

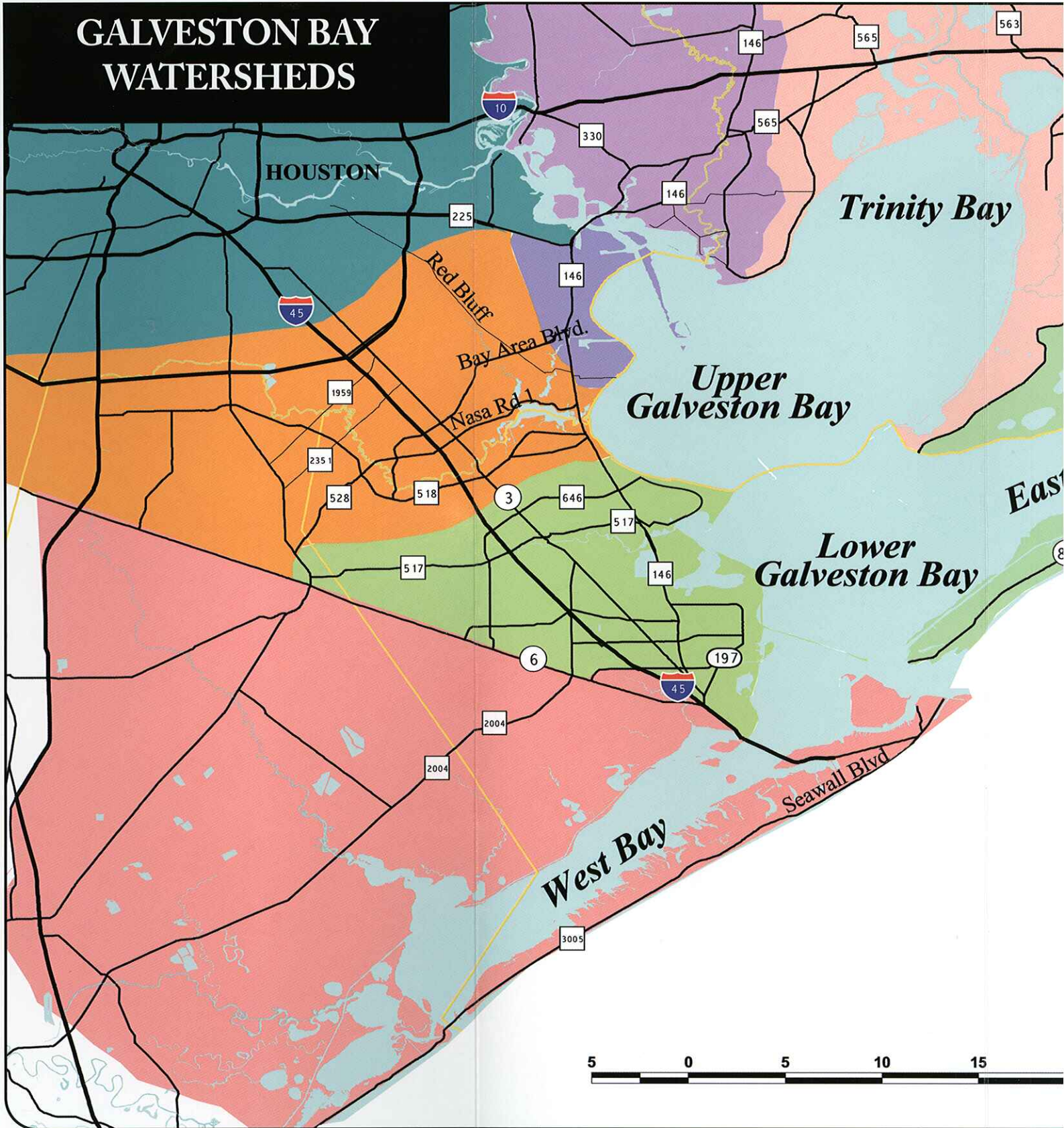
# Galveston Bay DRIVE & DISCOVER



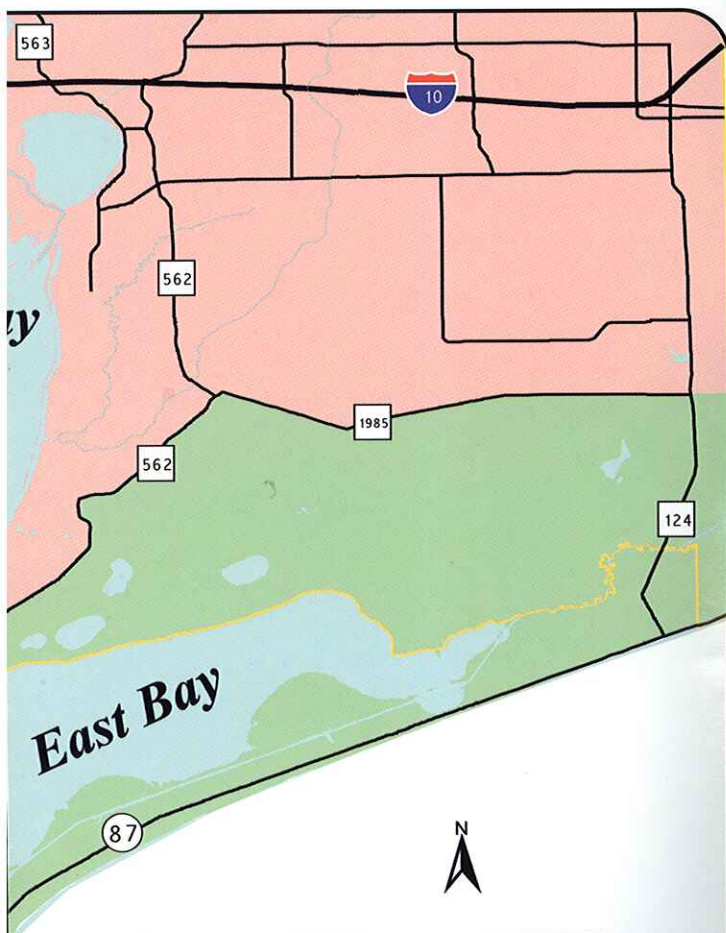
A Guide To Galveston Bay History and Habitats



# GALVESTON BAY WATERSHEDS





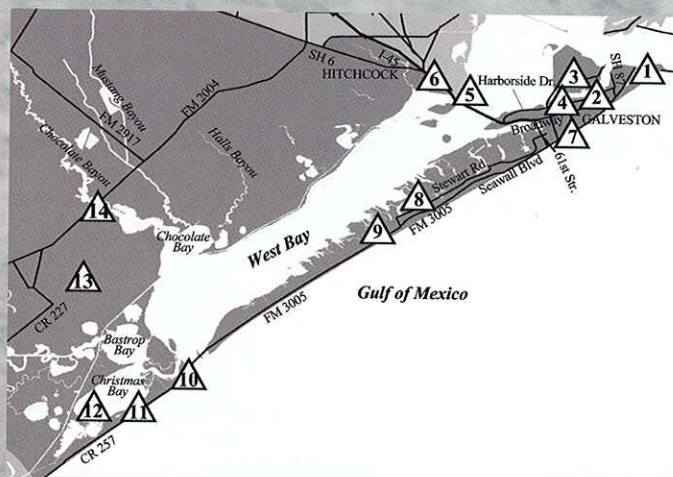


## GALVESTON BAY MAP KEY

- Stream Segments
- Main Roads
- Freeways
- County Boundary
- Water
- West Bay Area
- Lower Galveston Bay Area
- Clear Creek Area
- Upper Galveston Bay Area
- West San Jacinto River Area
- East San Jacinto River Area
- Trinity River Area
- East Bay Area

20 Miles

## WEST BAY AREA



1. *The Galveston Jetties and Big Reef Nature Park (BRNP).* To keep Bolivar Roads free of sandbars, two jetties extending a total of five miles into the Gulf were built between 1874 and 1898. Together they quickened water flow into and out of the Bay, which tended to deepen Bolivar Roads. The jetties also thinned Galveston beaches by interrupting the longshore current. The South Jetty begins on East Beach, while the North Jetty, which starts from the Bolivar Peninsula (see Bolivar Flats in the East Bay Area), is visible when looking to the east from BRNP. Both jetties are well known among area fishers, and BRNP is an excellent birding area with a quiet nature trail. Do not swim or wade at BRNP; the current can be violent and strong. *BRNP and East Beach can be reached by proceeding northeast to the very end of Seawall Boulevard and then turning right. Park near the wooden observation tower on the left to walk into BRNP; East Beach is at the end of the road.*

2. *Campeche.* Pierre and Jean Lafitte were French-born pirates who operated throughout the Gulf and Caribbean. They established Galveston as a smuggling and piracy base from 1817 to 1820, naming their port and town Campeche. About a thousand people lived in Campeche, which was the first sustained European settlement on the island. At this site was the brothers' Maison Rouge, their primary house-fort. The current building (on Harborside Drive between Fourteenth and Fifteenth Streets) was constructed in 1887 on the foundation of the Maison Rouge. Nearby are the docks of Galveston's Gulf and Bay shrimping fleets (including the Mosquito Fleet at Pier 19) as well as the 1877 tall ship *Elissa* and the Texas Seaport Museum.

3. *Texas Wetlands Center.* Researchers are actively trying to learn more about submerged seagrasses, which anchor what is arguably the most important habitat in our Bay. Smooth cordgrass serves



# MEET YOUR BAY



Most of us who live near Galveston Bay never think much about water and its influence on our lives. Yet we live on an estuary, a place where fresh and salt water meet and mix. The effects of being in an estuary are felt by fishers on the Galveston jetties and by Houston commuters stranded by a flooding creek. The Bay plays an important role in the lives of all who live near it, whether we are aware of those effects or not.

When people first came to Galveston Bay thousands of years ago, they found many distinct habitats:

- Bald cypress swamps near the Trinity River
- Enormous oyster reefs in the Bay
- Dense riparian woodlands along Clear Creek
- Coastal prairies full of bison
- Deep salt marshes along the shores
- Long barrier islands

We now know that they found the second most-productive and seventh-largest estuary in North America, a place where the San Jacinto and Trinity Rivers and numerous creeks and bayous merge with the Gulf of Mexico. Estuaries are rich with natural resources and thick with life, and ours has been particularly blessed.

The ways people have used our estuary's habitats have changed significantly over time, and these changes have been inscribed upon and around the Bay. The *Drive & Discover Guide* documents some of these changes and their effects on our Bay's habitats. As such, the *Drive & Discover Guide* blends human and natural history. We point out places as diverse as ancient shell middens, early cattle ranches, submerged seagrass meadows, good birdwatching sites, and the first offshore oil rigs in Texas. The *Drive & Discover Guide* organizes these sites into eight areas. These regions approximate watershed – the flow of water from the mainland to the Bay – but they also reflect how humans have divided the Bay into a series of cultural zones.

