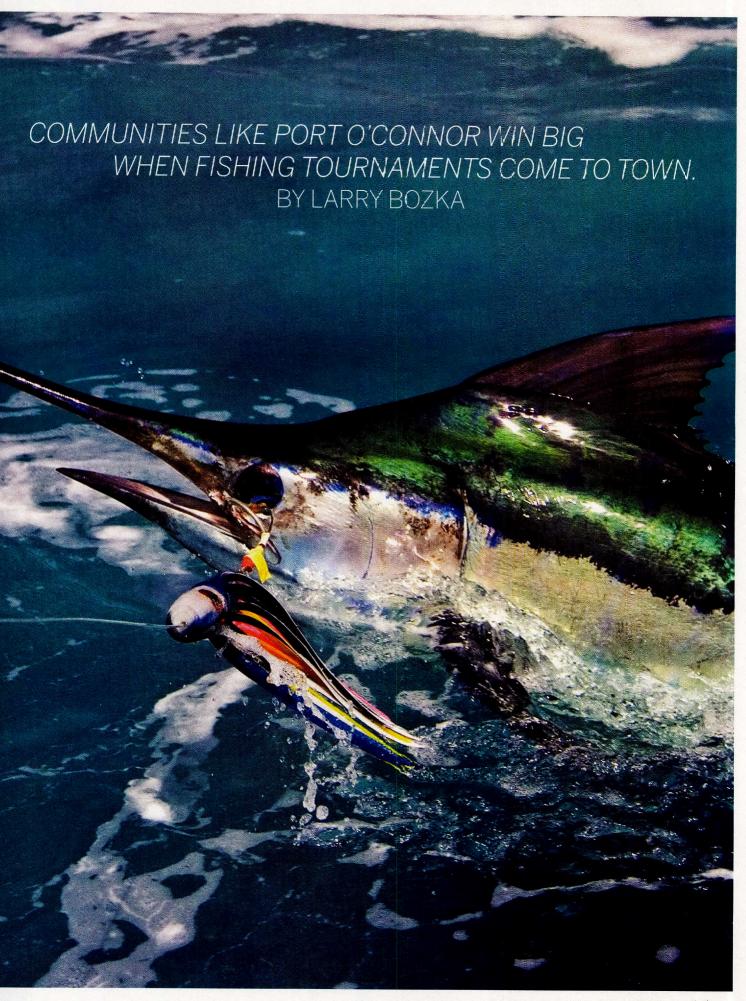
In East Galveston Bay, where the largest loss of oyster reef occurred, the Texas Parks and Wildlife Department closed the area to all oyster harvest for two years, allowing the surviving oysters to spawn. Coupled with the department's oyster restoration projects in the area, the newly settled oysters were able to establish, grow and spawn over two seasons before being harvested. Where there were no oysters growing after Hurricane Ike, by the fall of 2011 the restored reefs were home to more than 356,000 oysters per acre.

Though the unsightly scars from Hurricane Ike are fading, the less visible natural resource recovery in the area has been slower. With optimum growing conditions, these coastal habitats would take decades to return to their former state. Unfortunately, conditions are far less than desirable. Reduction in freshwater inflows, loss of sediment inputs in the upper reaches of estuaries from rivers and ongoing drought conditions all combine to slow this natural recovery along the upper coast.

Ongoing restoration efforts along the Texas coast by TPWD and others are mitigating many of these obstacles and accelerating the return of these hidden yet important natural resource victims of Hurricane Ike. *



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Anyone who's even vaguely familiar with the Texas coast knows that Port O'Connor is the epitome of a "sleepy little fishing village." Anyone who isn't need only enter the outskirts of town to figure it out.

The signs are everywhere.

