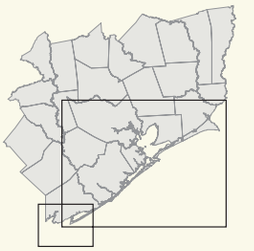
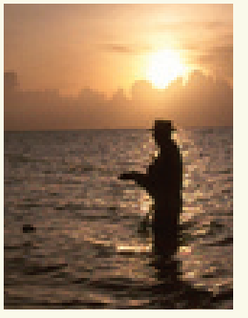
Coastal Marshes



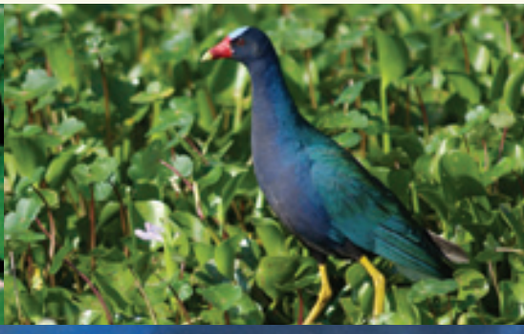
THE BAYS AND ESTUARIES of the upper Texas coast are rimmed by marshes from the Louisiana border to the western shoreline of Matagorda Bay. These grasslands are true wetlands—part water, part land—that provide a transition zone between the upland prairies and the open water of the bays.

All wetlands are not created equal. There are three major types of marshes on the Texas coast. Salt marsh touches the salty water of the bays; true freshwater marshes are found adjacent to the prairies, mostly in the Sabine Lake area. The third type is the brackish or intermediate marsh, a transitional grassland characterized by plants that can tolerate both salty and fresh conditions. Each of these systems provides different natural functions.

A good way to appreciate the marshes fringing the coast is from the air. Looking down on them, one sees an interconnected web of grasslands with areas of shallow open water. This strip is narrowest in the southern portion of the Houston Wilderness, adjacent to Matagorda Bay, and gradually widens as one moves through the Galveston Bay system to the Sabine Lake system near Port Arthur and Beaumont. East of Sabine Lake, the strip widens into the Sabine National Wildlife Refuge of southern Louisiana. The refuge contains

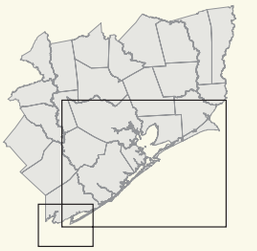


Coastal marshes are rich habitat for many species of fish, making the marshes a favorite for recreational fishermen.



Species of the Coastal Marshes ecoregion from top left to right: Black-crowned night heron, Nycticorax nycticorax*; Water lilies,* Nymphaea odorata*; Purple Gallinule,* Porphyrula martinica.

Bottom left: A typical coastal marsh scene: a breeze ruffles the marsh grass and creates ripples on the calm water.



salt, brackish and freshwater marshes and connects with an even wider band of marshes reaching eastward across south Louisiana.

In contrast to the coastal marshes, the wetlands that dot the inland prairie are commonly referred to as pothole wetlands. Prairie potholes are freshwater wetlands and have the same vegetation types as the freshwater marsh. Pothole wetlands, however, are dots within a larger prairie fabric and may be wet only intermittently (see the chapter on prairies), while the marshes described here are great swaths of saturated coastal landscape.

Swamps and floodplain bottomlands are also wetlands, but they are forested wetlands rather than grasslands. Swamps have water during most of the year, whereas floodplain bottomlands are inundated only by larger flood events, although they often include depressional swamps and oxbow lakes. The large swamps of the Houston Wilderness are on the Trinity River, and the major floodplain bottomlands of the region are the Columbia Bottomlands (see those chapters for fuller discussion).

Marshes are difficult places for people. Walking is hard. The marsh grass is rooted in dark, mushy soils called hydric soils, which sometimes emit sulfurous gases when you step onto and penetrate the muck that grabs your foot and causes you to leave your shoe behind. Marshes are places for birds that can walk on the leaves lying on the water's surface and for long-legged wading birds, waterfowl, fish and alligators. The best way to get into a salt marsh for closer observation is in a kayak. Marsh kayaking is a novel and expanding form of outdoor recreation on the coast, full of subtle pleasures. Though the salt marsh is adjacent to the open water of bays, the water is shallow. Sometimes you kayak in water less than a foot deep.