We hope that by visiting these sites you'll have fun as well as learn about our Bay – whether you live around the Bay or are just visiting. We want to pique your curiosity. Consider the *Drive & Discover Guide* a personal invitation to explore your Bay. Consider it a reintroduction to an old friend.



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## HABITAT KEY GUIDE

The open-bay water is the largest of all habitats in the estuary. It contains numerous microhabitats within itself, distinguished by ever-changing physical, chemical, and biological factors. The open-bay bottom is the second-largest habitat and hosts a vast array of benthic organisms that decompose the steady rain of dead organisms and digested materials that fall from the open-bay waters above.



Oyster reefs form on areas of open-bay bottom that possess a hard substrate and sufficient water current. Oysters are filter-feeders, and large populations may influence water quality conditions. Oyster reef communities, like coral reefs, are extremely diverse.



Seagrass meadows grow on areas of open-bay bottom with shallow, less turbid waters. The meadows serve as nursery grounds for juvenile shrimp, crab, and fish species and feeding grounds for predators and herbivores.



Mud and sand flats are the outer boundaries of the bay bottom. These areas are exposed to air and appear lifeless during low tides. During high tides, however, mud and sand flats are the pathways by which aquatic creatures visit the marshes.



Marshes range from salt to brackish to freshwater. Salt marshes are subject to daily tidal flushing of bay-water, and their inhabitants must be highly tolerant of salt and frequent changes in water levels. Freshwater marshes occur where a steady flow of fresh water, usually from a river or creek, prevents incursions from salt water. The large zones where fresh water from rivers and creeks meets salt water from tides are known as brackish marshes.



Oak mottes are clumps of oak trees seen on the coast. They are often found near freshwater marshes on islands and on ancient dunes on the mainland. The relative height and density of vegetation provide shelter for many species, particularly birds during the spring and fall.



Riparian woodlands are the tree-lined shore habitats along rivers, creeks, sloughs, and bayous. The plants and animals that live in this habitat are adapted to occasional-to-long periods of standing water.



Coastal prairies can be categorized into grassland prairies near the perimeters of the watershed, wet coastal prairies surrounding freshwater marshes, and salt prairies surrounding salt marshes.





a similar role in salt marshes. The Texas Wetlands Center educates the public on these plants and the many organisms linked to them. Pelican Island, where the center is located, was formerly a sandbar and small island joined with materials dredged from the Galveston Ship Channel. The island has become a significant habitat in its own right. *From Broadway, turn onto Fifty-first Street, following the signs to Texas A&M University's Mitchell Campus. The center is located at the foot of the far side of the draw-bridge.*

**4. Old Port Industrial Boulevard.** Galveston's port no longer dominates Texas commerce, but it remains a good example of what working ports look like and how they operate. A drive on Old Port Industrial Boulevard is a (bumpy) tour past docks, warehouses, and tall grain elevators full of sugar, rice, bananas, and sulfur. You can also drive close to the wharves. Large ships designed to lay underwater cable, service offshore oil platforms, or carry dozens of cargo containers to Central America lay berthed here. Several offshore oil platforms may be awaiting deployment. A dense maze of rail lines wind their way to the wharves, and heavy trucks pass constantly. *You can reach the area from Harborside Drive. From the north, exit right just before the Judge Smith Viaduct onto Old Port Industrial Boulevard, which passes beneath the Viaduct. From the south, a large sign marks the start of Old Port Industrial Boulevard near the intersection of Harborside Drive and Twenty-sixth Street.*



*Brown pelicans - Photo: ©Jim Olive*

**5. Virginia Point and the Galveston Causeway.** Overlooking the channel into West Bay and just east of the Galveston Causeway, Virginia Point has long been a strategic place to cross over to Galveston Island. One of Lafitte's lieutenants, James Campbell, settled here in 1821 and helped to establish the first ferry to Galveston Island. Stephen F. Austin included the Point in his settlement contract in 1828. The town of Virginia Point was first established in 1836 and replatted in 1893. In 1852, William Jefferson Jones purchased a large portion of the point and established a beautiful plantation home and used the land to develop a superior variety of "sea island cotton". During the Civil War, the Jones Plantation home became a hospital and part of the Confederate Fort Herbert. This fort was held by the Confederacy during the entire length of the war and was a strategic point of defense during the Battle of Galveston. The first railroad bridge

was built in 1859, and the first wagon bridge was opened in the late 1800s. The bridges from Virginia Point to Galveston were destroyed during the 1900 Storm, and in 1912 an all traffic causeway was opened. The 1912 bridge still serves as the rail bridge across Galveston Bay today. The Galveston Causeway was completed on April 29, 1964. A new eight lane facility will replace the 1964 causeway.

**6. SCENIC GALVESTON John M. O'Quinn I-45 Estuarial Corridor.** One of the most visible and accessible marshlands in the Galveston Bay area, SCENIC GALVESTON's O'Quinn I-45 Estuarial Corridor straddles several miles of I-45 just north of the Galveston Causeway. SCENIC GALVESTON acquired these 900 acres and manages the area as a scenic park for wetlands habitat conservation. Portions of the original salt marsh were highly degraded, and SCENIC GALVESTON and several partner organizations and agencies have been working to restore healthy stands of marsh grasses and sustainable water flow. *Reitan Point turnout provides a pleasant view of the protected roadside marshes on the southbound side of the highway just south of Exit 6.* SCENIC GALVESTON's most recent acquisition is the historic Virginia Point Preserve, 1,490 acres of wetlands and intact coastal prairie just east of the Estuarial Corridor. The combined preserve will permanently protect nearly five linear miles of Jones Bay-Galveston Bay shoreline.

**7. NOAA/NMFS Sea Turtle Facility.** Sea turtles were once relatively common along the Texas coast and in our Bay, particularly near seagrass meadows. Over the past two centuries, however, sea turtle numbers have seriously declined, and some species are in danger of extinction. Researchers at the NOAA/NMFS Sea Turtle Facility hope to find strategies to stabilize wild Gulf populations. The site also serves as a rehabilitation center for injured sea turtles. Although this is a federal research facility, visitors are welcome on Tuesdays, Thursdays, and Saturdays. The facility is housed on the site of the former Fort Crockett. *You can reach the facility from either Broadway or Seawall Boulevard by first turning onto Forty-fifth Street and then again onto Avenue U (towards Forty-sixth Street). Follow the small blue signs to Sias Street.*

**8. Auia and Eckert's Bayou.** Much of the land on the Bay side of Galveston has been developed into residences, but archeological excavations in this area uncovered burial grounds of native Americans believed to be members of the Akokisa culture (sometimes referred to locally as the Orcoquisacs), which was part of the Atakapan linguistic family. Atakapan-speaking groups inhabited the Bay area for at least 5,000 years. Cabeza de Vaca (see Follets Island) encountered this culture in 1542, and his and other accounts suggest these groups were nomadic hunter-gatherers. The Akokisa were replaced by the Karankawas, who called Galveston *Auia*. Sickened by European diseases and attacked by the Lafitte brothers near Eckert's Bayou, no Karankawas were left on Galveston by 1830. *You can reach the site from Stewart Road (which parallels FM 3005 for much of its length; Eight Mile Road is a good crossover), turning onto Eckert Road in the Lafitte's Cove subdivision. An interpretative nature trail is located in the subdivision.*



**9. Galveston Island State Park (GISP).** With 1,200 acres stretching from the Bay to the Gulf, GISP contains many barrier island habitats. Sadly, the marshes have been damaged by subsidence and erosion in recent decades, but on the northern shore is one of the most ambitious and successful marsh restoration sites in our Bay. Geotextile tubes—wide plastic-fabric tubes filled with sand—have been placed parallel the shore to break the Bay's waves to lessen erosion. A series of low mounds have been built in shallow water and planted with smooth cordgrass. Submerged seagrasses have also been transplanted behind the geotextile tubes. A local support group--The Friends of Galveston Island State Park--hosts regular birding excursions and staffs the popular nature center. *The park is well marked on FM 3005.*

**10. San Luis Pass County Park.** San Luis Pass is one of two major connections between Galveston Bay and the Gulf of Mexico. Bird Island, located a few hundred yards north and slightly west of the Pass, is one of the largest colonial bird rookeries in the Bay. Drive only in designated areas; motor vehicles have destroyed nests of many bird species, including the threatened piping plover. *San Luis Pass can be reached on Bluewater Highway/CR 257 between Folletts and Galveston Islands.* The county park is located on the western shore, but public access is also permitted on the eastern side.

**11. Follets Island.** At this writing, Follets Island is a narrow peninsula connected to the mainland near Surfside and is no longer an island. However, erosion and storms are likely to make it an island again in the future, and this vulnerability has limited development. *Bluewater Highway/CR 257 is the main road on Follets; it passes between wide, little-used beaches and deep salt marshes.* Most historians agree that Follets was the site where Cabeza de Vaca, a Spanish explorer, became stranded in 1542. A town and port briefly blossomed here in the nineteenth century.



*Roseate spoonbills at Christmas Bay - Photo: ©Jim Olive*

**12. Christmas Bay Coastal Preserve.** Located to the southwest of San Luis Pass and ranging north of Follets Island, Christmas Bay is one of the best examples of what most of our Bay looked like before the extensive subsidence and development of the twentieth century. Large seagrass meadows still exist in the shallows close to shore, though these are only accessible by boat. *Good views of Christmas Bay can be found along Bluewater Highway/CR 257 or down some of the side roads, such as CR 257S, that cut to the north.* Please note that power boat propellers can permanently damage seagrass meadows.

**13. Brazoria National Wildlife Refuge (BNWR).** A great deal of the freshwater that flows into West Bay must pass through some part of the 43,000 acres of the BNWR, which was founded in 1966. Wildlife is abundant in the many numerous refuge habitats; alligators and bobcats have been seen crossing roads. Public access to most of BNWR is limited to the first weekend of each month, but there are several day-use fishing areas. *BNWR is accessible from FM 2004 and CR 227.*

**14. Chocolate Bay and Bayou.** Brown pelicans nest on an island at Alligator Point at the mouth of the Bayou. The bayou itself is West Bay's largest single freshwater source, and several petrochemical plants sit on the eastern shore. *A boat launch is located below the west side of the FM 2004 bridge.*



*Seagrass meadow - Photo: Courtesy of Pete Sheridan, National Marine Fisheries Service*



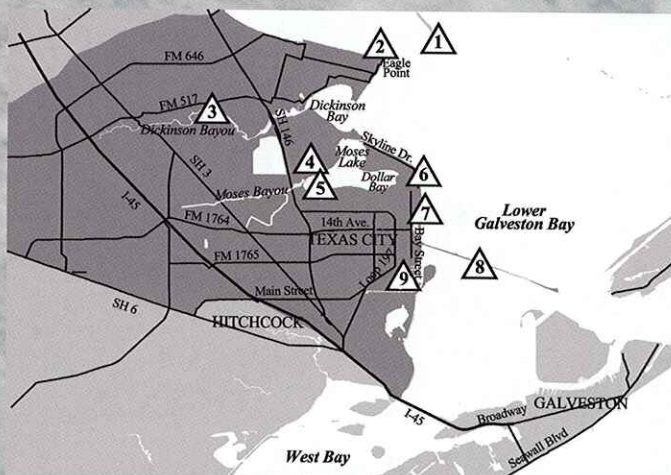
## West Bay Habitat

**Seagrass meadows.** Until the early 1970s, most of the Bay west of the Galveston Causeway and along the western shore of the Bay was ringed by thick "fields" of seagrasses. Today, many groups are actively trying to restore or re-create these old stands, which are arguably the most important type of habitat along the Texas coast. Seagrasses are flowering plants (like grasses in our yards and parks) rather than algae or seaweed. The meadows remain underwater below the low tide mark, making them hard to see from shore. Seagrass meadows are rivaled in importance and complexity only by tropical rainforests and coral reefs. Their citizens live in, among, above, and below their leaves and roots. Most non-microscopic life in the Bay is connected to seagrasses in some way. Indeed, the thick stands were even crucial at protecting life in the salt marshes by absorbing some of the wave energy that would otherwise erode the shoreline. The largest remaining meadows today are in Christmas Bay between Follets Island and Brazoria National Wildlife Refuge. Seagrasses were formerly the main food source of sea turtles in our Bay.