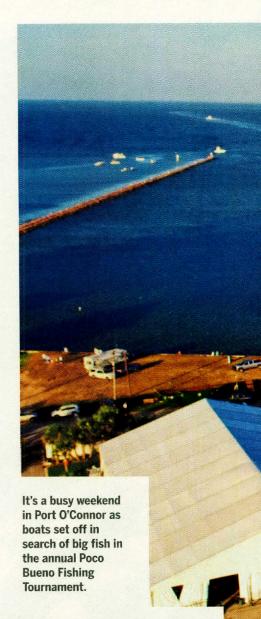
After carving an arrow-straight path through miles of mostly featureless prairie and just before dead-ending at Matagorda Bay, Texas Highway 185 makes a final dramatic statement. A curiously divergent gallery of road signs suddenly appears to the left.

It's an intriguing exhibition of local commerce and deeply rooted culture, a fusion of contrasts, textures and materials so eye-catching and compelling that it could arguably pass muster as an exhibit of contemporary art. Part Andy Warhol's iconic soup cans, part Winslow Homer's ivory-crested seas and part Christo and Jeanne-Claude's flamboyant outdoor creations, all the

way down to color-drenched fabric, the elements are dissimilar but unmistakably connected. It's an enigmatic cornucopia of choices, presented to visitors upon arrival.

Just off the shoulder, a piggybacked cluster of panels directs passers-by to an RV park, a cabin rental facility, a motel and charter boat operation and a fishing lodge. On the ground, a black-and-white poster tacked to a stake carries the name of a fishing rod repair shop.

Two larger signs stand out in the crowd at an adjacent intersection. The bottom one features a grizzled old captain at the helm of his boat. Draped in a slicker and holding the wheel, he guides weary travelers to a motel just a short









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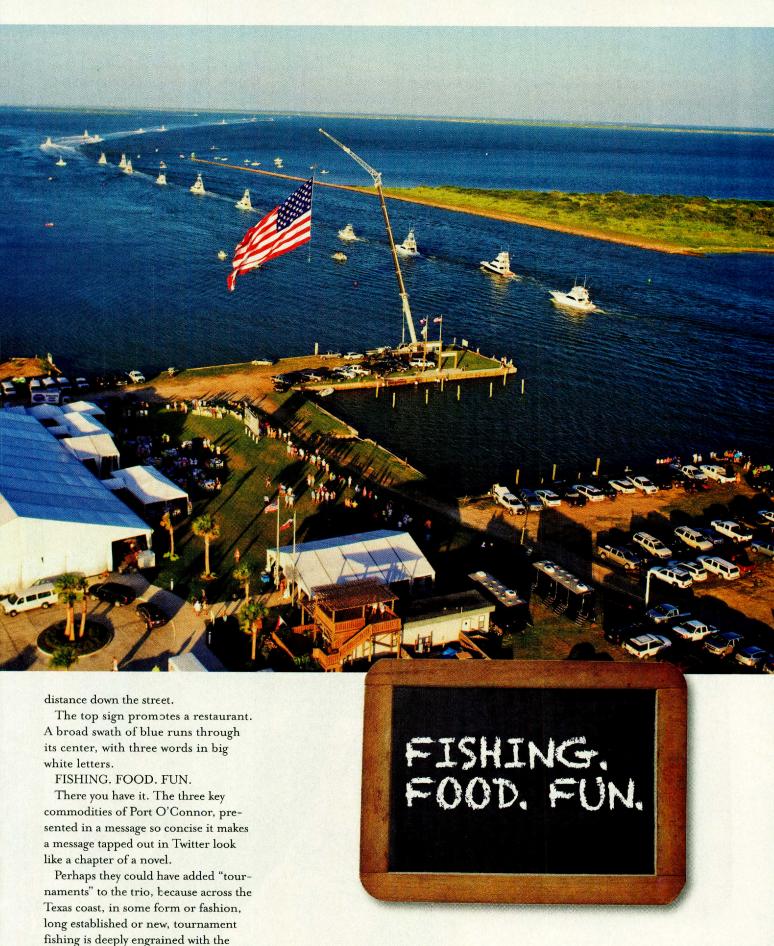
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sport. But to the businesses they benefit, fishing tournaments are far from a bonus. They're the key to survival, especially in a challenged economy.

