



*Image: Keri Turner*



# HABITATS OF BTES

## Fastest Disappearing Land Mass on Earth: Description and Graphic of Habitats within the Estuary

All living creatures are directly tied to the habitats that sustain them. Barataria-Terrebonne contains some of the most diverse and fertile habitats in the world. The 4.2-million-acre wedge-shaped area between the Mississippi and Atchafalaya Rivers contains agricultural lands, forests, swamps, marshes, levees, islands, bays, bayous, ridges, and other habitats. Strictly speaking, the BTES consists of two different estuaries, Barataria and Terrebonne, separated by Bayou Lafourche which runs generally north to south. This estuary is the youngest part of the United States and was built by accumulating Mississippi River sediment over thousands of years.

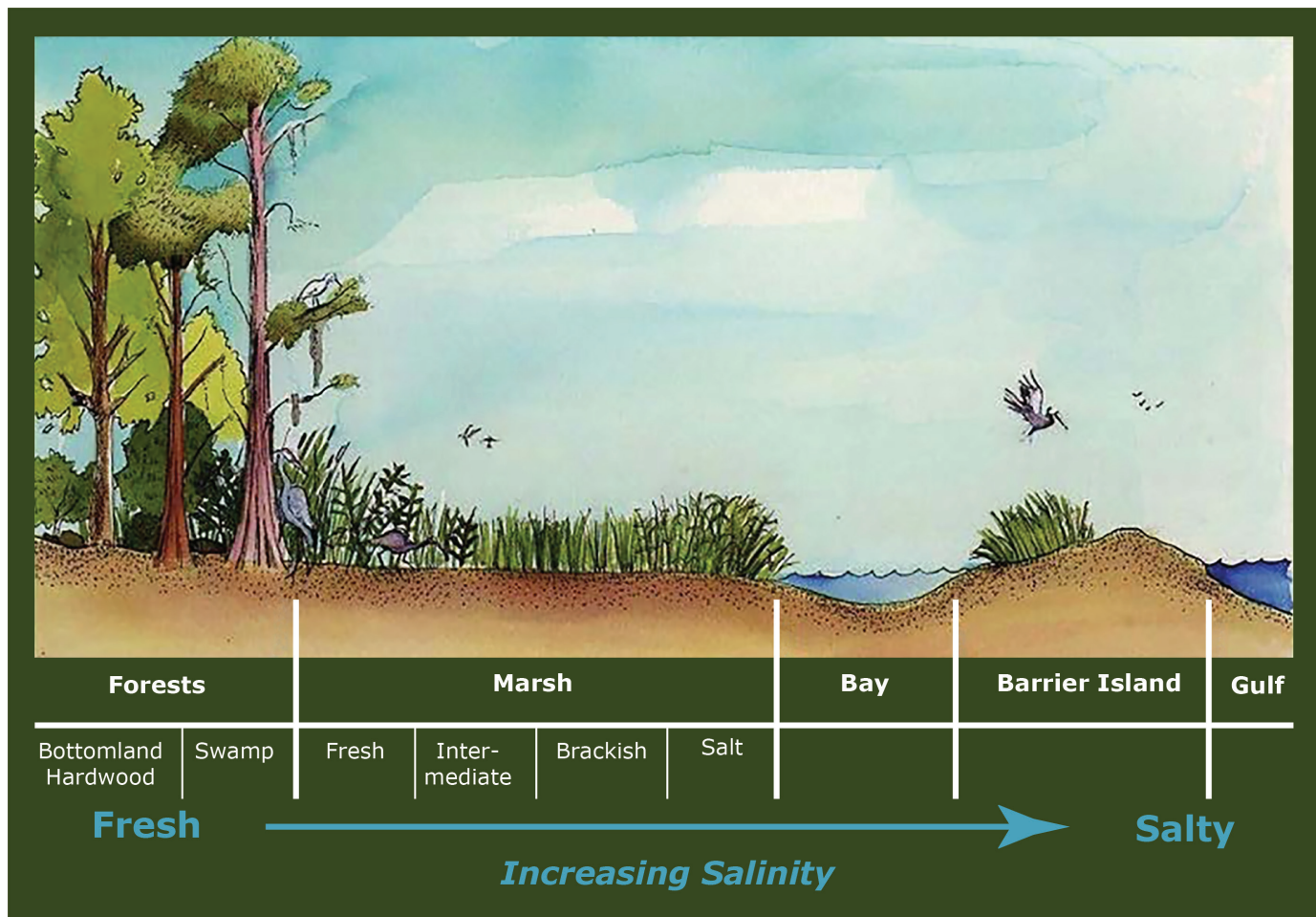
### **Agricultural Lands**

Starting at the northern most part of the estuarine system, the Mississippi River meets the uplands of the continent where the BTES