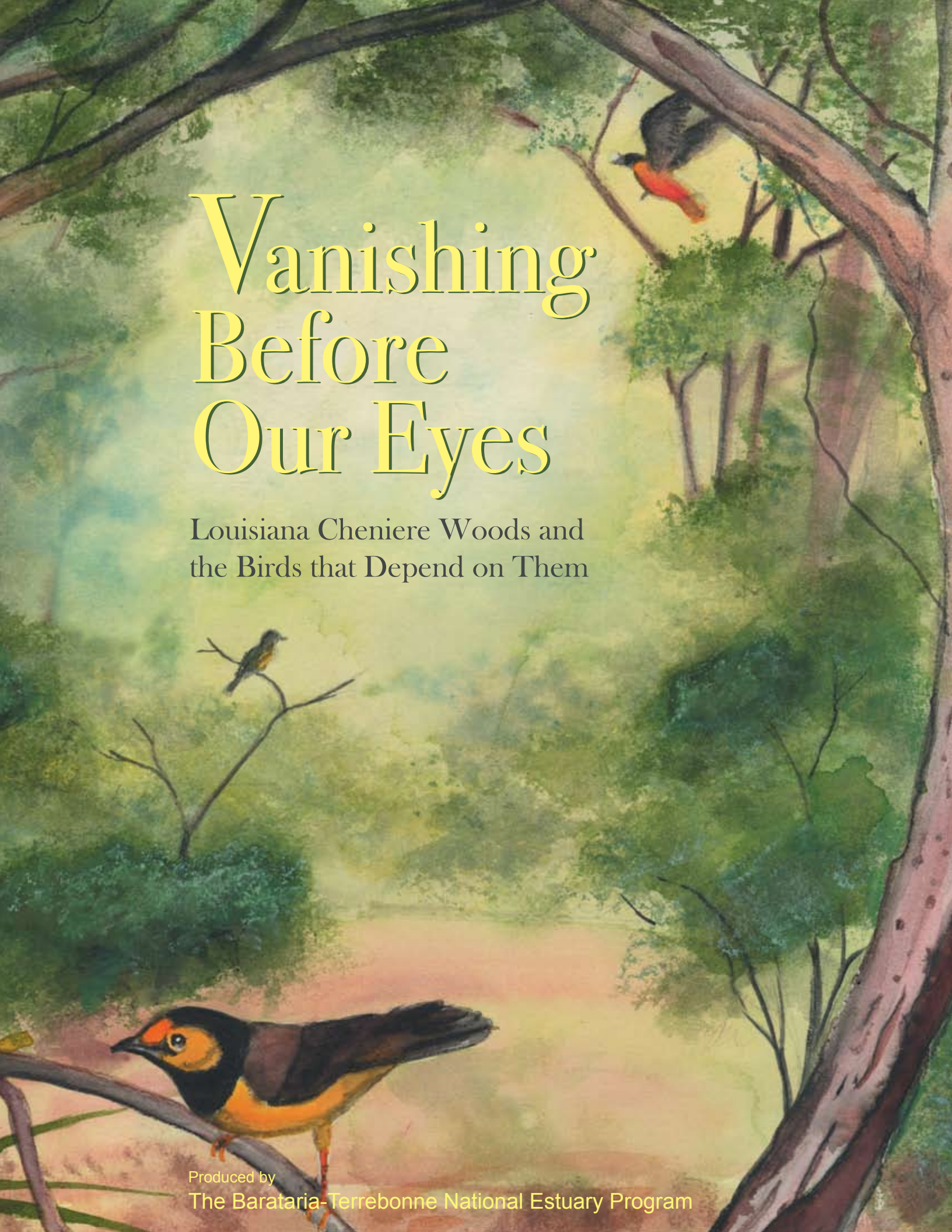

Vanishing Before Our Eyes

Louisiana Cheniere Woods and the Birds that Depend on Them

Produced by
The Barataria-Terrebonne National Estuary Program

"As the reader will encounter the word cheniere from time to time, it may be well to get acquainted with it at the start, for unless familiar with south Louisiana, it is probably not in one's vocabulary. The word derives from the French ***chene***, meaning oak, and in that language ***cheniere*** is literally oak grove. It is applied loosely to any grove of trees, predominantly oak in character. By the same construction ***cypriere*** is a grove of cypress trees, and ***pecaniere*** [sic]* is a grove of pecan trees. Scientifically, the word ***chenier*** is applied to certain land formations, whose origin and character are quite distinctive, and unlike most land formations in general. They begin at the Sabine River and may be found as far east as Lafourche Parish in Louisiana, although they are at their best in the area lying between Sabine Lake and Vermilion Bay. Grand Chenier, and Pecan Island in Vermilion are classic examples." -- Archie Hollister, 1960, *in* A Sportsman's Paradise on the Beach Lined Shores of the Gulf Coast, Cameron Parish, Louisiana.

In this publication, we use ***cheniere*** to describe groves of trees found on several coastal landforms isolated in the coastal marshes of Louisiana. The term ***chenier*** is used here as described above, to refer to a particular type of landform found in coastal Louisiana, former beaches isolated from the Gulf by a strip of marsh.

