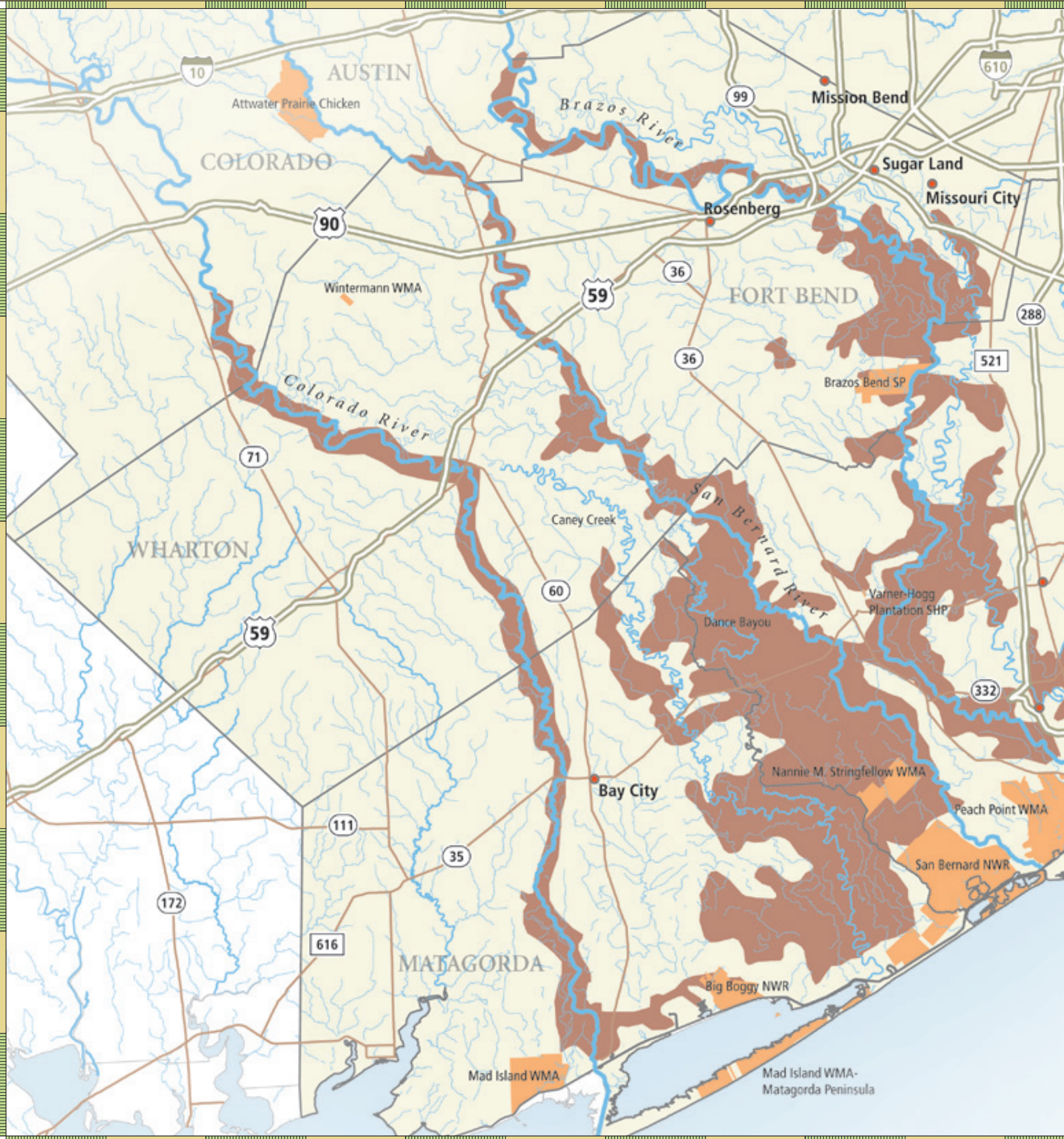
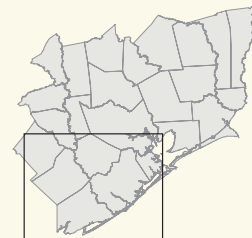
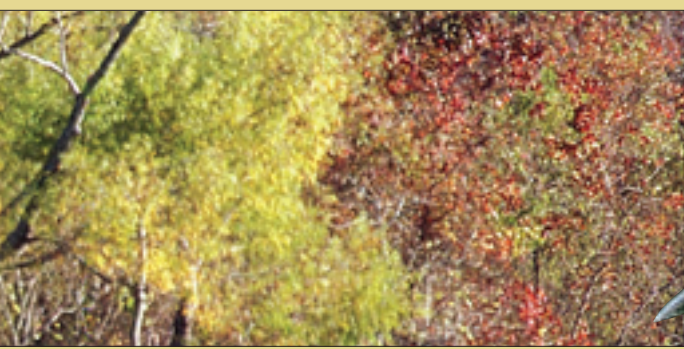