extends north of Port Allen into Pointe Coupee Parish. The Mississippi River has ranged across this terrain countless times as it changed its path through time. In contrast to coastal areas, little danger exists of this land turning into open water. Although it is only 20 to 30 feet above sea level, it is the highest land in the BTES.

Much of the land in the northern part of the estuary is used for agriculture. The ridges are cultivated; sugar cane is the dominant crop. Soybeans, pecans, wheat, and corn are also important crops of this part of the estuary. Cattle are the primary range animal.

### **Forests**

The largest expanses of bottomland hardwood forests found in the BTES occur in the northern area east of the Atchafalaya Floodway. These seasonally or occasionally flooded forests support the largest number of tree and shrub species of any habitat in the system and include ash, hackberry, oak, and



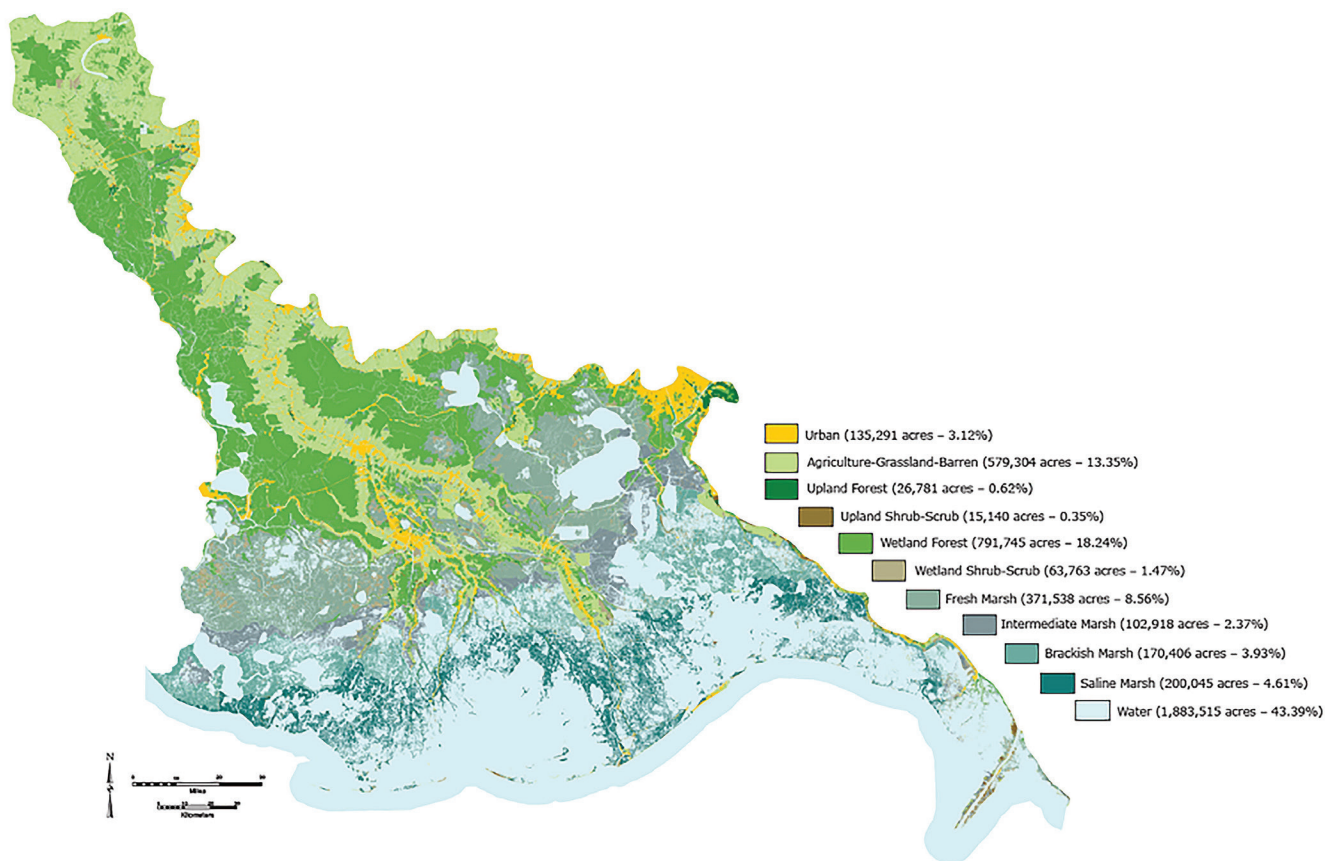
Diverse habitats within the BTES. Image: BTNEP