**Barrier islands and peninsulas.** Between five and ten thousand years ago, narrow mounds of sand emerged from the Gulf paralleling the shore. When sea levels fell, the islands widened and tended to connect, forming a few long islands (like Galveston) or peninsulas (like Bolivar and Follets). In our Bay, these islands are literally barriers between the mainland and Gulf, reducing the energy and salinity of the Gulf's waves, allowing brackish marshes to form, and keeping our rivers' silt within the Bay. Yet barrier islands retain their wandering character. The distinction between islands and peninsulas is often only as strong as the next storm or high tide, much to the frustration of humans.



## LOWER BAY AREA



**1. Red Fish Bar.** Extending between Eagle Point and Smith Point, Red Fish Bar traditionally served as the line dividing Upper Galveston Bay from Lower Galveston Bay. Until the 1880s, the Bar was shallow enough for ranchers to drive cattle across the Bay along a massive series of oyster reefs and shoals. The constriction of the Bay here forces much river-borne sediment to fall out of suspension in Upper Bay and tends to make the salinities of Upper Bay and Lower Bay distinct. Industrial mining of the shell in the reefs and the dredging of deepwater channels eliminated most of the original Bar. A portion of Red Fish Island was restored in 2002, and functions as bird and oyster habitat and a safe anchorage site for boaters. Parts of the old bar are visible from Eagle Point at low tide.

**2. Eagle Point.** Like Smith Point, this area has seen significant human activity for thousands of years, and large shell middens indicate the long-term presence of Native Americans. The first commercial fishing fleet of Galveston Bay was established here by the 1840s, delivering salt water terrapins, redfish, and oysters. Vietnamese fishers entered the area in the 1970s. Commercial fleets berth south and west to Dickinson Bayou, and the fleets harvest oysters, fish, shrimp, and crabs from the Bay and Gulf. You can reach Eagle Point from SH 146 by heading east on either FM 517 or FM 646. A marina with limited picnic facilities stands near the point, which has views of Baytown, Smith Point, the Bolivar Peninsula, Galveston, Texas City, and LaPorte. A larger park is located a few miles to the west on FM 646. Many of the small roads near the point are worth exploring.

**3. Paul Hopkins Community Park.** Although this park is small, there is a nature trail along the shore of Dickson Bayou. Red-shouldered hawks occasionally nest here. Exit I-45 onto FM 517 and proceed east; the park is on the right.





*Attwater's prairie chicken equipped with a radio collar*  
*Photo: Courtesy of Mitch Philpot, The Nature Conservancy*

**4. Texas City Prairie Preserve.** In 1900, roughly one million Attwater's prairie chickens roamed the coastal prairies of Texas and Louisiana. Only about 50 are left in the wild today, with a major loss of habitat the primary cause of their decline. Urban expansion and invasive species have taken over 98 percent of the native prairie that once supported this now-endangered bird. Since the mid 1990s, the population at Texas City Prairie Preserve has teetered between 36 and 16 birds, but The Nature Conservancy, which owns the 2,300-acre preserve, is part of a recovery team of wildlife specialists determined to save this natural treasure. An education center and trail are open to the public during business hours at the preserve, where visitors can learn more about the efforts of The Nature Conservancy to save Texas' coastal-prairie heritage. *The preserve stands a bit north of Texas City on the east side of SH 146 along the shore of Moses Lake.*

**5. Moses Lake.** Named for the father of Stephen F. Austin, Moses Lake is typical of the many small inlets into Galveston Bay. Subsidence and wave action can result in a loss of over three feet of the lake's shoreline annually. This erosion not only eats away valuable marsh but can start cutting into prairie habitat used by the endangered Attwater's prairie chickens on the Texas City Prairie Preserve, which borders the lake. An erosion control project protecting 4,000 feet of the shoreline has been initiated and one phase, 1,800 feet long, has been completed. A wave barrier was built with concrete rip-rap parallel to the shoreline to reduce the erosion, and smooth cord-grass has been planted along the shoreline behind the first phase of the barrier. With this planting, erosion has stopped and new marsh habitat is being created. *Moses Lake is visible from SH 146 north of Texas City.*

**6. Texas City Seawall and Levee.** Hurricane Carla covered Texas City in 1961 with about four feet of water, damaging many homes and industries. Subsidence (caused by extensive industrial groundwater pumping) had worsened the flooding. In response, Texas City began building a 23-foot seawall on the bayside of the city in 1962 and levees around much of the rest of the community. By the time of their completion in 1987, the levees would surround the city and its industrial zone, and huge screw pumps were installed to prevent flooding by quickly drawing water beyond the seawall during storms. *The levees are visible all around Texas City. The seawall can be seen near the dike and Bay Street Park.*

**7. Bay Street Park.** Running along the eastern side of Texas City, Bay Street Park has many attractions, including sports and picnic facilities and hike and bike trails. The Thomas S. Mackey Nature Center stands at the northern end of Bay Street Park and features several nature trails and observation areas. Driving north from the Mackey Nature Center eventually takes you to Skyline Drive, a levee road dividing Dollar Bay and Galveston Bay. Most of the drivers go slowly on Skyline, so bicycling is a good option here. *The main entrance to the park is at Fourteenth Avenue North and Bay Street.*

**8. Texas City Dike.** To reduce Bay sedimentation from the Trinity and San Jacinto Rivers into the Texas City channel, a dike was initiated in 1913, which was reinforced with timber pilings. Eventually U.S. Army Corps of Engineers assumed control of the project. By 1934, the dike extended five miles into the Bay. The Texas City Dike has had profound effects on the movement of water and resources within the Bay, significantly altering local habitats and reducing freshwater distribution to West Bay. The dike is a popular fishing and wind surfing site, and you can drive to its end. *From SH 146, turn east onto Loop 197, and then turn again on Second Avenue. Go north on Bay Street to Eighth Avenue. You can drive down Dike Road.*

**9. The S. S. Grandcamp explosion.** April 16, 1947, the French S. S. *Grandcamp* was anchored at the Texas City port terminal. The ship was full of ammonium nitrate fertilizer that caught fire and caused the ship to explode violently and suddenly, which led to other fires and explosions. A total of 576 individuals were killed and four thousand more injured. Texas City has overcome the economic and human disaster and uses the phoenix as a symbol of its rise from the ashes of the explosion to become a town of parks and deep civic pride. *The ship's anchor stands near the foot of the dike on Dike Road.*



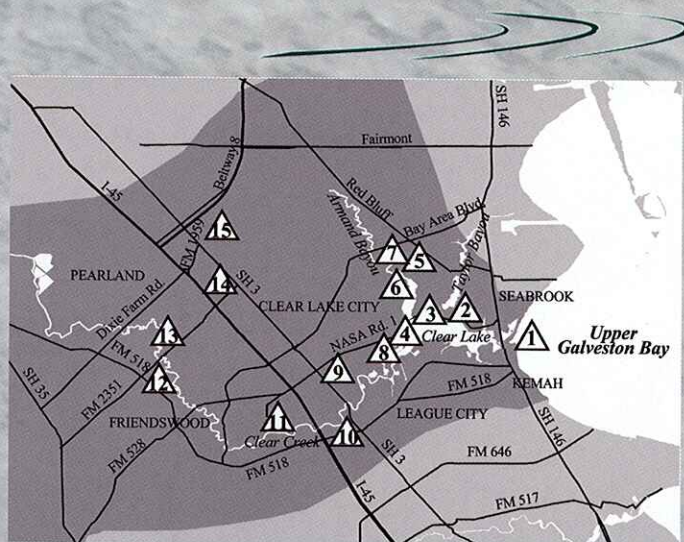
## Lower Bay Habitat

**Coastal prairies.** In the Bay area, a prairie is distinguished from a marsh by elevation and inundation; a heavy rain or flood can turn a prairie into a marsh, and a drought can shift marshes into prairies. The prairies here fall into three categories. Grassland prairies are close cousins to the bluestem prairies found farther inland; they form the outer ring of the Bay watershed. Wet coastal prairies surround freshwater marshes. Salt prairies also have high groundwater levels but usually ring salt marshes. Our prairies have been heavily developed for agricultural, residential, and industrial purposes. The prairies have also been degraded by the Chinese tallow (*Sapium sebiferum*), which was introduced as an ornamental from China in the nineteenth century. Hardy and fast growing, the tallow tree covers many thousands of acres of former coastal prairie. Native species did not evolve in the presence of tallow tree and cannot make use of its fruit or temper its growth. Landowners must often "kill" individual trees many times, since simply cutting the trunk does not prevent resprouting.

**Oyster reefs.** The many reefs in our Bay were created by oysters rather than corals. Young oysters drift with the currents until they find a suitable substrate to settle on, usually another piece of oyster shell, but shipwrecks, piers, bridge pilings, and the shells of other mollusks can also work. Oysters feed by filtering suspended nutrients (about 10 gallons per hour), and the largest reefs form where steady, regular currents flow. Many old reefs break the surface of the Bay during low tide. Indeed, oyster reefs disperse the force of strong waves and protect the shorelines from erosion. Some of the oldest signs of human activity show the endurance of our taste for the Bay's oysters. Native Americans dumped their empty clam and oyster shells into massive mounds around the Bay called middens, some of which date back thousands of years.