An active base of businesses, most small to medium-sized and nearly all locally owned, work every day they can to keep their doors open in Port O'Connor, population I,253. "Every day they can" currently translates to "from Easter to Thanksgiving."

The town's promoters desperately want to expand that time frame. Off-season visitors have plenty to do here, from combing the shores of area beaches to enjoying a huge range of wildlife.

That's not the focus for a few days each July, known as the "Weekend of Poco."

The Poco Bueno Fishing Tournament, 100 boats strong in both inshore and offshore divisions, has come again to Port O'Connor.

The exact meaning of "Poco Bueno" is still up for debate, even among the family of the late Walter Fondren III, who continue to run the tournament today. The loosely translated version is "It's sort of OK." The Poco Bueno Fishing Tournament is "sort of OK" to Port O'Connor in the same way that the

Super Bowl is "kind of cool" for the city that hosts it.

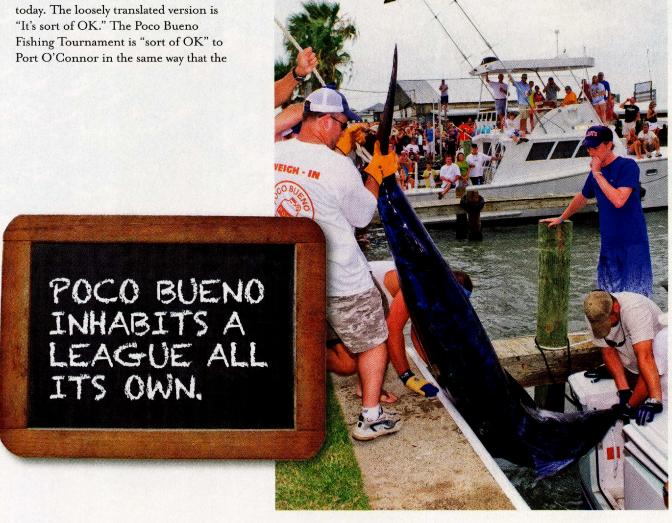
Fondren founded Poco Bueno in 1969 when 13 teams of fishermen, all good friends, received and accepted what quickly became the most coveted invitation in billfishing. To this day, Poco remains an exclusively invitational event.

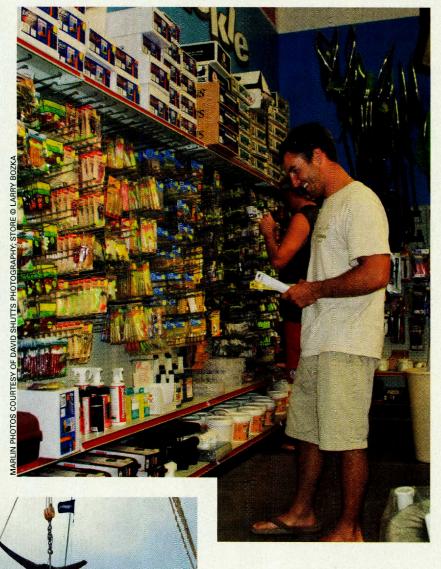
There's no other tournament like it. In Port O'Connor and every other community of note between the Sabine and Rio Grande, dozens upon dozens of fishing tournaments large and small aggressively vie for the prime weekend calendar slots of warm-weather months. Some are Texas traditions, wide open to all who pay the entry fee. Smaller towns hold more modest contests, often with ancillary activities that collectively make up a festival or fundraiser.

Some are venues for semi-pro anglers, experienced saltwater fishermen with an innate and insatiable bent for high-stakes competition. It's an uncertain game, played inside the boundaries of the state's major bay systems by a singular segment of fishing society that's willing to part ways with money.

Again, much of it flows directly into the coffers of local businesses. With each progressive leg of every tournament series there's a grateful community with a guaranteed economic win. The total amount of revenue that coastal contests generate is impossible to tally with any degree of accuracy.