maple. These forests sustain Louisiana black bear and provide nesting habitat for bald eagles and migratory songbirds. They are also prize hunting areas for deer, squirrel, and wood duck.

Swamps occur in the BTES along stream bottoms like Choctaw Bayou and Bayou Corne. Swamps become more prevalent farther south where they surround large lakes like Verret and Palourde. The swamp is the dominant habitat in the part of the Barataria basin around Lac des Allemands and Bayou Boeuf.

The tranquil swamp with its tea-colored water, cathedral-like stands of bald cypress, and moss-draped water tupelo is a hallmark of Louisiana. The swamp is home to crawfish and choupique and is an ideal nesting habitat to herons, ibises, and egrets.

However, much of the swamps and bottomland hardwood forests in the BTES have been drained. About 200,000 acres of its forested wetlands have been converted for agriculture or urban use since the late 1950s, and many of the species that depended on



*Different environments of the BTES. Image: BTNEP*

these areas—such as the Louisiana black bear—are now rare.

## Marshes

Marshes that extend for miles are found farther south in the BTES. Marsh plant roots bind the soil, creating the fabric that holds the wetlands in place. Marshes also offer food and shelter to animals. Decomposed marsh plants are the foundation of this part of the estuary's food chain. The food chain begins with the

microorganisms that flourish on the decomposing plants. These microorganisms are a primary food source for many bottom-dwelling invertebrates that, in turn, provide food for small fish, shellfish, birds, and mammals. Marsh habitats can be divided into four zones that extend roughly parallel to the coastline: fresh marsh, intermediate marsh, brackish marsh, and salt marsh.

Fresh marshes are found mostly in northern marshes of the BTES near Lake Penchant, Lake Theriot,





*Marsh with a ridge of trees and vegetation adversely affected by salt water intrusion. Image: Lane Lefort Photography*

Lac des Allemands, and Lake Salvador as well as alongside the mouths of the Atchafalaya and Mississippi Rivers. Of all Louisiana marshes, fresh marshes accommodate the most diverse array of plant life, including such species as maiden cane, bulltongue, and spikerush. Fresh marshes are home to a broad range of animals such as frogs, turtles, ducks, alligators, muskrats, mink, otters, egrets, herons, and hawks.

Flotant marshes are an unusual feature in Louisiana. Some marshes survive the sinking of the land by floating when water rises. This ability of the marsh to break away from the underlying sediment creates the mysterious “trembling prairies” or “flotants” that are found in fresh and intermediate marshes throughout the BTES. The areas surrounding Lake Boeuf and Bayou Penchant exemplify floating marshes. Three quarters of the BTES’s fresh marshes are flotant. Some are so buoyant that they undulate when walked

on; others are so firm that it is difficult to tell that they are floating. Wildlife use the flotants frequently because they provide a “dry land” refuge in regions where flooding is frequent.

Intermediate marshes are found in areas where slightly salty water mixes with fresh water. Plants found in these marshes can tolerate infusions of slightly salty water and include a mixture of spikerush, wiregrass, three-square grass, arrowhead, and deer pea. Depending on the season, waterfowl, wading birds, marsh hawks, and fur bearers are commonly found in these habitats.

Intermediate marshes provide nursery habitat for brown shrimp, blue crab, gulf menhaden, and a variety of other commercially and recreationally valuable fishery resources. Intermediate marshes are located near Clovelly, Chauvin, south of Lake Salvador, and around Lake De Cade.