## CLEAR CREEK AREA



**1. Seabrook and Kemah.** These towns sit between Clear Lake and the Bay on either side of the mouth of Clear Creek. On the north shore lies the Point, a part of the town of Seabrook. Seabrook is an old shrimping town that has retained a traditional economic base with a fleet and mostly locally owned restaurants, stores, and seafood markets. It now emphasizes nature tourism. On the south shore lies Kemah, a small town once based on shrimping and mining local shell middens. The 14-acre waterfront area began changing in the mid-1990s, however, when restaurateur and real estate developer Tillman Fertitta created the Boardwalk, a tourist center with many chain restaurants, a hotel, stores, and theme-park activities. The Kemah Boardwalk has substantially changed the local economy. *Seabrook is accessed from SH 146 and NASA Road 1, and Kemah from SH 146 and FM 2094.*

**2. National Aeronautics and Space Administration (NASA) and Space Center Houston.** Created after the USSR launched the first artificial satellite into orbit, NASA quickly began working to put people into space. The Manned Space Center (eventually the Lyndon B. Johnson Space Center) would be the engineering and management brain for these projects. Its location in the Clear Lake area pushed industrial development in this area away from petrochemicals and toward engineering and high-tech fields. Space Center Houston is a non-governmental visitor center. *From I-45 NASA Road 1's exit, drive east several miles to the complex. Space Center Houston is located at 1601 NASA Road 1.*

**3. Clear Lake Park and the Bay Area Museum.** Located between the north shore of Clear Lake and Armand Bayou, Clear Lake Park has excellent views of the Lake and contains the Bay Area Museum (specializing in regional history), which itself is housed in the former Webster Presbyterian Church. The church building dates to 1901 and replaced an 1896 structure destroyed by the 1900 hurricane. For many years, it was the only church in



Webster, and the Presbyterians shared space (and a choir) with local Baptists, Methodists, and Quakers. Many nearby Japanese rice farmers attended services. The congregation outgrew this sanctuary and in 1976 donated it for use as a museum. *From I-45, exit east on NASA Road 1. Just past the Johnson Space Center is a bridge over Mud Lake; the park is on Mud Lake's eastern shore.*



*Rocket Park at Johnson Space Center - Photo: ©Jim Olive*

**4. James West Mansion.** From his fortunes in banking and real estate, James Marion West sold 30,000 acres in the Clear Lake area to Humble Oil (later ExxonMobil) in 1938. One thousand acres of this land became NASA's Johnson Space Center in 1961, and an adjoining 15,000 acres were then developed by Humble Oil into the residential community of Clear Lake City. *The West Mansion still stands on the southwest shore of Clear Lake at Mud Lake along NASA Road 1.*

**5. Armand Bayou Nature Center (ABNC).** The 2,500 acres of the ABNC constitute the largest urban wilderness area in the U.S. Major habitats include freshwater and salt marshes, coastal prairie, and riparian woodlands. Nature trails pass through each habitat, including one segment that crosses a well-restored prairie that retains some of its original potholes and pimple mounds. ABNC has retained a wide diversity of wildlife species. It also has a bird blind and an interpretative center. *From the Bay Area Boulevard exit on I-45, drive east along Bay Area Boulevard. Clear Lake City will fade after several miles, and the entrance to ABNC will appear to the south.*

**6. Armand Bayou marsh restoration.** Armand Bayou suffered nine feet of subsidence since the 1950s, effectively destroying all of the wetlands along the bayou that had existed half a century ago. From 1995 to 1997, a task force of corporate, environmental, and governmental groups (as well as more than four hundred volunteers) restored seven acres within Armand Bayou. One restoration site here was the first in the Bay area in which dredging was undertaken for the sole purpose of restoring elevation for replanting marsh.

This successful strategy has since been applied to other restoration sites. To date, twelve acres of salt marsh have been restored along the bayou. The largest stretches of restored marsh are in Armand Bayou Nature Center. *The sites may be viewed from the waters of Armand Bayou and some can be accessed from ABNC.*

**7. Bay Area Park.** Owned by Harris County, Bay Area Park is adjacent to Armand Bayou Nature Center. The park is a popular canoe launch and an easy place to park, sit, picnic, and watch birds and animals along Armand Bayou and its marshes and woodlands. *Follow the directions to ABNC to reach Bay Area Park; the latter's entrance is just before the entrance to ABNC.*

**8. Clear Creek marsh restoration.** Subsidence has destroyed habitats throughout the Bay area, primarily due to pumping groundwater for industrial uses. In a coalition between government and industry, fifteen acres of dredge material were distributed along heavily subsided shorelines of Clear Creek where much marsh had been lost. The soil was seeded with smooth cordgrass, and temporary barriers were constructed to minimize erosive wave energies. The project received a Coastal America Partnership Award in 1999 for its successful coordination of private, state, and federal resources. *The restoration site can be seen by looking west (upstream) from the bridge over Clear Creek on Egret Bay Boulevard. Egret Bay Boulevard runs between NASA Road 1 and FM 518, about one mile west of SH 3 and two miles west of I-45.*

**9. Webster rice farmers.** Rice has been grown in North America since 1685, but when Seito Saibara came to Webster in 1903, his colony of thirty Japanese farmers brought new expertise and superior seed. Sponsored by the Houston Chamber of Commerce and Southern Pacific Railroad, they trained local rice farmers in Japanese techniques. A price collapse around 1920 forced many of the immigrants to change industries, but rice continued to be an important crop around the Bay until the reduction of federal agricultural rice subsidies in recent decades. *The site of the original Saibara farm is located 0.2 miles east of the intersection of SH 3 and NASA Road 1.*

**10. Walter Hall County Park.** This community park was designed for a wide range of uses. A nature trail along Clear Creek offers good wildlife viewing opportunities. *Access is from the FM 518 exit of I-45. Drive east along FM 518 (West Main Street/Friendswood Road) and turn north on SH 3. The park is on the left.*

**11. Challenger 7 Memorial Park.** Named in honor of the astronauts killed in the space shuttle *Challenger* explosion of 1986, this park has a network of trails and boardwalks through its riparian woodlands. Fishing and birdwatching are popular here. There is a playground and a small pavilion. Natural history classes are offered at a learning center. *The park is just west of I-45 on FM 528.*

**12. 1776 Memorial Park.** The park's twelve acres are mostly riparian woodlands that line the banks of Clear Creek. The park is also a good place to launch a canoe and explore the upper reaches of Clear Creek more directly. Randolph Park is quite close. *The park is on the south side of FM 2351 to the west of I-45.*



**13. Frankie Carter Randolph County Park.** Standing almost across the street from 1776 Memorial Park, the much larger Randolph Park also straddles Clear Creek. The park has jogging and walking trails, picnic facilities, tennis courts, open fields for group sports, and bathrooms. *Randolph Park is on the north side of FM 2351 to the west of I-45.*

**14. Friendswood Field.** This once-massive parcel was first developed by Humble Oil on the former James West Ranch in the late 1930s and named for a nearby Quaker community. About 450 wells have been drilled in the field, with less than 100 still producing oil and gas. Much of the original parcel has been sold for residential and commercial development. *Portions of the field are visible between FM 2351 and FM 1959 along I-45.* The Friendswood Field is representative of many similar oil and gas fields throughout the Bay area.

**15. Ellington Field and Sylvan Rodriguez Park.** Planes first began landing at Ellington Field in 1917, when it was established as a military training field. Military (and eventually NASA) usage has continued off and on since. The city of Houston began managing Ellington in 1984, when civilian flights started here as well. *Ellington is accessible from I-45 by driving east from the FM 1959 exit. Sylvan Rodriguez Park, which is a calm place to watch the planes of Ellington, stands just to the south of Ellington Field on Clear Lake City Boulevard, about 0.2 miles east of its intersection with SH 3.*



*Military transport plane at Ellington Field - Photo: ©Jim Olive*



*Crabbing - Photo: ©Jim Olive*



*Riparian woodlands - Photo: ©Jim Olive*



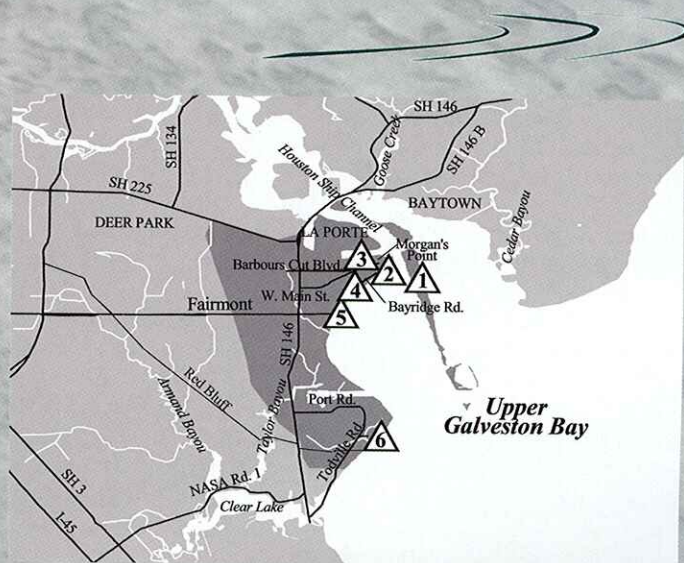
# Clear Creek Habitat

**Riparian woodlands.** The tree-lined shore habitats along rivers, creeks, sloughs, and bayous are called riparian ("related to rivers") woodlands. The Trinity River's riparian woodlands are by far the largest in the Bay area. Among these are dense bald cypress swamps, with long periods of deep standing water covering the bases of the tall trees. The woodlands formed near the Trinity's mouth as the river slowed down and lost much of the sediment it carried in suspension, creating a wide and meandering delta. These woodlands are influenced by tidal action several miles inland, so that crabs mingle with crayfish and barnacles spread over cypress knees. In contrast, 1776 Memorial Park and Frankie Carter Randolph County Park along Clear Creek have a mix of deciduous and coniferous trees typical of the riparian woodlands of smaller streams and bayous ringing the rest of the upper Bay. Clear Creek's habitats are far less broad than the Trinity's delta, with steeper banks, but even there plants and animals must be adapted to occasional periods of standing water from storms and floods.

**Potholes and pimple mounds.** Over the past few millennia many rivers and streams have drifted across the soft soils in the coastal prairies of the Texas coast. Through a complex and poorly understood process, these meanderings formed circular depressions called potholes, typically a few yards across, as well as similarly sized lumps called pimple mounds. The mounds and potholes normally vary from the surrounding terrain by no more than a foot, yet in an otherwise flat landscape with a high water table, such a difference in elevation can be quite significant. The potholes typically become small freshwater marshes, while the pimples concentrate plant species requiring drier soils. Most of the pothole-pimple mound zones around our Bay have been lost to leveling for development and agriculture, but a good example can be found at Armand Bayou Nature Center.



# UPPER BAY AREA



**1. Atkinson Island.** Atkinson Island sits just east of Morgan's Point, where the San Jacinto River enters the northwestern corner of our Bay. Originally part of the mainland (as the eastern tip of Morgan's Point), Atkinson Island was created and then extended by the Houston Ship Channel. Conoco donated the northern tip to the Texas Parks and Wildlife Department. In 1993, a coalition of organizations tested the economic and environmental feasibility of using spoils from dredging the Houston Ship Channel to create healthy new marsh at a site on the east side of Atkinson Island. In all, 220 acres of marsh were successfully established. The project marked a significant change in the history of the management of the Bay's resources. It is no longer accessible by land, but Atkinson Island is visible from the Hartman Bridge and the eastern and southern shores of Morgan's Point.