# Columbia Bottomlands





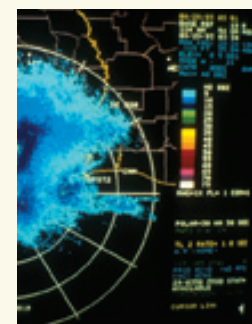


ABOUT TWO OR THREE MILES from the San Bernard River, in the usually wet, almost impenetrable bottomland forest, lives a tree the Texas Forest Service has declared the state's champion live oak. Its canopy, extending from a double-barreled trunk thirty-two feet in circumference, creates the sense of a huge raftered room, close to seventy feet high and a hundred feet across. This tree is old and entering its last

decades. It is situated only a few miles from East and West Columbia, the first towns established by Stephen F. Austin in the 1820s. When Austin's colonies were just starting out, the tree was already well established and probably fifty to a hundred years old.

This live oak is one of the more impressive inhabitants of the Austin Woods unit of the Columbia Bottomlands—the most important stopover habitat in Texas for migrating neotropical birds. But it's not the age and the size of this tree that matters so much as what it is part of: the dense, wet, hardwood bottomland forests that have grown up in the floodplains of three rivers in the Houston Wilderness that empty into the Gulf of Mexico: the Brazos, San Bernard and Colorado.

The massive live oaks may be the big personalities of the forest, but many other trees are important: green ash, hackberry, honey locust,



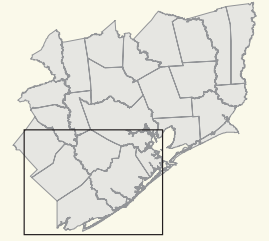
*The number of birds migrating through the Columbia Bottomlands is so large that the flocks can be seen on radar scans.*





*Top Left: The Golden Orb Web Spider, Nephila clavipes; American alligator, Alligator mississippiensis; and the Ruby throated hummingbird, Archilochus colubris; all can be found in the Columbia Bottomlands.*

*Bottom Left: Less than two hours southwest of Houston, visitors to Brazos Bend State Park can witness stunning sunrises like this one captured on film at Elm Lake.*



pignut hickory, cherry laurel, American beech, magnolia and pecan trees, many of them draped with Spanish moss and grapevines as big as a man’s arm. The flowering plants of this wet wilderness attract all manner of butterflies and hummingbirds. Sloughs meander through palmetto thickets, and the dense understory supports a lush world of orchids, ferns, frogs, snails and—most important for birds—insects.

On April and May evenings, tens of thousands of neotropical birds—the warblers, buntings, grosbeaks, thrushes, hummingbirds, orioles and tanagers, among others—take off from the Yucatan Peninsula and fling themselves across the Gulf of Mexico. With the prevailing southeasterly breezes to their backs, these birds, many of which weigh less than an ounce, fly the six hundred miles overnight, arriving at the Texas coast by mid- to late morning. If the tailwinds are brisk, they may fly a hundred miles deep into East Texas in their urgent rush to reach their breeding territories.

Should the birds encounter the headwinds of a sudden spring norther, however, they arrive at the coast and the Columbia Bottomlands exhausted and in need of fresh water, food and cover before moving on. Migration is the most dangerous time in a bird’s life. Without the adequate stopover habitat provided in these key areas, many could die.

One group of ornithologists has described three types of stopover habitat: the “fire escape,” the “convenience store,” and the “full-service hotel.” When birds encounter strong headwinds and rain, they may “fall out” and land on the nearest structure they can find. This might be a drilling platform, a ship, or a coastal woodlot. The coastal woodlots on barrier islands such as Galveston, or along the coast at spots such as High Island and Quintana, serve as fire escapes. Small as these woodlots are, they can save the lives of many birds, while giving birdwatchers intimate views of a large number of species.

In better conditions, birds use the coastal forests merely as convenience stores, loading up on protein-rich insects and snails. Such a diet is especially important to the females, which need additional energy reserves to cope with the rigors of breeding. Birds may exhaust their stores of fat completely in the effort to reach land. After recovering at a fire escape, these birds need several days of rest, food and shelter.

The Columbia Bottomlands are a full-service hotel that has been offering all three models of stopover habitat for tens of thousands of years. The only other comparable coastal forests are far to the east, in Louisiana. While much needs to be learned about bird migration, one thing is crystal clear: stopover habitat is essential, and it is declining. When Austin settled in Texas the Columbia Bottomlands covered a thousand square miles. Now they have been reduced to two hundred and fifty square miles. Neotropical bird populations have been cut in half.