* pacaniere, not pecaniere, is the correct spelling

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Louisiana Cheniere Woods and the Birds that Depend on Them

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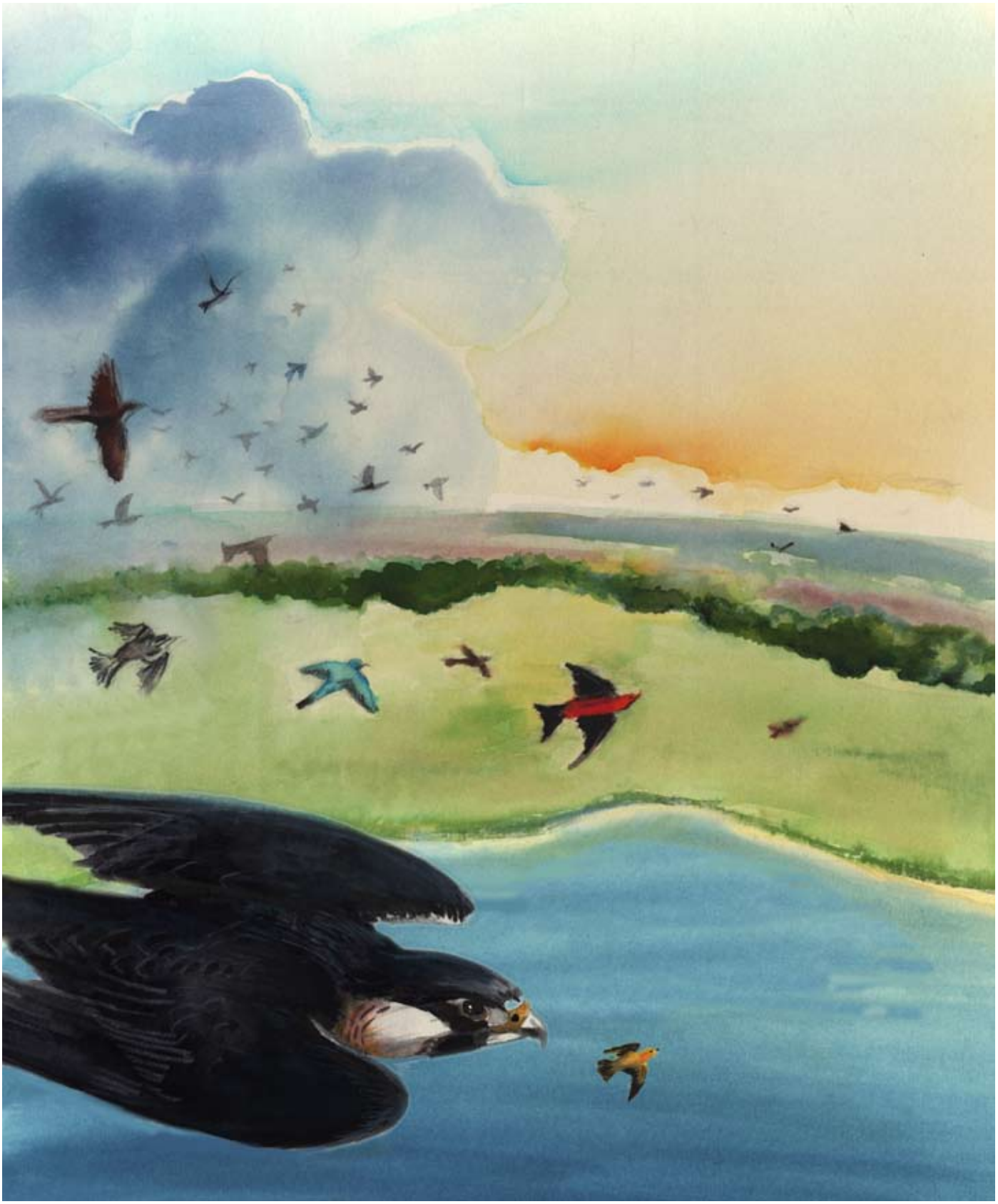


A Bird's Eye View

It is springtime, and you are a Ruby-throated Hummingbird. You are flying north across the Gulf of Mexico toward the coast of Louisiana. Though you weigh only 3-5 grams, you have been flying for over 20 hours from your winter home in Guatemala. At last and at the very end of your strength and energy, you reach a vast sea of wetlands. Here and there among the marshes, low "islands" covered with trees rise from the marsh. Offering food, protection, and a place to rest, these groves are your destination—the ***chenieres*** of coastal Louisiana.

Most people, even in Louisiana, know little about the chenieres, with their moss-cloaked oaks, windblown hackberries, and tangled grapevines. The early French settlers used the word cheniere (pronounced "shin-ear" or "shane-year") to mean "oak grove." Chenieres are ancient, stranded woodlands that rise above the flat wetlands to dominate the landscape. The chenieres are supported by landforms that include ***relict beaches, barrier islands, remnant natural levees, salt islands, and shell middens***. The chenieres begin in east Texas and occur as far east as Grand Isle, Louisiana.

Chenieres play a key role for migrating landbirds because of where they lie in important migration pathways. Twice each year, millions of songbirds, in fact most all eastern species, swarm Louisiana's coast as they migrate across and around the Gulf of Mexico. These scarce wooded habitats situated in coastal Louisiana serve as safe havens that migrating birds use in spring to stock up on energy and to build strength for the nesting season. In autumn, the birds return to the chenieres, pausing there to store energy for continued migration and molt.

As birds migrate great distances, a bewildering array of perils challenge their survival. They face stormy weather, strange new habitats, scarce food, lurking predators, and ever present parasites. Today, however, the changes made by humans are greater than these natural dangers. In their tropical winter homes, the birds' natural habitats are dwindling, and their breeding ranges in North America are increasingly disturbed. Louisiana's chenieres—the songbird port of call of the Americas—are disappearing swiftly as well. As the wetlands and cheniere woods begin to vanish, people are joining in a race to save these critical "migration stations." We have learned the answers to many questions about the chenieres and their role in songbirds' travels: What are the ancient origins of the chenieres? How do these woods meet the needs of birds in a unique way? What can we do to save the chenieres and the songbirds that depend on them?

Photo: Michael L. Gray.