**2. Morgan's Point.** Morgan's Point is located where the San Jacinto River enters the northwest corner of Galveston Bay. Charles Morgan acquired property here in 1835 and gave his name to the area. In the 1890s the Bayridge community was founded along the south shore of the Point (along Bayridge Avenue) by several wealthy Houston families as a resort. By 1930 the Morgan's Point Ferry operated over the Houston Ship Channel to the Tabbs Bay Causeway; both have ceased to exist. The Barbours Cut container port sits just to the north. Morgan's Point is worth exploring for its historical and scenic qualities. *Bayridge was located on the shore of the Point on Bayridge Road. You can reach Morgan's Point from the West Main Street exit of SH 146.*

**3. Barbours Cut.** The Port of Houston Authority's 187-acre Barbours Cut facility is now the largest containerized port on our Bay, handling thousands of containers from many freighters and barges (and trucks and trains) a day. "Containers" are large metal



boxes with standardized dimensions; they can carry any item that can fit inside, from clothing to bananas. Standardization allows containers to be transferred between ships, trains, and large trucks more rapidly than noncontainerized freight. Nestled between the cranes and railroad tracks is the old Morgan's Point Cemetery, which once stood on the grounds of a large plantation. *You can see the port by taking the Barbours Cut Boulevard exit on SH 146; drive directly east. The cemetery is just north of the railroad tracks on Vinsonia near the end of the road.*

**4. Ross Shaw Sterling House.** Ross Sterling was born near Anahuac and was initially involved in agriculture. With good investments in local oilfields in 1910, Sterling created the Humble Oil and Refinery Company (now ExxonMobil), eventually becoming governor of Texas (1930-32) and founding another petroleum company. Completed in 1927, his home in the wealthy resort community of Bayridge was designed to look like the White House, the official presidential mansion. *The house is now a private residence overlooking Galveston Bay along Bayridge Road.*



*Historic bath house at Sylvan Beach Park - Photo: Courtesy of Alecia Gallaway*

**5. Sylvan Beach Park.** When LaPorte was incorporated in 1892, 22 acres were set aside for a city park. The land was then acquired in 1896 by a series of companies, which all hoped to profit from the park. Until 1943, Sylvan Beach Park was one of the most popular recreational destinations on our Bay. After 1914, a train depot served the crowds who came to fish and swim, stroll the long boardwalk, rent boats, watch free movies or fireworks, visit the amusement park, or dance to live music in the enormous pavilion. Up to 35,000 people might visit on a major holiday. After the destructive 1943 hurricane, the park remained vacant until it was acquired by Harris County in 1954. The park hosts several festivals and is open all year. There is a private fishing pier on the site as well. *To reach Sylvan Beach Park, exit SH 146 onto Fairmont and drive east.*

**6. Pine Gully Park.** This park is notable for a shell midden, a marsh, its views of the Bay, and the presence of wildlife so near to urban areas. Many migratory birds visit the park during spring and fall. A small fee is required of park visitors. *From SH 146, exit east onto Red Bluff. Proceed to Todville Road and turn north. Pine Gully Road turns off to the east shortly. Another area park, Robinson Park, lies at the intersection of Red Bluff and Todville Roads.*



*Heron rookery - Photo: ©Jim Olive*



*Great blue heron fledglings - Photo: ©Jim Olive*



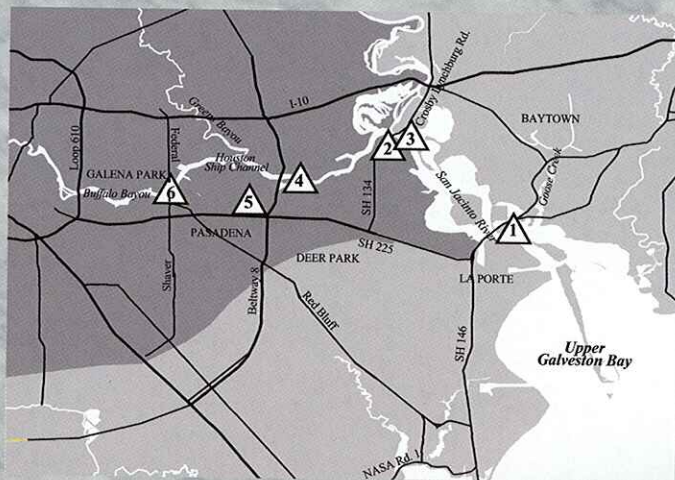
## Upper Bay Habitat

**Bay waters.** The Bay itself is the largest habitat in the estuary. The Bay covers 350,000 acres at an average depth of seven feet, containing many microhabitats within itself, distinguished by temperature, salinity, dissolved oxygen and nutrient levels, and water clarity. The very nature of the Bay is fluid, generally increasing in salinity from north to south. The San Jacinto and Trinity Rivers freshen the Bay and deliver their silt to its floor. During low tide, brackish water leaves the Bay through Bolivar Roads and San Luis Pass. During high tide, the salty Gulf forces its way back into the Bay. Life is concentrated near the Bay's surface and bottom. The seagrass meadows and oyster reefs of the Bay floor are discussed elsewhere; they are like densely populated cities on a wide plain. But living in the spaces between these cities are worms, arthropods, bottom-dwelling fish, and mollusks, as well as microorganisms that decompose and recycle the steady rain of dead organisms and digested materials, which then reenter the Bay's swirl of life.

**Bay islands.** There are a few small islands scattered in pockets of the Bay. Made of mud or sand flats or the tops of oyster reefs, many remain dry during high tide. These islands are particularly important during the spring as colonial bird rookeries. Mud Island, Deer Island, and the Vingt-et-un Island (once many islands) near Smith Point are all large nesting grounds. While subsidence has destroyed many smaller islands, a few new ones have been created by humans. When commercial dredging operations create or deepen channels like the Houston Ship Channel and the GIWW, the bottom of the Bay is hauled to the surface and piled near the channel to form "spoils." Increasingly, this dredge material is purposefully used to create new island habitat.



## SAN JACINTO WEST



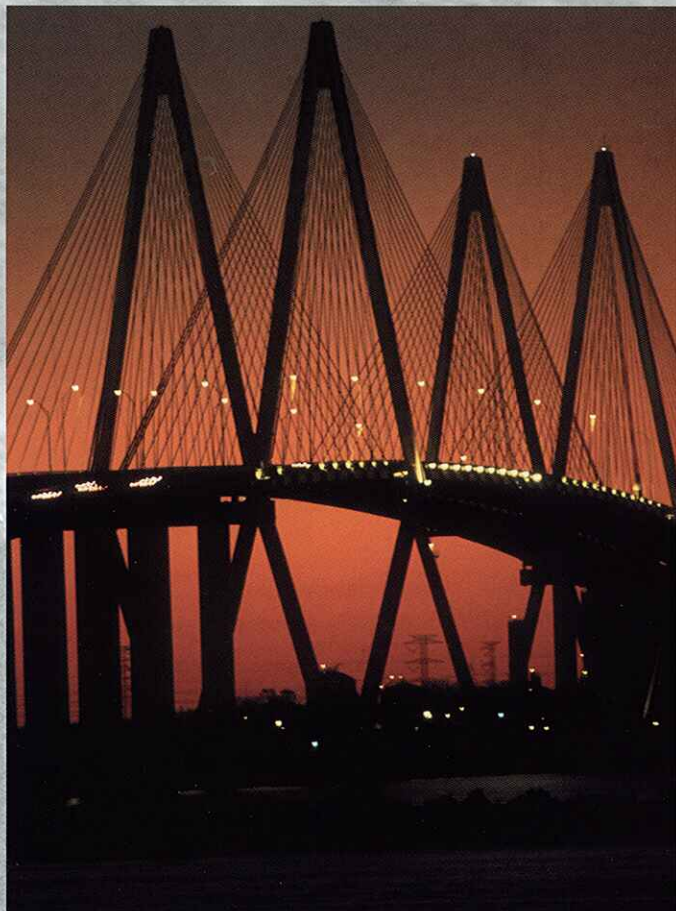
**1. Fred Hartman Bridge.** The Baytown-LaPorte Tunnel, completed in 1954, proved inadequate for the sustained growth and traffic of the Upper Bay. Construction of the Hartman Bridge on SH 146 over the Houston Ship Channel and the tunnel began in 1987 and was finished in 1995. The bridge is perhaps the only way to see much of the Bay and its tributaries from above without actually being airborne, and a slow drive (in the right-hand lane) can be rewarding on a clear day. There are good views of the massive Baytown refinery, Atkinson Island, Morgan's Point, the Houston Ship Channel, Pasadena, and the remnants of the dense marshes that once ringed the mouth of the San Jacinto River.

**2. San Jacinto State Historical Park.** San Jacinto is well known as the location of the 1836 battle resulting in the independence of Texas and as the current home of the battleship *Texas*. But the park is also significant as having the last large marsh on the lower San Jacinto River. Sadly, it also suffered some of the worst subsidence in the Bay area, losing 10 feet of elevation since the 1930s. The salt marshes lining the park have all become open water. Extensive habitat restoration work has been conducted since 1996 to raise the elevation of the former marshes and to create new marshes. The park is also an excellent place to watch wildlife. *The park is located just south of the Lynchburg Ferry on SH 134.*

**3. Lynchburg Ferry.** In 1822, Nathaniel Lynch began operating a pay ferry where the San Jacinto River met Buffalo Bayou just south of the town of Lynchburg. His flatboat ferry was one of many in the area necessary for traversing the marshlands around the Bay. In 1837, Harris County began setting ferry rates, and in 1890, the ferry became a free service. *From the south, the ferry is accessible from SH 225 by exiting north onto SH 134. From I-10, drive south along the Crosby-Lynchburg Road, just east of the San Jacinto River.*



**4. Pasadena.** The Pasadena region's economic importance began with shipping and cattle. It then became known for its fruit industry until the 1920s, when petroleum refineries were built here to take advantage of Pasadena's proximity to the Houston Ship Channel. Within a decade, farming had ended in Pasadena, although an annual Strawberry Festival commemorates that history. The local economy still depends on shipping, petroleum, and the Houston Ship Channel. *You can get a good sense of Pasadena along SH 225 between Loop 610 and SH 134.*



*Fred Hartman Bridge - Photo: ©Jim Olive*

**5. Houston Ship Channel.** Until 1914, the only access for large ships in the Bay area was the port at Galveston Island. The establishment of a deepwater facility near Houston eventually led the city to become the second largest port in the U.S. by tonnage. At 40 to 45 feet deep and 50 miles long (from Bolivar Roads to well within the 610 Loop), the channel required extensive dredging of the Bay, the San Jacinto River, and Buffalo Bayou. Long ridges of dredge material line much of the channel in the Bay. The channel has profoundly changed the movement of water and biological resources throughout the Bay. *Good views can be had from SH 134, the Hartman Bridge, and the channel bridges on Loop 610 and Beltway 8.*