There are boat-owner tournaments, fundraising tournaments and a growing number of "in-house" tournaments, corporate events that until recent years never went beyond the I8th hole of a





country club golf course. There is no such thing as a standard format for Texas saltwater tournaments.

Here in Port O'Connor, business owners can be certain of only one incontestable fact: Poco Bueno inhabits a league all its own.

A billfish boat that gulps 50 gallons of diesel fuel an hour isn't exactly a teasipper. Throughout the rest of the week, tanker trucks will roll in daily to replenish the tanks of area docks. During Poco, a boat with that kind of thirst is only one of many.

Meanwhile, at the gas pumps outside the Speedy Stop, the bay boats of Poco's inshore division are demanding drinks of their own. The locals laughingly call this place "the mall." While drivers await their turns at the pump, passengers walk into the store to check out the hardware.

An entire wall bristles with saltwater lures. Here at the mall, experienced

customers don't do much windowshopping. If they want a specific plug or spoon, they rattle off a model number and the person behind the counter knows exactly what it means.

Up the road, a striking banner of red-on-yellow vinyl marks the entrance to a car wash. There's a waiting line here as well. Make and model notwith-standing, every vehicle on the lot is identical in one important way. Every one's a pickup. And behind every one there's a bay boat.

The car wash is a microcosm of Port O'Connor in July, and owner Leah Griffin is determined to see it expand. An unflagging town booster, Griffin came here to stay two decades ago. Today she looks after her 90-year-old mother, sells real estate and, along with business cohort Brett Williams, a techsavvy transplant from California, runs the Port O'Connor visitors center.

Griffin's father, the late Lee Richter, was a legendary angler with a noteworthy name both in and out of Port O'Connor, where he relocated in the 1960s to build custom flounder boats. Having seen Port O'Connor through his eyes, an unvarnished assessment of all that it is and all that it offers, she has a fondness for the area that goes beyond sentimentality.

Just off the porch of the visitors center, tropical reef fish with thin yellow flanks of onion-skin paper swim behind kite strings in the damp summer air.

"Twenty years ago, four or five fishermen would visit Port O'Connor for a 'guy's' trip," she says. "Now, the same fishermen are bringing their wives and children, passing along the art of fishing."

At the end of a long day of fishing, Ryan Smith, an overjoyed angler from the small town of Portland, stands next to a blue marlin for photos. The marlin's more than 9 feet long, and it's just a tad shy of 500 pounds. The victorious crew wins more than \$900,000.

For Smith, only 18 years old, it's the biggest thrill of his life, something he will remember and talk about forever.

Between fishing, food and fun, there are nonetheless things that will always be priceless. **

Ryan Smith, 18, caught the biggest fish at 2012's Poco Bueno. Stores in Port O'Connor (top photo) welcome the business.

Artificial reefs attract sea life, biologists ... and zombies?



There's something about the ocean that makes me

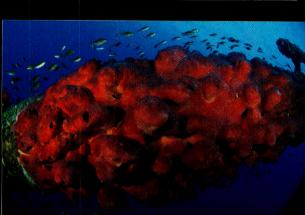
feel small and rather insignificant. Maybe it's the endless horizon or the relentless pounding of the surf. At times the ocean is serene and comforting, then suddenly it can become as frightening as God's wrath. What fascinates me most is the great unknown that lies just beneath the surface, the life that we can't see but we know is there. Some of it is big and scary, some of it microscopic. There's so much life still unknown, yet to be discovered.

Be they monsters or mermaids, I'm fascinated by them all. I guess that's why I feel compelled to jump from a perfectly good boat to go explore what Jacques Cousteau referred to as "the briny depths of

the ocean."

Jumping into the Gulf of Mexico with full scuba gear is the closest I'll ever come to being an astronaut walking in outer space. My entire being feels different. Water wraps around my skin, welcoming my body in a total embrace.





I float as though weightless, peering straight down into an infinite depth. My hearing is muffled, which helps to clear my mind of distractions. The sunlight dances through the water in random lines and sparkling points. All of these sensations transport me to an alien

world, one in which I don't belong.