An Ancient Story Begins

Although the most noticeable features of the chenieres that rise above the coastal plain are the live oak trees; many diverse forces helped construct the various landforms that support the trees. There are also subtle differences in the form and foliage of coastal chenieres. To learn about the origins of the oldest chenieres, we look back to the Ice Age.

The Relict Beach Ridges: Ice Age Secrets

The Ice Age was not simply one long era when most of the earth was covered with ice. Instead, the Ice Age was a series of glacial events in which a large portion of the Earth's water froze into massive ice sheets. Some of these ice sheets were several miles thick! These cold eras alternated with warmer times when the ice sheets melted, and water returned to the oceans. The sea level dropped during glacial events, when glaciers tied up vast amounts of water. The sea level again rose when glacial ice melted back into water. During each of these events, the sea level rose and fell up to 300 feet or more.

Photo: David Cagnolatti.

Eastern Wood-Peewee.

Opposite page: Blackburnian Warbler.

During drops in sea level, coastal lands were exposed. Then rivers of the coastal plain cut deeply into the earth as they drained waters from surrounding newly exposed lands. When the sea level rose again, these same rivers quickly lost their seaward slope and filled with silt. The rivers then flooded their banks and spread land-building silt throughout the coastal plains. In this way the rise and fall of sea level during the Ice Age built wetlands and natural levees of the coastal zone, layer upon layer.

As each new layer of sand and silt reached the Gulf of Mexico, the ocean's waves and near-shore currents reworked these sediments into a new beachhead. The next flood would then build more land seaward, effectively "stranding" the last cycle's beachhead inland within new marshlands. A Scarlet Tanager flying north across the marsh would find a series of these relict beach ridges fanning out parallel to the coast. Thirteen clusters of distinct east-west beach ridges formed in Louisiana between Marsh Island and the Sabine River. Individual ridges range from 100 to 1,500 feet in width and from a few inches to more than 10 feet in elevation. The largest extend parallel to the coast for distances of about 70 miles. The oldest beach ridge within the complex, Little Chenier, is 2,800 years old.

Some barrier islands grew out of a similar process. As coastal rivers changed courses, old delta areas lost their source of nourishment (flood-borne sediments). Surrounding marshes began to subside, or to submerge under the rising sea level. Thus the higher beachheads were left standing in the open gulf as barrier islands.

Cheniere Au Tigre, Vermilion Parish.

Photo: Charlie Bush

Photo: Charlie Bush

A remnant natural levee, Marmande Ridge, Terrebonne Parish.

Natural Levees: Ghosts of Rivers Past

Another creator of "high land" in Louisiana's marshy plains is the great Mississippi River. As its course shifted through many thousands of years, the river and its distributaries built a series of natural levees. These levees are ghostly reminders of former Mississippi River distributaries, and stand out clearly on the flat coastal plain. From a bird's eye view, the ribbons of live oak woods generally run north-south because they followed the river's pathways to the gulf.

Photo: Michael L. Gray.

Worm-eating Warbler.

The Salt Islands: Vestiges of Former Seas

Vestiges of ancient seas, the salt islands also rise curiously and prominently above the marshlands of the central coast of Louisiana. These landforms are really salt domes on which unique chenieres flourish. To understand the salt islands, we look back about 200 million years, when a vast, shallow sea covered much of the center of the United States. Over time, this sea became landlocked and left behind a thick layer of salt as water gradually evaporated.

As years passed, these salt beds became buried deeper and deeper under layers of heavier silt. The weight of the soil put great pressure on the salt, and from time to time, the salt "bubbled up," squeezed like toothpaste through a weakness in the layers of soil. This bubbling up created massive, mountain-like salt formations vertically embedded through the layers of soil. Sometimes, these formations find their way close to or through the earth's surface. This bursting through is more likely to happen in younger, less solid, coastal wetlands, where at least five salt domes—Jefferson Island, Avery Island, Weeks Island, Cote Blanche Island, and Belle Isle—have formed, rising up to 150 feet above sea level.

Opposite page: White-eyed Vireo.

Photo: Michael L. Gray.

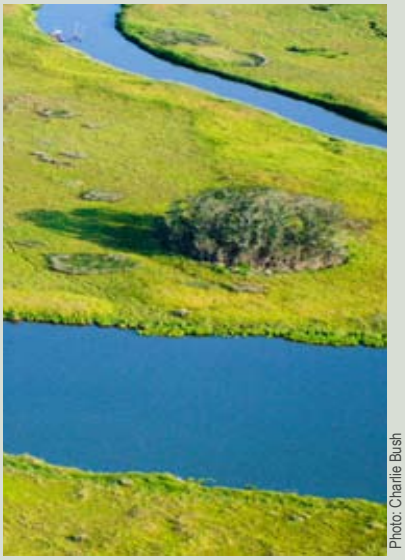


Photo: Charlie Bush

Indian midden, Terrebonne Parish.

The Middens: Home to Paleo-Indians

The climate, ocean, and the great river were not the only creators of high lands in Louisiana's marshy plains. Paleo-Indians built thousands of mounds throughout the coastal lowlands. Many of these mounds still rise above the wetlands today and support woody plants. Anthropologists have found evidence that humans first appeared in what is now coastal Louisiana about 10,000 to 12,000 years ago. As the Ice Age ended, Louisiana's climate grew warmer and more humid, and the lands became more heavily wooded. Gradually, the coastal landscape came to resemble the one seen today. It was in the shelter of the natural levees, salt islands, and beach ridges that these Indians lived and died. These landforms were prominent in the flat plains, and were the best places for humans to settle. Soon, great mounds of shells—refuse from countless clam and oyster meals—began to pile up. Known as "middens," these large ridges attained lengths of several hundred feet and heights from three to eight feet above the marsh. The Paleo-Indians shaped other mounds of earth, shell or both into steep, four-sided pyramids.