*San Jacinto Monument - Photo: ©Jim Olive*

**6. Washburn Tunnel.** To promote commerce and ease auto transportation, the Washburn Tunnel was built in 1950 between Pasadena and Galena Park under Buffalo Bayou. *You can reach it by driving north along Red Bluff Road from SH 225 or south from I-10; drive south to Market Street and then west to turn south on Federal Road.*



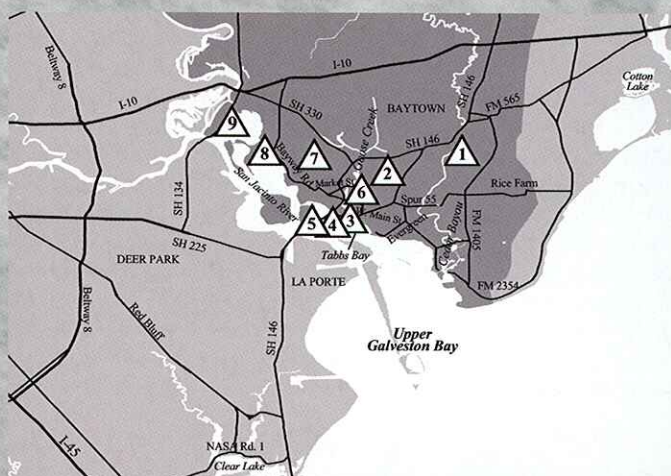
*Galveston Bay marsh - Photo: ©Jim Olive*



## San Jacinto West Habitat

**Salt and brackish marshes.** Whether on the mainland or on barrier islands, all salt marshes feel the daily tidal flushing of baywater. Their residents must be highly tolerant of salt and frequent changes in water levels. Because most of our mainland is so low in elevation, the tide can push salt water several miles inland. Freshwater streams and rivers dilute the salty tides, mixing both sources in a wide brackish zone whose size changes daily and seasonally. These marshes are like international food markets: freshwater inland resources flow downmarsh while Bay resources flow upmarsh with the tide. Biologically, there's something for everyone in brackish marshes, and their cosmopolitan resources make them very fertile.

## SAN JACINTO EAST



**1. TexasGenco EcoCenter (formerly Reliant Energy).** The EcoCenter performs a vital role in marsh restoration around the Bay. Until the early 1990s, Bay area marsh restoration projects harvested smooth cordgrass from healthy marshes for transfer to replanting areas. Harvesting wild cordgrass was slow and labor intensive, could damage the source marsh, and provided a limited number of plants. Beginning in 1994, however, the Galveston Bay Foundation partnered with Reliant Energy. Using some of Reliant's large growing ponds at their 25-acre Cedar Bayou site, they raised thousands of plants from seed for the Clear Creek marsh restoration project (see Clear Creek Area). The experiment was so successful that TexasGenco (formerly Reliant Energy) now provides cordgrass for many sites and has even expanded into freshwater marsh plants. Visitors are not allowed on the site, but the EcoCenter and its greenhouses and ponds can be viewed from your car. From I-45, drive south on SH 146 to FM 1405; proceed south to the intersection with Bayer Road, which is several hundred yards south of a canal. Turn right onto Bayer. The ponds begin between the bridge and the small tank farm on the left. From the south, after crossing the Hartman Bridge exit onto SH Business 146 and then turn right onto Spur 99. When Spur 99 intersects FM 1405, turn north (left) and drive about a mile to Bayer Road.

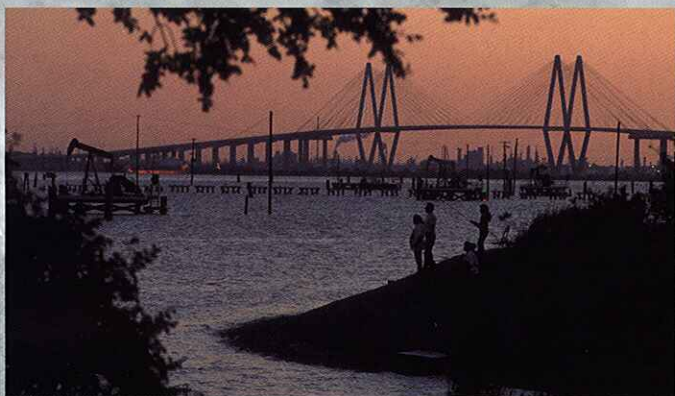
**2. Baytown.** The construction of the Baytown Refinery by Humble Oil (now ExxonMobil) in 1921 altered the nearby small towns of Pelly and Goose Creek. First, Ross Sterling's Humble Oil changed the area around the refinery from fields to shacks and tents and then into an unincorporated city called Baytown, which was full of refinery workers and refinery-related businesses. The town was quickly laid out and developed. Goose Creek annexed the refinery and surrounding town in 1945, and in 1948 Pelly and Goose Creek merged to become the city of





Baytown. You can get good exposure to Baytown's industrial past from Spur 330 off of SH 146. Spur 99 and FM 1405 (south of Spur 99) are more representative of the area's more rural history.

**3. Goose Creek Oilfield.** In 1903, John I. Gaillard noticed natural gas bubbling near the mouth of Goose Creek, inspiring the first offshore oil drilling in Texas in Tabbs Bay. When indications came in 1916 that there was a large oilfield here, massive exploration and development followed. Annual production reached nine million barrels by 1918. Production continues on- and offshore in the Goose Creek oilfield today. *There are good views of Goose Creek and Tabbs Bay along SH Business 146 near Bayland Park. The Goose Creek Shoreline can be explored by way of a nature trail at Britton Park, which is just across SH 146 from Bayland Park and which can be reached by driving north on Wyoming Street and turning right on Missouri Street into the parking lot. To see more of Tabbs Bay, drive east of Bayland Park and turn south onto Causeway Road; turn again almost immediately onto Evergreen Road, which traces the shoreline.*



Goose Creek Oilfield and Fred Hartman Bridge - Photo: ©Jim Olive

**4. Bayland Park.** Bayland Park is notable for its fishing facilities and marina, but is also known for its extensive salt marsh and sand and mud flats. Part of the salt marsh was destroyed in the process of building the marina, so a new marsh was created to mitigate that loss. *The park is accessible from the first exit on the Baytown side of the Hartman Bridge on SH Business 146.*

**5. Fred Hartman Bridge.** See San Jacinto West Area.

**6. Eddie V. Gray Wetlands Education and Recreation Center.** In 1992, Eddie Gray sought permission from the Goose Creek Stream Greenbelt Development Committee to purchase an abandoned bowling alley on six acres along the creek and turn it into a wetlands center. The Eddie V. Gray Wetlands Education and Recreation Center, a 14,000 square-foot building with staff offices, meeting rooms, a science lab, a computer lab, and a 9,000 square-foot exhibit area, opened in January 1998. Since then, the center has added several new marsh areas and a native-plant butterfly garden. The Wetlands Center offers several ongoing educational programs with support from the Goose Creek Consolidated Independent School District and Lee College.

*From Spur 330, you can reach the Center by driving south until Spur 330 becomes Decker Drive; the road will curve to the right and change to Market Street. The Center sits across from the Lee High School auditorium. From SH 146, exit onto Decker Drive and drive northeast on Decker.*

**7. Baytown Refinery.** Following the successful development of the large Goose Creek oilfield by 1920, Humble Oil (now ExxonMobil) completed its primary refinery near Goose Creek in Baytown in 1921. More heavy industry soon followed in the Baytown area. For many years it remained the largest petroleum refinery in the world, and its massive size can be appreciated from the Hartman Bridge and while driving along Spur 330 near the West Main Street exit. Just as the Goose Creek oilfield permanently changed the aquatic habitats of Tabbs Bay just offshore, the refinery forever changed the economy and habitats in the Baytown area.

**8. Baytown Nature Center.** The 360-acre Brownwood subdivision was built here on a peninsula jutting into the Bay near the mouth of the San Jacinto River, but this portion of the Bay also felt the effects of the most severe subsidence in the area. Some areas have sunk as much as 12 feet since the 1930s. Subsidence and severe storm surges forced the homes here to be abandoned by 1983. Habitat restoration began in 1995 as mitigation for an Environmental Protection Agency Superfund site upriver. You can now find extensive marshes in the area as well as oak mottes. Bald eagles, peregrine falcons, and osprey have been seen here. Several dozen acres of marsh have been created, and plans exist for additional marsh plantings. *To reach the Baytown Nature Center, exit from Spur 330 onto Bayway Drive and drive south. Turn right (west) onto Shreck. The Center will be on the left.*

**9. Lynchburg Reservoir.** Traveling 22 miles from the Trinity River, the Lynchburg Reservoir's 1.5 billion gallons quench the residents of Harris County, industries in Mont Belvieu, Deer Park, and Baytown, and several Chambers County rice farmers. Built in the 1970s, the large and deep Lynchburg Reservoir reflects our growing thirst. To reach Houston residents the water is pumped through three 102-inch water lines that pass underneath the Houston Ship Channel to a City of Houston water treatment facility. *The reservoir is best seen from the Crosby-Lynchburg Road just north of the Lynchburg Ferry and San Jacinto State Historical Park.*

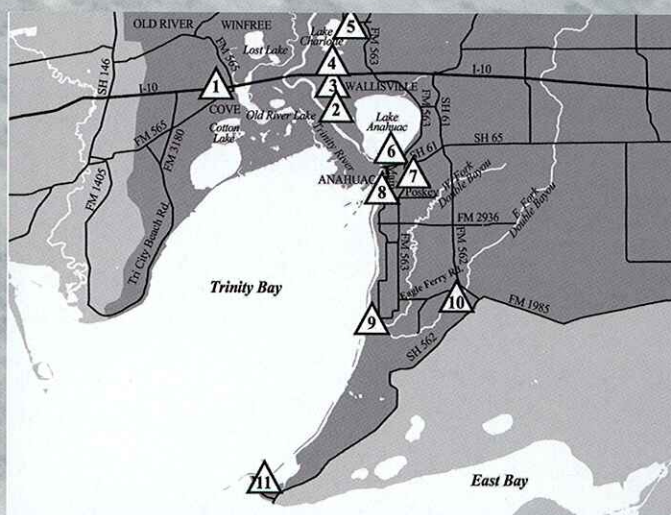


## San Jacinto East Habitat

**Freshwater marshes.** Without actually tasting the water, you can easily distinguish a freshwater marsh from brackish and salt marshes by looking at the plants. Freshwater marshes have cattails, reeds, and tall rushes rather than the low, stiff cordgrasses of saline habitats. Freshwater marshes can only exist where a steady flow of fresh water, usually from a river or creek, can prevent incursions from salt water. Although there are not as many freshwater marshes around our Bay as there are salt and brackish marshes, large examples can be found at the Baytown Nature Center, near the Trinity River, in Armand Bayou Nature Center, and in the Brazoria and Anahuac National Wildlife Refuges.