Smooth cordgrass, Spartina alterniflora, is the primary species of our salt marshes. Spartina is emerald green in the spring and golden green in the fall, a beautiful contrast to the blue bay water. Cordgrass can cover hundreds of acres at a single location, disappear when a higher piece of ground intrudes, and then reappear for several hundred acres more, a pattern recurring throughout the upper coast bays.

The Spartina marsh is laced with tidal channels and is punctuated with open lakes. Along the Texas coast the tides are relatively small in range, varying only one to two feet between the low and the high, with the highest tides coming in spring and fall and with tropical storms. At high tide the water comes up the channels and spills over onto the adjacent marsh, flooding the grass with several inches of water that covers the roots and inches up the stems. During higher high tides the entire marsh is flooded with a foot of water or more, the water pushing up to the edge of the marsh grass and into the higher ground behind it.

When the marsh is flooded, the water within the grass shimmers with the movement of schools of small fish and shellfish among the stalks, comfortable within the shelter of the marsh, which hides them from predators in the channels and at the grass's edge. The stalks and roots are covered with algae and other microscopic organisms that provide nurture for slightly larger organisms higher up the food chain. Snails climb Spartina stalks to escape the water and fiddlers and other crabs scurry to higher ground, clicking as they move.

From a kayak one views the marsh at water level, submerged within the grass. As you paddle along a marsh channel, white shrimp jump before you and finger mullet skitter into the flooded grass. Around a corner you encounter an ibis feeding at the marsh edge, its curved scarlet beak probing deep into the muck for worms and crabs, plunging deeper, searching with the nerves on the tip of the beak, pulling back and searching again, watching you out of the corner of a wary eye.

Coastal marsh inhabitants include from top left to right: Long-billed dowitcher, Limnodromus scolopaceus*; Iris,* Iris brevicaulis*; Cattle egret,* Bubulcus ibis*; Cottonmouth snake,* Agkistrodon piscivorus.

The marsh is a quiet place, so quiet that even small sounds reach a paddler. As you ease along, the loud aaark of a heron from somewhere within the grass may startle you. As you glide into the open water of a marsh pond, a flock of resting wigeon at the far end may take flight, a flurry of ducks rising sharply and then banking back over you to land in an adjacent pond. Ahead in the water you see the moving vee that is the wake of a large fish, perhaps a redfish. This is a living ecosystem and you are immersed within it.

By car, one can get close to some of the salt marshes along the inland side of barrier islands. Among the more accessible places for kayakers are East Bay marshes on the bay side of the Bolivar Peninsula, between the ferry to Galveston and High Island (try launching at Stingaree Marina); West Bay marshes along the bay shore of Galveston Island (try launching at Galveston Island State Park); Christmas and Drum Bay marshes on the bay side of Folletts Island, between San Luis Pass and Freeport; and the Lower Colorado River Authority park at the mouth of the Colorado River at Matagorda. Galveston Island State Park also has an excellent boardwalk reaching into the marsh, where those not inclined to paddle can get a closer look.

Prior to the twentieth century, much greater areas of freshwater marsh existed in the region than are found today. Freshwater marsh requires large amounts of rainfall to ward off the salinity that is ever-present on the coast. Historically, rainfall runoff moved from the slightly higher prairie uplands downward into the lower-lying lands of the marsh system, moving toward sea level and the Gulf in an overland flow pattern. In this manner, the marshes grade from the freshest areas adjacent to the prairies to the saltiest marsh adjacent to the bay.

Today, classic fresh marsh is declining, primarily due to drainage alterations. The Gulf Intracoastal Waterway is a man-made channel traversing the length of the Texas coast and connecting our various bay systems. Between the bays, this canal cuts through the marshlands, interrupting the north-to-south overland flow regime and providing a pathway for saltier water to move from the bays into the adjacent fresher marshes. Additionally, various other channels have been constructed to support oil and gas operations and other uses, adding to the movement of saltier water into the fresh marsh. The net result is that we are losing fresh marsh.