The story of these early people of the Delta Plain mirrors the changing courses of the ancient streams. As the streams of fresh water from each period between floods flowed into new channels, the Indians abandoned the older levees. Thus, they lived by hunting, fishing, and gathering, moving from one cheniere to another as new highlands were built by the changing climate.

Photo: David Cagnolatti

Indigo Bunting.

Songbird Bed And Breakfast

"The coast islands, or chenieres, (as they are called, because of the oaks growing there) afford the fatigued travelers places for needed rest and food. The principal migration stations are Grand Isle, Timbalier, Last Island, Chenier Caminada, Chenier au Tigre, Marsh Island, Grand Chenier, Breton, and Chandeleur Islands."

-- George E. Beyer, 1899;
(The Avifauna of Louisiana, Proceedings of the Society of Naturalists, for 1897-1899)

Unlike live oaks growing on a cheniere, birds cannot root in one place and make their own food. They must move about to find it, then move on to another place once that food supply is gone, and so on. Fortunately, birds have wings that allow them to be the true explorers of the animal kingdom. Like all migratory animals, birds move on as resources decrease within their home ranges. At any given time, and within any given species, life-giving resources such as food, water, nesting sites, and roosting sites can diminish within that bird's "home." Whether this happens on a seasonal or permanent basis, birds must migrate when resources fail.

Taken as a whole, most North American bird species are migratory. Some species, such as Yellow-bellied Sapsucker, Ruby-crowned Kinglet, House Wren, American Robin, Cedar Waxwing, and Yellow-rumped Warbler tend to migrate only as far as the nearest ready supply of food. In the eastern United States, the bulk of these migrants winter within the gulf coastal states, although many travel as far as southern Mexico.

Others, including most species of thrushes, warblers, tanagers, grosbeaks, and orioles engage in more "instinctive" movements involving much longer distances between the temperate and tropical Americas. Most of these long distance migrants spend the winter from tropical Mexico southward through Central America and into tropical South America and the Caribbean Basin. Only a few linger along the U.S. gulf coast each year.

Gulf Travel Plans

The long distance migrants spend up to a third of each year flying from breeding grounds to wintering grounds and back again. Most of these birds, especially songbirds, set out on the demanding and risky flights at night, eating and resting during daylight hours. After the sun sets below Louisiana's gray marshes, and under the cover of darkness, millions upon millions of birds fly quietly through the black skies above. These epic flights stream directly over Louisiana for several months twice each year, completely unwatched and unknown to most people of the Bayou State. Flying at night may reduce danger from hawks and other raptors for which the small songbirds are easy prey. During the

Archie Hollister. Photo: Courtesy of Hollister family.

Photo: David Cagnolatti.

Red-bellied Woodpecker.

Mr. Hollister is fondly remembered today as Cameron Parish's earliest historian. It was quite fitting that in 2004, Mr. Hollister's surviving wife, daughter, and two son's (Blanche Hartwell Hollister, Lynne Hollister Houk, and Lloyd and Dale Hollister) dedicated 54 acres of the family's old home-site (relict beach ridges and swales) on Grand Chenier as a cheniere woods preserve for migratory birds through a formal agreement with The Nature Conservancy and Baton Rouge Audubon Society. Today, these woods represent one of the largest continuous expanse of protected cheniere woods in Louisiana.

Photo: Micheal L. Gray

Painted Bunting.

day the migrants must devote their time to eating in order to maintain the body fat they need for fuel. Nighttime travel may also allow the birds to avoid high-altitude winds, which prevail during the day.

Bad weather poses other risks. As birds fly north from their winter home across the gulf, they sometimes fly into major spring storms complete with cold headwinds and hard rain. Those who make it through the storm "fall out" as soon as they reach the first available land, stacking up densely and overtaxing the limited food sources.

From the storms that hit Grand Isle in 1993 and the hurricanes of 2005, we learned that hundreds of thousands of migratory birds can perish from exhaustion or starvation when stormy weather prolongs a trans-gulf flight beyond the birds' reserves of stored energy. When storms wreak havoc on birds away from shore and over the gulf, we never see traces of downed or dead birds. They are recycled as fish food. As a rule, however, birds are good weather watchers and time their flights to avoid headwinds and storms.

Results from a recent study indicate that 85% of annual mortality of a long distance migrant, the Black-throated Blue Warbler, occurs during migration rather than in breeding or wintering habitat.

-- Scott T. Sillett and Richard T. Holmes, 2002
(Journal of Animal Ecology. vol. 71)