## TRINITY RIVER AREA



**1. Cove and Old River-Winfree.** The Trinity River has shifted its channel many times through the flat, soft soil of its basin. Old River was once the primary channel for the Trinity but has become a tributary, flowing southeast into the current channel. Early settlers included Winfree's founder Joseph Lawrence (and a former associate of the Lafitte brothers), who valued the rich soil, high bluffs, dense bottomland forests, and good grasslands. Cove is to the southeast of I-10 at FM 565 and Old River-Winfree is to the north. Many of the roads throughout each community are worth exploring.

**2. Wallisville Lake Project.** The U.S. Army Corps of Engineers manages 20,000 acres of brackish and freshwater marshes and bald cypress swamps along both sides of the lower Trinity River. This is the site of the formerly proposed Wallisville Lake, which is now only a saltwater barrier. One nature trail begins on the south frontage road at the western base of the I-10 Trinity River bridge. You can reach trails on the eastern side by following the directions to Wallisville Heritage Park and then driving a bit farther west along the frontage road. Turn left onto Levee Road, which ends at a saltwater barrier and visitor center. Here you can park, picnic, and hike. Although invasive species have affected the habitat quality, these trails and Levee Road are excellent places to observe wildlife.

**3. Wallisville Heritage Park.** Settlers officially founded Wallisville in 1854. Ships docking here carried cotton, rice, and logs from nearby riparian woodlands down the Trinity, and local lumber was used in the town's large shipyards. Wallisville grew rapidly and became politically and commercially central to the county, but Anahuac's establishment as the new county seat in 1906 and



damage from the 1915 hurricane started an economic and political decline. In 1979, local groups formed the Wallisville Heritage Park to protect and restore what remained after acquisition of the town by the U.S. Army Corps of Engineers for the Wallisville Lake Project. *Exit at Wallisville from I-10 and follow the signs along the southern frontage road.* Other remnants of the town exist on some of the quiet backroads south of Wallisville Heritage Park.



Cormorant eating hardhead catfish - Photo: ©Jim Olive

**4. Presidio San Agustín de Abumada and Mission Nuestra Señora de la Luz Orcoquisac.** Joseph Blancpain's small French trading post and plans for French settlement in this area had alarmed Spanish officials by 1754. A Spanish mission and presidio (fort) were founded in 1756 at the native village of El Orcoquisac just south of Lake Miller to forestall further foreign incursions and to convert local Native Americans to Catholicism. The soldiers and priests stationed here suffered from hurricanes, internal dissension, isolation, disease, and frustration; few natives converted. By 1771, the mission and presidio were abandoned. No trace of the Spanish buildings remain. Markers for the site stand at Wallisville Heritage Park.

**5. Cedar Hill Park.** Standing on the northeastern shore of Lake Charlotte, Cedar Hill Park is a beautiful gateway to the largest bald cypress swamp on the Texas coast. A nature trail lined with old cedars traces a high bluff over the lake, while sycamores and bald cypress follow the shore below. Originally slated to become a much larger lake, the area is now protected from further flooding and development. The park has a canoe launch, picnic and restroom facilities, primitive camping sites, and a boardwalk "overlook" into the swamp. *Take the FM 563 exit on I-10 and drive north. After 3.0 miles, watch for the Lake Charlotte Road sign (a cluster of local business signs also mark the turn) and turn left. Drive west 1.1 miles. Across from the Sherman Cemetery are two large gates on a gravel road; turn left to enter.*

**6. Lake Anahuac.** The Anahuac Pumping Station at this site marks the beginning of the Lone Star Canal, which is used for irrigation, as well as the southern boundary of Turtle Bay. Now called Lake Anahuac, Turtle Bay was once deep enough for large ships to sail north past this point. But the Trinity River's gradual deposition of sediment made the mouth of Turtle Bay unnavigable by 1902. Salty tide-driven baywater still mixed with the Trinity's freshwater, however, threatening local irrigation-dependent agriculture. Temporary dams were built to limit the tidal influence, but in 1954, a more permanent dam was constructed. Turtle Bay was then renamed Lake Anahuac to reflect its closure and predominantly freshwater character. *To reach the site, exit onto FM 563 from I-10 and drive south to SH 61. Drive west into downtown Anahuac. When the road makes a sharp left-hand bend, continue straight on the smaller road. You can park below the bluff and follow the Levee Trail along the shore of Lake Anahuac. There is good birding here.*

**7. Scow Schooner Project.** Before the dredging of the Houston Ship Channel, scow schooners were the bulk haulers of Galveston Bay, capable of carrying large payloads in shallow water. These sailing vessels had squared ends, a flat bottom, and (typically) two masts. The Scow Schooner Project is using traditional techniques to construct a working replica of a scow schooner that is indigenous and particular to Galveston and Trinity Bays. The hull is 38 feet long, and the boat's total length is nearly 59 feet. The construction of the scow schooner is an ongoing demonstration, and visitors are welcome from 10 A.M. to 4 P.M. on Thursdays and Fridays. *The site is located at the Chambers County Airport in Anahuac. From I-10, exit onto FM 563 and drive south to SH 61. Drive east on SH 61 for 3/10 of a mile to Airport Road. Turn right (south) on Airport Road and bear right at the fork to the last gate on the right, marked "B." Turn right on Road "B" always bearing right, to the project shop, located in one of the airport hangers.*

**8. Fort Anahuac Park.** The newly independent Mexican government created a fort and town at this site in 1830 to regulate trade and Anglo immigration. The fort and the Mexican authority it represented became a source of conflict in 1832 and 1835 and played a direct role in mobilizing residents to agitate for the independence of Texas from Mexico. Hiking and driving trails (including the 1.9 mile Fort Anahuac Park Levee Road and a boardwalk into the marshes), picnic facilities, ball fields, a lighted fishing pier, historical markers, and restrooms are in the park. Anahuac's annual Gatorfest is held here every year, and many alligators can be found along the trails. Swimming is not advisable. *The park is about 1 mile south of Anahuac on South Main Street.*

**9. Jobe Beason Park.** Located in Oak Island and named for the one-time keeper of the Double Bayou Lighthouse, this park is a good place to bird, fish from shore, and watch shrimpers. Oak Island's name refers to the presence of several large oak mottes in the area. *From Double Bayou Park, proceed west on Eagle Ferry Road, turn left onto Eagle Road, and then left again onto the short West Bayshore Road. The park is on the left at the end of the road.*



**10. Double Bayou Park.** Double Bayou's relative distance from the Bay explains its more established forest habitats and large oak mottes, but tides still influence both branches of Double Bayou. Nearby was the center of the 26,000-acre Jackson Ranch, founded by James Jackson in 1847. Cotton, sugar cane, and cattle were long the bases of the economy. Since few roads existed in the area, boats served as the primary means of transportation well into the twentieth century. Double Bayou was a significant African-American community in the Bay area. *To reach the park, drive south of I-10 along FM 562 about 15 miles and turn right (west) onto Eagle Ferry Road. The park is a short distance away on the south side of the road.*

**11. Smith Point.** Smith Point has been a significant landmark for humans and animals for thousands of years. Commercial fishers still launch from here. Ranchers drove cattle between Smith and Eagle Points from the 1700s until the 1880s. Migratory birds, dragonflies, and butterflies follow the same path, flying over the Bay at its narrowest width. The exhausted birds and insects often touch down here as soon as they reach land. The Candy Cain Abshier Wildlife Management Area is particularly known for its hawk watch and tall observation platform. James H. Robbins Park has an observation tower overlooking Trinity Bay. *From I-10, drive south to the end of FM 562 (about 40 miles). From the convenience store in Smith Point, continue driving west about 1 mile. Turn to the right on Hawkins Camp Road towards the RV park, go past the RV park's driveway around the turn, and proceed until you see the metal tower at Robbins Park. To reach the Abshier observation platform, proceed about 0.1 mile past Hawkins Camp Road and turn left. The platform will be soon visible.*



*American alligator - Photo: ©Jim Olive*



*Field worker - Photo: ©Jim Olive*



*Oak motte - Photo: source unknown*



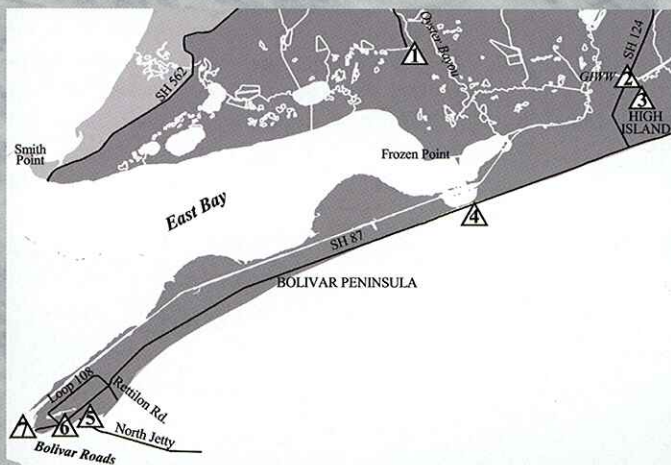
# Trinity River Habitat

**Agricultural fields.** Ranching may be the oldest human use of our coastal prairies. Native Americans living around our Bay before European settlement "managed" large herds of bison living on the wide coastal prairies, driving them to new areas and burning the prairies. By the 1700s, Spanish ranchers replaced the bison with cattle and began driving herds across Galveston Bay on Red Fish Bar to Louisiana markets. Today, ranching is probably the most beneficial use of coastal prairies, although ranching is in decline locally. Rice farming, which began here in the late nineteenth century, shares this relatively benign effect on habitats. Rice plants require standing water, so most rice is grown in wet coastal prairies, especially pothole zones. The high water in the inundated fields creates freshwater marshes. And since rice fields are typically farmed only one year in three, indigenous species have time to recolonize. However, rice farming came to depend on federal subsidies that have largely ended. The shift to more intensive development (and the Chinese tallow invasion) has proven to be far more destructive than the conversion of potholes into rice fields. Both rice and ranching continue to be important parts of the Trinity Bay and East Bay economies.

**Oak mottes.** Much of the soil near the Bay is sandy and holds few nutrients for plants, brackish groundwater can poison roots, and strong coastal wind can strain a plant's skeleton. Oak mottes (or oak islands, reflecting the clumps of oaks often seen on the coast) are small but highly developed solutions to these problems. Often located near freshwater marshes on islands and on ancient dunes on the mainland, oak mottes begin when shrubs form a stable mat of soil and roots. In time, sturdy live oaks sprout and come to dominate the mottes. These patches of relative height and vegetation form an archipelago of shelter for many species. Oak mottes particularly concentrate bird life (and birdwatchers) during the spring and fall.



# EAST BAY AREA



**1. Anahuac National Wildlife Refuge (ANWR) and Frozen Point.** Established in 1963 from the Jackson cattle ranch, ANWR includes about 35,000 acres of wetlands and prairies. In 1895, the winds of a severe winter storm pushed six thousand cattle south onto a spit of land here, who then moved into the warmer Bay. The chilled, wet cattle soon died of hypothermia, and their floating bodies extended from what came to be called Frozen Point far into the Bay. Today ANWR is better known for the presence of clapper, yellow, and black rails, all of which are considered threatened or endangered in portions of their ranges. *ANWR is accessible from FM 1985 between FM 562 (from Anahuac) and SH 124 (from High Island and I-10).* The East Bay Bayou Tract entrance has a nature trail. The main ANWR entrance leads to driving and hiking trails. Near the first right turn after the main entrance is a well-regarded birding site called the Willows.