Thankfully, there are two other divers with me on this journey. I'm exploring one of the hundreds of artificial reef structures off the Texas coast with Brooke Shipley-Lozano, who is the chief scientist from the Texas Parks and Wildlife Department's Artificial Reef Program, and Chris Ledford, the department's scuba diving safety officer. The Artificial Reef Program works with partners to create and maintain more than 4,000 acres of artificial reef structures in the Gulf, benefiting divers, anglers and sea life itself.

This strange undersea world is now so normal for these two that they hardly recognize they don't belong here.

The three of us descend down the boat's anchor line to what remains of a cut-off oil platform structure intentionally left for the benefit of the life that now grows on it and lives around it. This is called reefing a rig. Our depth gauges read 25 feet, and we can just begin to see the faint, distant outline of the top of the platform 60 feet below us. Ledford and Shipley-Lozano look as though they are taking a stroll in the park. Their ease underwater gives me more confidence.

Ledford seems rather unassuming when you first meet him. What lie just beneath his surface are a quick, dry wit

and an insatiable knowledge for the physiology, chemistry and physics of scuba diving. He also possesses a vast understanding of what to do if zombies were to ever take over the world.

Shipley-Lozano is a fun, ever-smiling redhead, a little shy at

Opposite page: Divers explore an oil rig that new serves as a reef. This page. Brooke Shipley-Lozano, above left, and Chris Ledford, above right, are part of TPWD's Artificial Reef Program, and for them, scuba diving is part of the job. They monitor marine life, at left and below, at reefs created from structures such as oil rigs.



THIS STRANGE
UNDERSEA WORLD
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DON'T BELONG HERE.

first. Point to any fish and she can nearly always identify it. Ask her about the stars or plot of any major movie produced after about 1950 and you will be astonished by the database she keeps in her head.

Shipley-Lozano and Ledford make a great

working pair, teasing each other and pushing each other's buttons just enough to get a reaction, but never enough to upset the other. What one doesn't know, the other usually does. Though they love to venture off into wild discussions of zombie movies, most of their conversations center on the undersea world they explore on a regular basis.

"You feel small because you're in such an infinite space and

there's so much life around you," Shipley-Lozano says. "You're in a huge circle of life, from amoebas to huge sharks. You get in the water and you realize you're not top dog. People think they're at the top of the biological food chain and feel confident on land, but the ocean connects you to the reality of how small we really are. There is a spirituality to it."

Shipley-Lozano feels fortunate to be able to dive as part of her career.

"Diving is like everything you imagined as a kid growing up watching Cousteau and *The Blue Planet* on TV," she says. "I feel kind of bad for the folks who sit behind a desk all day. The excitement of jumping into the unknown never grows old. You never know what you'll see. These artificial reefs create such a wonderful concentration of life."

The ocean has been a part of her life for as long as she can remember.

"I could swim before I could walk," she says. "Being born into a fishing family, half my life was spent on a boat. Oysters and crabs are in my blood. I still have a piece of paper from when I was a child, and on it written in crayon it says I want to be a ballerina, scuba diver or a veterinarian. I kind of got two out of three."

We're now approaching 40 feet of depth, and the reefed oil rig is clearly in sight, spanning some 60 feet from one side to the other. The ocean floor is about 200 feet below. It's like being in a skyscraper on a foggy day and not being able to see the street below, but you know it's down there somewhere.

The life around the eight supporting legs of the platform is abundant. I catch some movement to my left and think it might be Ledford or Shipley-Lozano passing by me, but it's not them. A blacktip shark is heading right at me. It's about 4 feet long, so I'm not too worried about his size, but that row of sharp teeth gives me pause.

Sleek, bare and lightly glistening, the blacktip is superbly adapted to life in this saltwater world. He glides past us smoothly, looking at us with curiosity. I know what our intent is in this watery world, but I'm not so sure of his. We marvel at his ability to appear, then disappear into the murky distance with almost no effort. The shark is just one of the thousands of varied sea creatures that benefit from this artificial reef.