Fortunately, the U.S. Fish and Wildlife Service has begun a program to save essential pieces of the Columbia Bottomlands. Working with county and state officials, the agency has managed to preserve 14,000 acres worth roughly \$12 million since 1997. Money for the wildlife refuges comes from federal grants for migratory species and from private donations of land and money. The goal is to preserve 70,000 acres, with 28,000 of the total in federal refuges.

The goal is further to preserve the variety in kinds of habitats represented in the Columbia Bottomlands. Mike Lange, refuge biologist for the Fish and Wildlife Service, notes: “Each tract has a different personality based on different soil types and plants. The idea is to preserve the character of the entire ecosystem.” The 46-acre palm tract, for example, contains the last remaining examples of the Brazoria palm, a native palm unique to the Columbia Bottomlands that grows up to twenty-



*Species of the Columbia Bottomlands from left to right: Golden Orb Weaver, Argiope aurantia; Black-bellied whistling duck, Dendrocygna autumnalis; Barred owl, Strix varia; Cedar waxwing, Bombycilla cedrorum.*

eight feet high. Stands were cut in the nineteenth century for use in wharves. The 5,000 acres recently added to the San Bernard Refuge includes a mix of connecting marsh and bottomlands particularly valuable because of their location at the coast.

Because it contains one of the largest tracts of old growth forest left in the South, the six-hundred-and-fifty-seven-acre Dance Bayou tract holds important clues to the character of the original bottomland forest. More than three hundred species of flowering plants have been counted at Dance Bayou, suggesting that plant diversity may be tied to bird diversity. Slight variations in soil types and ancient swales that produce small changes in elevation help create this diversity. Besides providing critical stopover habitat for spring migrants, places like Dance Bayou offer year-round habitat for other species. Biologists have collected ten years of research on wintering and breeding birds in this area.

One of the most beautiful and publicly accessible acquisitions is the 1,100-acre Hudson Woods, just north of the intersection of State Highways 35 and 521. Open to the public year-round, it offers a typical feature of the Columbia Bottomlands, an oxbow lake, a remnant of an old river bed that is probably

spring-fed. Using a map provided at the parking lot entrance, visitors can take a two-mile walk around Scoby Lake and identify a series of numbered trees along the route, including live oaks, water oaks, cedar elm, box-elder maple, black willow, western soapberry, sugarberry, green ash and pecan.

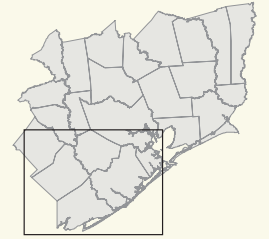
Visitors will also likely see red-bellied, downy and pileated woodpeckers. The lake almost always holds ibises, snow egrets, roseate spoonbills, great blue herons, and here and there an alligator. Blue-winged teal, among the last ducks to migrate north, swim in the lake, flushing suddenly and flashing their brilliant wing patches. Back in the swampy woods to the north, wood ducks live year-round, feasting on the tiny native pecans that drop from the large trees that East Texans call “bull trees.” Male wood ducks are so elaborately beautiful that their Latin name translates roughly as “bird in a wedding garment.” Wary of approaching humans, they can be recognized from a distance by their wobbly flight. A Carolina wren may be heard; its loud distinctive call has been characterized as liberty, liberty, liberty, whew. A belted kingfisher may be working the lake, chattering as it flies. In winter, a red-shouldered hawk may approach across the lake to land on a tree.

### Brazos Bend State Park

*One of the most heavily used state parks in the region, the five-thousand-acre Brazos Bend State Park has some coastal prairie, but its distinction is that it sits on the floodplains of the Brazos River. Here visitors may see some of the features typical of the Columbia Bottomlands: the meandering sloughs and swales; oxbow lakes; riverbanks lined with black willow, cottonwood and sycamore; and of course, the thick hardwood forests with massive live oaks.*

*In the artificial lakes the visitor will see many alligators and probably also the nutria, a muskratlike mammal from South America that was imported for its fur and has multiplied in the wild. Along the walking paths on the levee one can see purple gallinules, bitterns, and in season, ducks. Volunteers work hard to provide amenities such as boardwalks and benches and to fight the invasive Chinese tallow. Houstonians have been known to make the thirty-mile drive from southwest Houston and climb the observation tower just to watch the sun go down while flocks of ibis wing their way past to their roosting grounds.*





The Columbia Bottomlands also hold six or seven active bald eagle nests. One such nest is situated a few miles west of Hudson Woods on SH 35 in the top of a tall oak within telescope range. The breeding pair arrives in November and broods a clutch of two to three eggs for a little more than a month. If things go well, they may raise two chicks, which must be fed and taught to hunt for three months before they are ready to leave the nest. By May, the chicks are fully fledged, and the parents move to summer hunting grounds, before returning to the same stick nest to begin the process again.