**2. Gulf Intracoastal Waterway (GIWW).** Beneath the SH 124 bridge (just north of High Island) lies the GIWW. Constructed during the 1920s and 1930s, the GIWW enters our Bay's system just east of here, traces the northern edge of Bolivar Peninsula, passes underneath the Galveston Causeway, and proceeds west along the mainland shore of West Bay. Altogether, the GIWW now stretches from Brownsville, Texas, to Fort Myers, Florida, averaging several hundred feet in width and 12 feet in depth. The GIWW is strategically important to the Bay's economy. The GIWW has also affected the Bay by crosscutting the natural transitions between the Bay, marshes, and rivers with a river of salty water. The wave energy of passing vessels has also eroded the GIWW's shores. *The GIWW is visible from many other places as well, including the Galveston Causeway and the Bolivar Ferry.*

**3. High Island.** Occasionally the overlying weight of rock deposits causes a lower layer of salt to flow upward through the subsurface,



raising the ground into a large mound or dome. High Island is one of these salt domes, and its 38-foot elevation is the highest point on the Gulf coast between the Yucatan and Alabama. Plants and animals consider the area an "island" of habitats normally found far inland. Migratory species often rest in Boy Scout Woods, S. E. Gast Red Bay Sanctuary, or Smith Oaks, all maintained by the Houston Audubon Society. *Smith Oaks is on the north side of town, west of SH 124; turn on Weeks Avenue and then onto Winnie Street. Boy Scout Woods and the S. E. Gast Sanctuary are east of SH 124 on Fifth and Seventh Streets, respectively.*



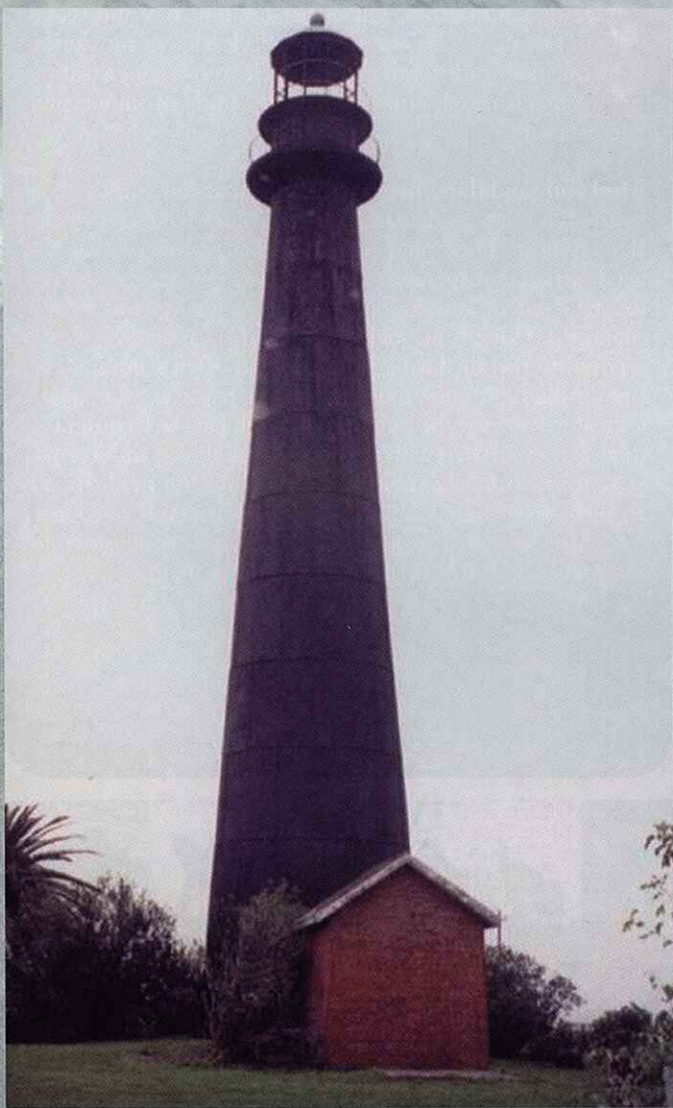
*Barge on GIWW - Photo: ©Jim Olive*

**4. Rollover Pass.** Formerly a very narrow portion of the Bolivar Peninsula rather than a channel, the "Rolling-over Place" was first visited by smugglers evading the Spanish customs house on Galveston Island. Smuggling continued through the Prohibition Era of the 1930s. The Texas Game and Fish Commission cut a channel in 1955 measuring 200 feet wide and 1,600 feet long. Rollover Pass increased the salinity of East Bay, and its strong currents may have caused beach erosion along the peninsula. Rollover Pass is a world-class fishing destination and supports the colorful economies Gilcrest and Rollover. *The pass is well marked on SH 87 southwest of High Island.*

**5. Bolivar Flats Shorebird Sanctuary.** Managed by the Houston Audubon Society, Bolivar Flats stands just southwest of Crystal Beach and is a reliable four-season wildlife viewing area. Gulf beach, dunes, and salt marsh habitat can all be found here. *From SH 87, turn onto Loop 108/Rettilon Road and drive to the beach, then turn south on the beach (carefully) and head south to the flats. Most people park near the poles.* There are also good views of the North Jetty (discussed with the Galveston Jetties in the West Bay Area), which is nearby.

**6. Fort Travis Seashore Park.** Point Bolivar has been the site of Mexican, French, Confederate, and U.S. forts since at least 1816, but Fort Travis dates to 1898. The federal government actively maintained the fort during both world wars and then sold the property in 1949. Galveston County acquired Fort Travis in 1976 and developed it as a park. *The site is well marked from SH 87.*

**7. Point Bolivar and Bolivar Roads.** Operating between 1873 and 1933, the Point Bolivar Lighthouse guided boat traffic through Bolivar Roads, the 1.5-mile-wide pass between the Gulf and the Bay and one terminus of the Galveston and Houston ship channels. Bolivar Roads is also the primary entrance and exit for water and waterborne life in the Bay. Ferry service between Galveston Island and Point Bolivar began here in the 1930s. Riding the ferry is a great way to see marine mammals like bottlenose dolphins and ocean-going flyers like boobies and frigatebirds.



*Point Bolivar lighthouse - Photo: Courtesy of Courtney Miller*



# East Bay Habitat

**Barrier island boundaries.** Barrier islands face both the Bay and the Gulf, and each side is very different. Sandy beaches line the Gulf face. They are harsh places to live, with strong wind, bleaching sun, extreme salinity, and pounding surf that prevent nutrient and soil accumulation. They are essentially narrow deserts, and their inhabitants often live underground or only venture forth at night. Above the high-tide level are dunes where hardy plants tie down the sand and build soil. Shallow troughs between dunes collect rainwater to form freshwater marshes, thick with life after rains. They are the only source of freshwater on islands and may last weeks or months but seldom longer. The other side of barrier islands is lined by salt marshes. These marshes blur Bay and island as high tide pushes baywater to the back edge of the dunes. Low tide pulls most of that water back away again, isolating many organisms who must endure the cycle of submersion and exposure.

**Mud and sand flats.** Between the salt marshes and the Bay lie the mud flats, which are really the outer boundary of the Bay's bottom. Their mud comes from saturated soil that has been carried in suspension from the north by our rivers. This soil falls out of suspension in the Bay, giving it a muddy character. Thick and sticky, the mud and sand flats are exposed to the air during low tides and often seem lifeless. But during high tides, the flats become pathways for aquatic creatures to visit the salt marshes. The flats lack cordgrass, though they are rich with crustaceans, mollusks, and worms, as well as hardy anaerobic bacteria within the mud. Broad algal colonies often cover and color the flats. And, of course, birds visit in search of food. The flats are very sensitive to subsidence, which permanently submerges them.





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# ACKNOWLEDGEMENTS



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The Galveston Bay Foundation and the Galveston Bay Estuary Program partnered in many ways to develop the *Drive & Discover Guide* for all of us as citizens to increase our appreciation of the Bay and its resources.

The Galveston Bay Foundation is a nonprofit organization that works to preserve, protect, and enhance the natural resources of the Galveston Bay estuarine system and its tributaries for present users and for posterity through advocacy, conservation, education, and research. The Galveston Bay Estuary Program is a part of the Texas Commission on Environmental Quality and works to implement *The Galveston Bay Plan*, which is a comprehensive conservation and management plan for the Bay.

For more information about the Bay and Bay activities, you can contact the Galveston Bay Foundation directly at (281) 332-3381 or visit our website at <http://www.galvbay.org>. The Galveston Bay Estuary Program can be reached at (281) 332-9937 or you can visit its website at <http://gbep.state.tx.us>.

Volunteer opportunities with the Galveston Bay Foundation include planting marsh grasses, monitoring local habitats, presenting educational materials to students as a Bay Ambassador, and assisting with public outreach at festivals and other events.



# HOW TO GET INVOLVED

Galveston Bay is the largest estuary in Texas and the seventh largest in the United States. Every day our growing community's effects on the bay accumulate on the top of past damage, threatening the balance of nature so many people, plants, and animals depend on.

You can help. By joining the Galveston Bay Foundation (GBF), you'll become a working partner in the preservation and enhancement of our signature waterway - a waterway that has shown it can recover from the abuse and neglect of the past, if it's cared for properly.

Through advocacy efforts, GBF is fighting projects that will have a long-term detrimental effect on the Bay. GBF has participated in numerous projects to prioritize and address critical Bay issues and needs and worked with stakeholders to build consensus on the best course of action.

Your support is essential to the very future of the Bay and our Gulf Coast lifestyle. Won't you join the Galveston Bay Foundation today? Simply fill out the membership application on the next page and drop it in the mail.

## Annual Membership Packages

\$15	Senior, Student Newsletter, Membership Card, GBF Bumper Sticker
\$25	Newsletter, Membership Card, GBF Bumper Sticker
\$50	Newsletter, Membership Card, GBF Bumper Sticker, GBF Lapel Pin
\$100	Sustaining Newsletter, Membership Card, GBF Bumper Sticker, GBF Lapel Pin, GBF Hat
\$250	Newsletter, Membership Card, GBF Bumper Sticker, GBF Lapel Pin, GBF Briefcase, Canoe trip within Galveston Bay complex
\$1,000	Lifetime Newsletter, Membership Card, GBF Bumper Sticker, GBF Lapel Pin, GBF Polo Shirt, Plaque, Canoe trip within Galveston Bay complex
\$150	Corporate I (fewer than 50 employees) Newsletter, Window Sticker, Plaque
\$500	Corporate II (more than 50 employees) Newsletter, Window Sticker, Plaque

## Membership Application

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Yes, I would like to become a member of the Galveston Bay Foundation.  
Enclosed is my gift of:

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☐ \$250

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