"I love my job!" Ledford tells me. "On a normal dive, you expect to see hundreds to thousands of small to medium-sized fish swimming around the corals that have grown on the structure. But you're just as likely to have a school of enormous jacks or red snapper surround you, see hammerhead sharks off in the distance or silky sharks up close. We've even seen whale sharks. You just never know what's going to show up. That's the excitement of it."

Ledford says scuba diving is an integral part of who he is and has become part of his regular routine.

"I have a difficult time if I don't get in the water often enough," he says. "I get grumpy and not so pleasant to be around. In January and February, when we are not diving for the department, I have to go jump in a lake and do a couple of quick dives just to stay sane."

From his earliest memories, Ledford remembers daydreaming of being underwater.

"My dad was a scuba diver and introduced me to the sport at an early age," he recalls. "I remember sliding down the stairs in our house on my belly with my socks half off my feet so they looked like fins, wearing a toy fireman's air tank that I used as my scuba tank and one of my dad's old, broken diving masks. Every time a Jacques Cousteau documentary came on TV, you couldn't pull me away from the set for anything."

Ledford says he is a person of two minds.

"I find that I have a top side, surface brain and my underwater brain. The underwater brain doesn't communicate very well with the surface brain," he says. "When I'm on the surface, I'm thinking about all the technical nature of what we do with the gear, the dive plan and the safety of the diving scientists. When I'm underwater, I think about all the various species of fish and the wonderful, alternate world that we're exploring."

For example, Ledford says he'll make a note about a fish he can't identify so he can look it up later, but sometimes forgets what it looked like when he gets back to the surface.

"The next time I jump in the water, my underwater brain gets triggered and I can see that fish from the last dive as clear as day," he laughs. "On land we walk around in a vertical position. Underwater we're in a horizontal position. That alone changes your perspective and your relationship with your environment."

Ledford says being able to hover in and around the wildlife in the ocean is unlike anything else he's ever experienced.

"In the woods, if you see a deer in the distance, it will run away," he explains. "For the most part, sea life doesn't run far away, so you can still see them up close. And the artificial reefs offer a wonderful density of life that makes the experience that much better."

Back on board our scuba charter boat, The Fling, our bellies are full from a wonderful meal, and the conversation drifts from business to casual talk. After a full day of scuba diving and data collecting, our minds are getting sleepy and wandering to strange subjects.

Shipley-Lozano and Ledford fall so easily into a discussion of zombies that I can tell it's a frequently explored topic for them.

"If zombies are the living dead, then they can exist underwater, correct? Just like in [the zombie movie] Land of the Dead?" Shipley-Lozano asks. "So, Mr. Diving Safety Officer, what do we do if we encounter one on a dive?"

Ledford looks away in deep thought and then offers his advice in quite a serious manner.

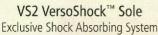
"First, I'd suggest you wear a suit of chainmail so they can't bite you," he says. "And then stay off the ocean floor. Zombies can't swim, but they can walk across the bottom of the ocean. They could climb the legs of an oil platform, so don't get too close to the structure on your dives. I'll have to do some research about this one. I'll get back to you."

Great. Just what I need — another monster from the deep to fear. ★

Just for fun, go to www.tpwmagazine.com for Chris Ledford's tips on what to do if you encounter a zombie while scuba diving. Hint: Keep swimming!

Check out the TPWD Artificial Reefs website for an animation showing how an oil rig can be turned into an artificial reef, a marine species identification page and the latest program news. Looking for red snapper? Try the interactive reef locater map for some possible offshore hot spots. Got a military vessel or a few hundred tons of concrete you want to donate? The site tells you how to get started. See www.tpwd.state.tx.us/artificialreef.







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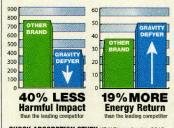
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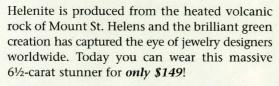
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