Intermediate or brackish marsh has a greater ability to withstand salt and is not as disadvantaged by this increase in salinity as is the fresh marsh. By definition, the intermediate marsh stands between fresh and salt. In exchange for being more salt tolerant, the number of plant species that can tolerate this environment declines. Although the intermediate marsh does not have quite the species diversity of a fresh marsh, it is nevertheless a valuable resource for waterfowl coming south down the central flyway of the United States. Salt tolerance is important on the coast. Storms regularly bring surge tides of eight to ten feet that flood all of the marsh, and even the freshwater marsh can absorb a blow that comes only once every decade or so.

However, when salt is present day in and day out, it kills the plants. After the plants die, their roots slough off along with the soil holding the root masses, and the marsh becomes an open body of water, lacking the food and habitat it once provided. All along the coast, there is growing concern about rising sea level and the impacts that a sea level rise could have on the long-term viability of the intermediate and fresh marshes.

Fresh marsh can be found on the western side of Sabine Lake, extending across the southern portions of Jefferson County, and extensive areas of brackish marsh have been preserved. From a national perspective, these areas are sufficiently important to migratory waterfowl for the scarce monies for land

purchase to have been provided by both the federal and state governments to ensure conservation of large areas of fresh and intermediate marshes. We can thank Congress and the Texas Legislature for what is already preserved, while still working to set aside more of the remaining tracts.

At winter's dawn, the intermediate marsh is alive with ducks and their sounds, the whistles of the wigeon and pintail, the quack of the gadwall and the mottled duck. In a year with good rainfall, the marsh is full of good food for ducks, foodstuffs such as wigeon grass and wild celery. The ducks that frequent the fresh and intermediate marshes are dabbling ducks, rather than diving ducks found in the bays. A dabbling duck feeds by tipping its tail up and reaching down toward the pond's bottom with its long neck. It is common to see duck rumps raised to the sky, a sign of great feeding on the pond or flooded flat.

One fine intermediate marsh is owned by the Brown Foundation, a Houston charitable organization. January of 2006 found these brackish marshlands very dry, with retreating water levels due to a dry fall. Water was standing only at the lowest elevations, in a series of ponds that were in heavy demand by ducks and other waterfowl due to the season's reduced freshwater marsh habitat all along the coast.

Looking into the brackish marsh along the shoreline of East Bay, Jim Neville, a former staffer with U.S. Fish and Wildlife Service, described its value. Jim can differentiate the grass species at a glance, noting subtleties that escape the eye of those of us who are not experts. Among his projects is monitoring the creation of ponds for mottled ducks that nest in the Houston Wilderness.

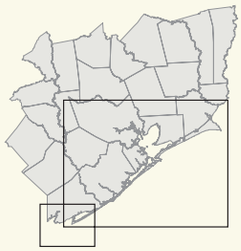
Jim pointed to an area covered by black rush, one of the major food sources in the marsh. The white heads of snow geese could be seen among the green stalks of the rushes. At another location, Jim pointed out an area where the land was churned up and the roots of plants were clearly visible. This was what is known as an "eat out," a place where geese have taken over a portion of the marsh and eaten out the vegetation. During the early fall, the marsh is often burned so that new grass can sprout.

One of the best places to get to know both fresh and intermediate marsh is the Anahuac National Wildlife Refuge. Roads allow visitors to observe the marsh from a car, including on a loop drive around Shovelers Pond, which has a viewing deck and a boardwalk reaching into the marsh. This section of the refuge has deeper freshwater channels, some open water, and adjacent areas that are covered with vegetation. In a wet year, the entire area is flooded, while in a dry year the standing water covers only portions of it.

As you drive along the edge of this large wetland, a small, ducklike bird may be swimming in the channel and then diving, only to reappear fifty feet farther down: a grebe, fishing. A larger bird—a dramatic, brilliant rainbow of purple and aquamarine, with a yellow and red bill—is supported on long toes as it proceeds among the marsh plants and over the lily pads: a purple gallinule is out foraging. This species nests in the area after spending the winter in Central and South America.