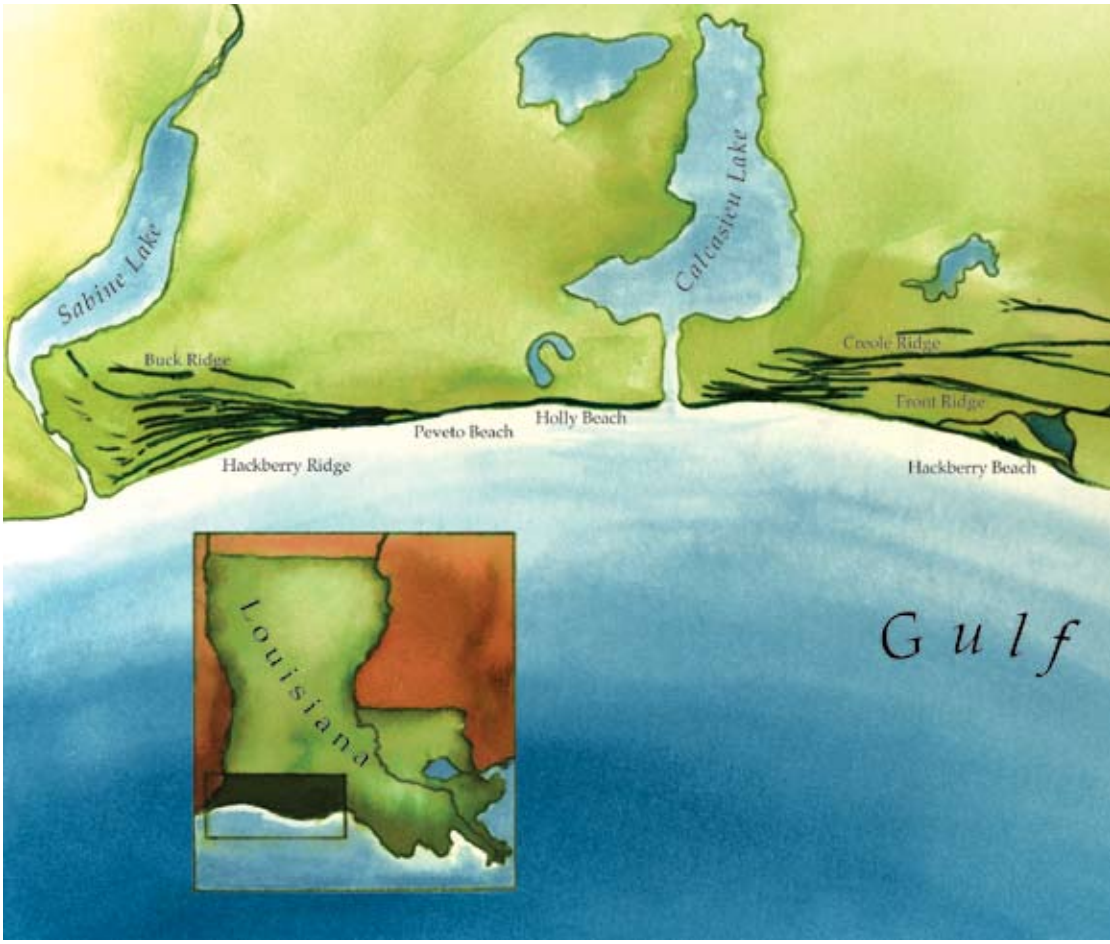
Many of these migrants embark on a 20 hour-plus nonstop flight over as much as 600 miles of the Gulf of Mexico to reach Louisiana's coast. Unless surprised by storms or strong cold fronts, migrants make the trip easily. On spring days with a steady flow of southerly winds, about 75%-80% of trans-gulf migrants make landfall to the north of the coastal marshes. Because of the length of trans-gulf flights, most spring landings on Louisiana's coast occur during early afternoon hours. Others take the more roundabout route over land and around the gulf through Mexico into Texas. Although this route may be up to three times longer, birds can stop to rest and feed along the way. Most birds, however, choose the much more dangerous trans-gulf route because they are racing with their fellows to claim the best nesting sites within their North American breeding ranges.

Photo: Michael L. Gray

Tennesee Warbler.

Migration Calendar for Coastal Louisiana

A bird's yearly calendar always highlights the three most demanding events of bird life—migrating, reproducing, and molting (shedding their old feathers). Although different species mark different dates for their semiannual visits to Louisiana's chenieres, they are very constant year to year within each species. Spring migration in coastal Louisiana extends from late February through May



Map showing the cheniers and salt domes of southwestern Louisiana.

"Before launching on such a long journey, the birds 'eat and grow fat,' for the fat thus stored beneath its skin is the birds' 'motor fuel.' When it lands, the bird is frequently 'very poor'—its fat has been exhausted and it must land and secure food for an additional supply."

-- Stanley C. Arthur, 1931;
(The Birds of Louisiana, Department of Conservation, New Orleans)

with peak numbers occurring between mid-April and early May. The earlier birds migrate, the greater are the risks they face. For example, a cold snap may temporarily reduce or wipe out insect prey. Males, particularly older males, risk the harsh demands of early arrival in the race to stake claim to prime real estate on the breeding grounds. We find migrants on chenieres on some days in March and then on a regular, almost daily basis in April and the first half of May.

The numbers of the long distance migrants swell after the birds complete the breeding season, and the songbirds again move toward the chenieres, now the staging ground for the autumn migration. Individuals of some species begin to arrive in the chenieres as early as July. The pace of arrival picks up by mid-August, and by September migration is in full swing. Numbers of migrants remain fairly constant through October with a slight peak during the second half of the month. Because of prevailing southerly winds, most of the movement in autumn is around the western gulf coast. Thus, many migrants use chenieres as a "bed and breakfast" for stopping over en route to Texas and Mexico. Some trans-gulf flights depart Louisiana's coast to cut across the waters of the northwest gulf and make landfall near the U.S.-Mexico border.

Photo: Bill Goulet

Yellow-billed Cuckoo.

Migrant Filling Stations

The fact that a Least Flycatcher, weighing about 10 grams, migrates from its breeding site in the forests of Saskatchewan to its winter home in Honduras is amazing. That a Ruby-throated Hummingbird, weighing only 3-5 grams, can fly from its nesting area in a West Virginia forest to its winter home in Mexico is almost beyond belief. To power these long-distance flights, small songbirds almost double their body weight with fat. They then burn off the fat in a matter of days. Such feats amazed ornithologists Dr. Paul Kerlinger and Dr. Russell Greenberg so much that one day each sat down in his office and came up with these two calculations.

- With one airmail stamp, you could mail two Black-and-white Warblers or five Ruby-throated Hummingbirds from anywhere in the United States to Mexico (P. Kerlinger).
- If Blackpoll Warblers were cars, they would get 720,000 miles to each gallon of gas (R. Greenberg).