Before the eagles leave, warblers arrive. Some will move north, but for some, the Columbia Bottomlands are breeding territory. The tiny northern parula, which weighs only a quarter of an ounce, conceals its nest in the beards of Spanish moss that are so abundant in the bottomlands.

The prothonotary warbler, named for a group of Catholic clerics who wore bright yellow hoods, nests in tree cavities a few feet over water, thriving on the larvae of aquatic insects and on the snails that abound in the wooded swamps.

Later in the season comes the only migrating flycatcher, the Acadian, which also uses Spanish moss or hanging leaf debris to conceal its nest. The Swainson's warbler is also a late arrival and nests low to the ground, preferring thick habitat such as laurel cherry or the once abundant canebrakes.

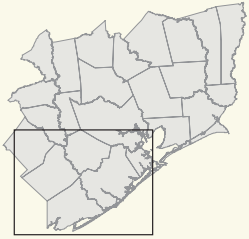
For every bird seen in a coastal woodlot or in bottomland forest such as Hudson Woods, many more use the Columbia Bottomlands. The magnitude of the migration drama is not easy to imagine, because the birds may stay only a day or two and then leave again at night. But there is another way to see the spring migration: with radar. Some of the most

## Canebrakes

*When Austin's settlers came to the Columbia Bottomlands, they saw not only the wooded bottomlands but also a remarkable sight that once dominated the South: a canebrake forest. The cane was one of two species of native bamboo, called giant cane (*Arundinaria gigantea*) and switch cane (*Arundinaria tecta*). Canebrakes were so thick that they provided cover for many species of wildlife. Audubon painted his famous picture of the wild turkey in its preferred habitat, a canebrake. Many folk songs allude to the canebrake. In "Sixteen Tons," a popular song of the 1950s, the singer Tennessee Ernie Ford claims he "was raised in a canebrake by an old mama lion." The canebrake was a favored haunt of black bears and a hiding place for runaway slaves as well. When Sam Houston's army retreated from the advancing Mexican forces during the last days of the Texas Revolution, they camped for a couple of days on a plantation in the Brazos bottoms. Houston's aide-de-camp, Alexander Horton, wrote of cutting runways through a dense canebrake. They felt relatively safe there, because "any approaching army would be slow moving in the terrain and would make enough noise breaking through the cane and timber so as to alert us in ample time to prepare for any encounter."*

*The canebrakes covered miles of territory and were often burned so that the land could be converted to agriculture. And the cane faced another disadvantage—cattle savored the nutritious leaves and ate the plants to the ground. Between grazing and agriculture, canebrakes all but disappeared from the Columbia Bottomlands. Two declining species are closely associated with canebrakes: a butterfly called the southern pearly-eye, and the canebrake rattlesnake, also called the timber rattlesnake.*

*Visitors to Hudson Woods and Brazos Bend State Park can see only remnant canebrake stands. Perhaps enough of this native plant will eventually rebound on protected lands for wildlife to use in a significant way once again.*



Common residents of the Columbia Bottomlands include from left to right: Swamp rabbit, *Sylvilagus aquaticus*; Bull frog, *Rana catesbeiana*; Red-eared slider turtle, *Trachemys scripta elegans*; and the Black-bellied whistling duck, *Dendrocygna autumnalis*.

The Columbia Bottomlands includes a diversity of tree species, highlighted in the illustration to the right, which create a rich habitat for mammals, birds and insects. The seed components of each of these tree species are also a vital food source for many species in the food chain.



influential studies of spring migration have been done by Sidney Gauthreaux, a Clemson University scientist considered the founder of radar ornithology. Using weather service radar scans, Gauthreaux has calculated an astonishing 239 million birds representing two hundred and thirty-seven species pass through the Columbia Bottomlands each spring. During the height of migration Gauthreaux estimated that 30,000 birds fly across each mile of Houston Wilderness coastline every hour.

Radar also allows one to see migration in real time. About a half-hour to forty-five minutes after sunset, when the wind is blowing from the south, the birds that have been resting and feeding

in the bottomlands seem to lift off at nearly the same time in what is called an “exodus” event. A wheel-shaped swarm of as many as quarter of a million birds appears to be sweeping up from the Columbia Bottomlands and over the city.

Gauthreaux has also estimated that the neotropical songbird migration has decreased by half from 1979 to 1995. The Gulf Coast Bird Observatory in Lake Jackson is working with site partners all along the Gulf Coast, from Mexico to Florida, in an attempt to understand bird migration better. It seems clear though that preserving habitat in the Columbia Bottomlands is part of the key to restoring migration to its traditional splendor.