At Anahuac on a sunny day, you will see lots of alligators. Alligators are cold-blooded, relying upon the sunlight to provide body heat. In the late spring, there may be several alligators in view from the Shovelers Pond loop. Alligators were endangered for a time but rebounded fast during two decades when hunting and trapping seasons were closed; their egg clutches are large. They are now relatively abundant once more, and hunting has resumed.

The mud along the edges of the deeper channel is smoothed down where gators slide in and out of the water. The marsh hay cordgrass, Spartina patens, is flattened where the gators have been basking. A large



From left to right: Seaside dragonlet, Erythrodiplax berenice*; Bull frog,* Rana catesbeiana*; Rambur's forktail,* Ischnura ramburii*, White pelican,* Pelecanus erythrorhynchos.

gator lying in the sun is an impressive sight—six to seven feet or more of glistening gray-black skin, a bony head with extruding eyes, and a prehistoric mouth full of teeth that glint in the sunlight. Small gators may seem appealing, but there is no mistaking the seriousness of an adult alligator.

Along the Shovelers Pond driving loop and boardwalk it is also possible to get quite close to birds that are usually difficult to see. During the fall and winter, the waters are filled with ducks and other waterfowl of every description. Among those readily identified is the northern shoveler drake with its white and orange-brown breast, bright green head, and spoon-shaped bill—the bird is affectionately known as a "spoonie." The blue-winged teal drake has a striking pale half moon across its blue-gray head, and the green-winged teal drake has a resplendent emerald green patch behind the eye.

Among the more visible of the freshwater bird species are the coots and moorhens that frequent the channels adjacent to the auto trail. The coots are black with white bills and paddle along in small groups, often within the thick vegetation. When spooked, they seem to run across the water's surface, their wings flapping but their feet doing most of the work. The moorhens look similar, but have orange bills and are more brown than they are black.

If you are lucky, a secretive bird may move a few steps out of the marsh grass onto the mud bank of the channel, then slip quickly back into the screening vegetation. Had you not seen it, you would have no idea it was there. The grass does not move as the bird slips between the stalks. You have seen a rail, and it could be any of the several species that frequent our marshes—a clapper rail, king rail or the smaller yellow rail. The expression "thin as a rail" has bearing: the birds' bodies are laterally compressed for creeping among reeds and grasses. Perhaps you will get a better look next time.

Around the turn, a brown animal that looks like a large rat moves slowly along the marsh edge. This is a nutria, an imported species that has found a home in the marshes of southeast Texas. For many years the nutria population grew fast, and the animals were damaging the marsh. However, as the alligators increased under the protection of the federal Endangered Species Act, nutria numbers have been checked by these top predators

Historically, the marsh was also full of other furbearers, notably otters and muskrats. These animals still can be found, but they are much less common than they used to be. Predators such as bobcats roam the marsh, as do coyotes. The red wolf that formerly frequented this area is no longer found in the wild on the Texas coast, although red wolf-coyote hybrids may persist. This wolf species was once common all throughout the southeastern United States, but populations were severely reduced during the era of government-supported predator control. The last of the wild red wolves were trapped in this part of Texas and adjacent Louisiana and transported to a federal reserve in the Carolinas, where they became the nucleus of a successful captive breeding and recovery program. Experimental populations have now been introduced in three other wildlife refuges.

Leaving the Anahuac National Wildlife Refuge on a later winter afternoon, with the sun softly shining on the marsh hay, you may watch a flight of snow geese moving gracefully across the sky. These geese winter on the upper Texas coast and breed in the far north of Canada, inextricably linking our region to the great wilderness expanses of James Bay and the Arctic Circle. Suddenly the geese tumble from the sky, wings folded in, bodies dipping as they drop downward, wings extending only at the last moment to break the fall and catch the air as the birds glide to the ground and join more than a thousand other snows in the safety of the marsh grass, protected within the refuge.