The Right Place at the Right Time

In spring, more than 70 species of long distance migrants regularly use cheniere woods, and about 65 use them year in and year out during autumn. Only a handful of migrants stay to breed. Of the 160 species of these long distance travelers in the Western Hemisphere, more than half visit the chenieres at some time during the year. About half as many species of migrants reside on the chenieres in winter. Still fewer species have chenieres as their permanent address.

"I have often stood among the oaks on Grand Isle in spring and in one spot watched dozens of warblers of several species not 30 feet away feeding on the ground and in trees, or drinking from small rain pools."-

-George H. Lowery, Jr., 1974; (Louisiana Birds, Published for the Louisiana Wild Life and Fisheries Commission, Louisiana State University Press, Baton Rouge)

Some years ago, New Orleans native and well-known ornithologist, Dr. Sidney Gauthreaux, used weather radar data to estimate that some 80,000 birds per mile of migration front arrive on the Louisiana coast each day during peak migration in spring. On these days, between 20% and 100% of the birds alight in cheniere woods, depending on the weather over the gulf. That is a lot of hungry birds to feed! In North America during autumn months, educated guesses suggest that between two and five billion birds leave for the tropical environs of Central and South America each year. Because most long distance migrants breed in the forests of eastern North America, tens of millions of them must filter through Louisiana twice each year. These migrants depend on Louisiana's cheniere woods to provide safe resting areas and enough food at just the right time to ensure a successful migration. Louisiana's coast truly is *Americas' avian port of call!*

Photo opposite page: Black-and-white Warbler.

Chenieres and Songbirds: A Perfect Match

As a rule, en route migrants seek habitats or features like those in which they breed. Other species make striking shifts in habitat and even diet. Freed from the constraints of breeding and offered endless new foods and habitats, migrating songbirds can be unpredictable. Birders familiar with the insect-loving Least

Photo: Michael L. Gray

Photo: Michael L. Gray

Bay-breasted Warbler searching for insects on a toothache tree.

Photo: Bill Goulet

Female Baltimore Oriole eating mulberries.

Flycatchers in tall Appalachian forests, for example, would be surprised at how common they are in the scrubby coastal thickets of Cameron Parish. There they spend most of their time during autumn stopovers darting from nearby perches to pluck small fruits of the toothache tree and swamp dogwood.

Many of the qualities of cheniere woods are absent or rare in other forest ecosystems. Here are the main features that are useful to the many migrants who stopover within cheniere woods:

Armed and dangerous: thorny and spiny plants. Armed woody plants are common on many chenieres, especially those near the gulf shores in Cameron Parish. Salt matrimony vine, toothache tree, honeylocust, chittumwood, Osage-orange, Chickasaw plum, green hawthorn, sweet acacia, blackberry, and greenbrier are some of the woody plants that grow thorns or spines along their trunks and branches to defend themselves against deer, cattle and other plant eaters. Regardless of the kind of birds at a given site, feeding migrants almost always favor these thorny plants in their search for insects. Some migrants will even defend honeylocust trees against other hungry migrants. Why do birds prefer to forage in plants armed with spines or thorns? Simply because there are

Photo: David Cagnolatti

Ovenbird.

more bugs there for birds to eat. Plants that invest their energy in growing spines and thorns spend less energy making chemicals that defend against leaf-chewing insects. In contrast, cherry laurel and Chinese tallow produce chemicals that make leaves toxic or inedible for the insects that eat plants. Such plants harbor very few bugs for birds to eat, so the hungry birds avoid them.

Leaf litter on the forest floor. Other than cheniere woods, the forests of coastal Louisiana most often grow along river basins and deltas. Such seasonally flooded forests provide great habitat for canopy-dwelling songbirds and for migrating birds like ducks, but not for all species of migrant songbirds. The species that prefer to search for food in the leaf litter of a forest floor must find sites that are higher and drier. Beneath the canopy of cheniere woods, these highland birds are almost sure to find patches of leaf litter in which to search for the insects and spiders they need for energy.

Woody undergrowth and thickets. Canopy gaps created by fallen trees and large branches are common features of cheniere woods. Strong gulf breezes, hurricanes, and rare ice storms all contribute to patches of light in otherwise closed-canopied woods. The increased sunlight that reaches the forest floor results in thickets of undergrowth. The varied ages of the undergrowth patches and the woody debris all add to the complex structure of the cheniere woods, which in turn draws a broad range of migrant species.

Seasonal thickets. For many years, the farmers of Cameron and Vermilion Parishes have taken their cattle to the relict beach ridges for grazing, primarily during the winter months. In fact, 95% of all woods on relict beach ridges are

Photo: Bill Goulet

A herd of free-ranging cattle on Little Chenier, Cameron Parish.

used for livestock grazing. As the hooves of roaming cattle disturb the soil, they promote the growth of nonwoody annual and perennial plants. At the end of the winter, the farmers move their cattle to the prairies north of the marshlands to escape the swarms of mosquitoes and flies of the summer. Then ragweed, croton, cocklebur, rattlebox, cassia, partridge pea, aster, balloon-vine, morning-glory, and other plants form dense stands on chenieres with semi-open canopies. These thick tangles of plants often reach heights of 6-12 feet, especially in years with plenty of rainfall. These thickets provide food and shelter for many species of birds during autumn migration.

Scarlet Tanager.

Photo: Bill Goulet

Broad-leaved evergreen foliage. The evergreen plants of the chenieres are especially important for migrants who spend the entire winter and for the 11 species of migrants that arrive each year prior to full leaf-out of most trees. Evergreen plants such as live oak, southern magnolia, red bay, yaupon, wax myrtle, groundsel bush, lantana, and several greenbriers provide homes for leaf-chewing insects and insect eggs that stay dormant over winter. Evergreens also serve as safe cover for resting and roosting migrants when little other cover is available.

Vine tangles. Many migrant birds prefer vines over trees and shrubs for searching out their prey, and on some vines, birds consume nutritious fruit as well. In spring, 10% of more than sixty migrant species use vine tangles as their first choice in the search for food. That percentage climbs to about 25% during autumn migration. Grape is the most common vine found on chenieres of southwest Louisiana. Many migrants prefer poison ivy during spring and autumn, although it is not as common on most chenieres as grapevine and honeysuckle. The crevices formed by poison ivy vines as they lay against the trunks of trees also harbor countless numbers of insects.

Photo: Michael L. Gray

Blue-gray Gnatcatcher.

Caterpillars. Migrants may eat a wide array of insects and spiders, but almost all feed on caterpillars when they are available. Caterpillars are the perfect food for migrants. They are larger than bugs, so birds have to search less to find them, and they have few defenses to deter hungry birds. They are a source of freshwater in an otherwise salty environment, and during caterpillar outbreaks they are plentiful. Several common cheniere trees are annual hosts to such outbreaks including hackberry, toothache tree, and honeylocust.

Flower power. Nectar is a "high-octane" food that is readily available in cheniere woods during spring. On Hackberry Ridge in Cameron Parish, Ruby-throated Hummingbirds divide their feeding time between honeylocust and Japanese honeysuckle flowers in spring. In autumn, ruby-throats gather nectar almost exclusively from another exotic species, morning-glory. Other true nectar lovers will settle on and defend individual honeylocust trees for several days at a time while stopping on chenieres. Amazingly, 31 migrant species are known to feed on honeylocust flowers.

Other species are attracted to oak and pecan flowers, called catkins. More than 20 species of migrants have been observed feeding on catkins of live oak along Louisiana's coast. Perhaps these birds are eating pollen, or maybe they are feeding on the tiny bugs that are also attracted to the catkins.

Rose-breasted Grosbeak feeding on lantana fruit.

Photo: Bill Goulet

Photo: Bill Goulet

Old-growth live oak.

Fruit of the woods. Many cheniere-visiting migrants prefer fruit during autumn migration. They eat a lot of hackberry, toothache tree, and swamp dogwood fruit. However, twice as many migrant species consume fruit during their stay in spring. Most bird-dispersed species in the gulf coastal plains bear their fruits in winter, and several species such as hackberry, yaupon, and others hold fruit well into spring. Other trees, including the American elm, mulberry, and mayhaw may time their fruiting to the passage of large numbers of migrants, who then disperse the tree's seeds long distances in a short time.

Epiphytes. An epiphyte is an "air-plant" that is attached to a shrub or tree branch but which gets most or all of its nutrients from the atmosphere. Common cheniere air plants include Spanish moss, ball mosses, resurrection fern, and lichens. They are important habitat features for migrants searching for food, both in winter and during migration seasons. More than 160 species of insects and spiders seek refuge in Spanish moss.

Water. Water loss can limit a bird's flight distance just as easily as a plane flying on an empty fuel tank. For birds making long nonstop flights, water loss can be a real problem. Most of the migrants that make landfall in chenieres are likely to be stressed, even when flying conditions are good. The birds often suffer from thirst, and are searching for the freshwater pools most chenieres contain.

Northern Parula.

Michael L. Gray

Summer Tanager.

Photo: Bill Goulet

"When you look at the broadest perspective, short-term advantages can be gained by exploiting the environment. But in the long term you're going to pay for it. Just like when you spend three days drinking in New Orleans and it'll be fun. But sooner or later you're going to pay."

--Joe Suhayda, LSU engineer, speaking about Louisiana's coastal erosion problems, 2004; (Gone with the Water, National Geographic Magazine, October, 2004)

Old-growth live oak. Other than a few cheniere woodlands, no forests anywhere in the state of Louisiana maintain their old-growth characteristics:

- super tall trees that rise above the cheniere canopy
- tree branches covered with epiphytes
- old, large trees with unique shapes
- a wealth of vine tangles, including large diameter vines
- frequent tree fall gaps
- diverse tree community
- large quantity of dead timber (fallen debris and snags)
- uneven age of neighboring trees.

When present, live oaks provide most of these assets to cheniere woods. The complex world of the live oak chenieres is so diverse that it can sustain a wealth of migrant species.

BIRDS OVER TROUBLED MARSHES

Given the pairing of songbird to cheniere, the decline of the coastal marshes has long been feared by scientists who monitor our migratory birds. And even those who do not know a flycatcher from a grosbeak or a warbler from a waxwing are joining in the fight to save the marshes and the chenieres that provide safe haven for millions of migrating birds. The threats that face the coastal marshes and chenieres come from both humans and nature.

Too Many People, Too Little Forest

The sheer number of people in Louisiana and the development we bring with us are taking a toll on the marshes and chenieres. The gulf coastal population from Texas to Florida is projected to increase from 14 million in 1988 to 18 million by 2010, an increase of 22%. As we develop the land, we lose old-growth forest, with its rich mosaic of giant trees scattered with patches of disturbed second growth. At present, only about 490 acres of cheniere woods in Louisiana is protected and managed for migratory birds. In lower Lafourche Parish, efforts are now underway to reestablish nearly 60 acres of cheniere forest as part of a coastal restoration project.

Photo: David Cagnolatti.

Chestnut-sided Warbler.

Sinking from Sight

All land forms—from the mountains to marshes—are in a state of constant change because of weather, climate, and human activity. Balanced between dry land and the open sea, our chenieres and wetlands are affected by hurricanes and other storms from the gulf and the building of levees and canals. Let's take a look at how storms and humans are changing the wetlands.

Levees. Through history, the regular flooding of the great Mississippi River has been the biggest factor in building the marshlands. Each year as the river flooded its banks, water and silt flowed outward from the river to nourish and rebuild the wetlands. When settlers came from Europe, they began to build levees to contain the river and prevent spring flooding. Although levees protect homes, businesses, and farms from flooding, they starve the marshlands of the water and sediment they need to rebuild. Unless the wetlands are refreshed by the river, they slowly subside into the sea. Since the 1930s, Louisiana has lost 1,900 square miles of coastal wetlands. The rate of coastal land loss today is about 16,000 acres per year. Picture a football field of prime wetlands sinking into the sea every 30 minutes, and you will have an idea how fast we are losing the marshland.

Canals. The network of canals that crosses the marshlands also has a major impact on the water throughout the wetlands. In order to recover oil and gas from under our coastal plain and supply our nation's need for fuel, we have dug hundreds of canals through the wetlands. The canals that run north and south bring salt water from the gulf straight up into freshwater marshes. Canals that run east to west can hold excess water on the wetlands. Both of these occurrences change the normal water conditions and can kill the plants that grow in the marsh and on the chenieres. There is also evidence that wetlands are sinking as a logical outcome of the removal of oil and gas from under the wetlands and chenieres.

Chenieres along remnant natural levees.

Hurricanes and the global climate. When deadly hurricanes move onshore, they rip up the wetlands and chenieres and erode the islands and shorelines of Louisiana. Hurricanes Katrina and Rita wreaked havoc by toppling vast expanses of forest and stripping foliage, vine tangles, epiphytes and insects from trees. Many live oaks were severely affected by these storms, appearing dead and denuded from the violent winds, but still standing in the wake of these horrific events. It was the oaks that helped prevent the loss of many homes along the coast.

Cheniere Today, Gone Tomorrow"

--Bumper Sticker, 1970s; (Baton Rouge Audubon Society)

As the global climate warms, these storms will increase in severity, changing both the structure of the forests and the mixture of plant species. Warming temperatures may also unlink the timing of bird migrations with the fruiting and flowering of key plant species, as well as the periodic surge of insect pests. Such a future would affect food supplies for migrants and may further reduce the health of forests along the coast.

Cheniere woods are tough and resilient, able to regrow after severe storms, floods and hurricanes; but it is too much to hope that they will persist under the waters of the Gulf of Mexico. Throughout coastal Louisiana, woodlands are already showing increased damage from sea-level rise and salt water intrusion. If this continues, most chenieres will be virtually wiped out and others will undergo long-term, perhaps irreversible changes, with profound impact on the migratory birds that depend on them.

SAVING THE CHENIERES, SAVING THE MIGRANTS

Erosion of Louisiana's coastal wetlands and the loss of our forests are huge threats to migratory birds. In these lands, Americas' avian port of call, millions of birds find refuge during their demanding journeys. Today, remnant wooded patches are more common than intact cheniere woods. The urban areas and agricultural landscapes that lie along today's coastal plain lack even the minimal habitat that birds require for stopping along their migration routes and are no substitute for the chenieres of the coastal plain should the chenieres be lost.

The millions of songbirds that migrate through Louisiana enrich human lives with their beauty. They also add to our economy in many ways. Each year, over 60 million Americans make time to watch them and spend millions of dollars doing so. Birds eat up to half their weight each day in insect pests and weed seeds. They play key roles in the spreading of pollen among plants and in spreading helpful seeds. We can and we must plan now to manage remaining patches of cheniere woods so that they will sustain migrating songbirds. If we do not act, silence may replace the voice of the songbirds in the wetlands and chenieres of Louisiana.

Female Yellow Warbler.

Michael L. Gray

What can you do? Take these steps to speak out for the songbirds:
Become more informed of the actions of local conservation groups in Louisiana including organizations like:

The Barataria-Terrebonne National Estuary Program - www.btnep.org - 800 259-0869
The Coalition to Restore Coastal Louisiana - www.crcl.org - 225 344-6555
Baton Rouge Audubon Society - www.braudubon.org/index.asp
Orleans Audubon Society - www.jjaudubon.net
Louisiana Bird Resource Center - www.lsu.edu/birdcenter
Louisiana Ornithological Society - www.losbird.org
Louisiana Wildlife Federation - www.lawildlifefed.org
The Nature Conservancy-Louisiana - www.nature.org/Louisiana - 225 338-1040
Gulf Coast Bird Observatory - www.gcbo.org 979 480-0999
Lake Pontchartrain Basin Foundation - www.saveourlake.org - 504 836-2215

These organizations are working on sound conservation projects for migratory birds and their habitats in Louisiana, the Gulf of Mexico, and in the tropics. These groups aim to:

- Preserve the best examples of cheniere woods.
- Develop techniques that will restore cheniere habitats.
- Protect old-growth trees and wooded habitats in urban landscapes of the coastal plains.
- Establish long term programs to monitor migrating birds on the gulf coast.
- Promote best management practices for sustainable forestry in coastal forests.
- Fight back against plant species like the Chinese tallow. They are a menace in wildlife refuges and on private lands throughout Louisiana's coastal plain.
- Work for responsible development in your parish.
- Fight to preserve green space in your community.

In addition, you should become aware of Louisiana's efforts to restore its coastal habitats. To learn more, visit www.lacoast.gov, www.crcl.org, and www.btnep.org. Finally, you should learn about landscaping your yard with native plants that are important to birds. For more information on landscaping with natives and their benefits, visit www.btnep.org.

By saving the coast, we save the cheniere woods and the migratory birds that depend on them.

More information exists regarding the natural history of Louisiana's cheniere habitats and their importance to birds. Go to http://birds.btnep.org to download a pdf of the larger version of this document.

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