Brackish marshes are flooded by moderately salty water and vegetated by wire grass, salt grass, and other plants. The BTES's brackish marshes stretch across the system in a band that includes Fourleague Bay, Galliano, Golden Meadow, and Little Lake. Louisiana's fisheries rely on the productive vitality of brackish marshes. Blue crab, shrimp, speckled trout, and redfish flourish in brackish marshes as do muskrats, raccoons, mink, otters, and other mammals.

Salt marshes occur where salinity is highest in a band that stretches from the Gulf Coast, along the edges of Barataria and Terrebonne bays, to north of Leeville and Cocodrie. The Gulf regularly floods salt marshes, creating conditions where oyster grass is common, but few other plant species survive. To thrive, redfish, speckled trout, blue crabs, and shrimp must move in and out of the salt marsh at different stages in their life cycles. After these species spawn offshore, larval and juvenile fish and shellfish move through the passes into the estuary where they feed and grow. The young tend to reside in shallow water

along marsh edges for access to food and protection. As they mature, juvenile fish and shellfish move into deeper and more open water.

The valuable functions that marshes perform are threatened by changes to the natural system of the BTES. Just as we need clean air to breathe, good food to eat, and a healthy heart to circulate oxygen, most tidal marshes need the ebb and flood of the tide as well as infusions of sediment to stay healthy.

## Bayous

The bayous of the BTES are slow moving channels of water that are often old distributaries of the Mississippi River's abandoned channels. Bayous are primarily fresh water at the northern stretch of the waterway but can be subjected by tidal influence that can cause salt water intrusion. In addition to providing drinking water for many residents, bayous provide a natural habitat for many species of plants and animals. Bayou life is as varied as tiny mosses



*Bayou Lafourche during the annual BTNEP paddle. Image: Lane Lefort Photography.*



to huge cypress trees, wading birds, and alligators. Bayous provided the main means of transportation prior to the train and automobile and now act as backyard vistas for many residents.

## Levees

The natural plumbing of the BTES has been altered in many ways. Levees were built with the intent of protecting families and local livelihoods. The ground floor of many homes and businesses are five feet below sea level in places like Paradis and only 15 feet above sea level in some “higher” areas like Thibodaux and the westbank of New Orleans.

The only natural land more than 20 feet high in the region is located north of Donaldsonville. Because communities are built on such low-lying land, most of the BTES’s people are surrounded by flood protection levees. Massive levees contain the Mississippi and Atchafalaya Rivers, and smaller levees protect the swamp sides of towns and cities. Morgan City is completely ringed with levees as are the westbank towns of Westwego, Gretna, and Belle Chasse.

Levees define the boundaries of small communities that extend south of Thibodaux on Bayou Lafourche and along the smaller bayous south of Houma. Levees can prevent water from draining naturally, so residents must depend on pumps to keep their homes dry during heavy rains. Today, drainage problems are still a defining feature for life in the BTES. Artificial levees, which now extend along the entire length of the lower river, prevent sediment and water from being spread into the marshes and swamps, and most of the sediment is lost to deep water in the gulf.

## Ridges

Although not very high, the ridges are perhaps the most important part of the estuarine system for humans because they provide limited protection from flooding. Some ridges that run north to south in the BTES mark the locations of old river channels and are the primary location where residents have built their homes. Each of these channels and associated ridges began as a short and efficient pathway for water to reach the Gulf.



*Camps and homes near Elmer's Island. Image: Lane Lefort Photography.*



Small maritime forests and associated ridges are found on Grand Isle and Cheniere Caminada. These habitats represent one of many unique habitats in the BTES. These live oak communities offer resting areas during spring migrations for birds such as tanagers and warblers returning from wintering grounds. BTNEP has worked for years to help advance restoration of these unique habitats.

Low ridges and canal banks in the marsh that are too narrow to be developed also provide important habitat for birds, reptiles, and mammals such as songbirds, alligators, rabbits, deer, and squirrels.

## Bays

Bays are inlets of the Gulf of Mexico which usually connect to marsh and to the ocean. In the past, navigable narrow waterways connected marshy areas to the coastline. Bays provide safe nursery grounds for many species of shellfish and fish. Changes to the hydrology have caused huge land loss issues and have turned small protected bays into large expanses of open water.

## Barrier and Headland Beaches

The southernmost portion of the BTES is bounded by beaches and chains of barrier islands: Isles Dernieres, the Timbalier Islands, the Caminada-Moreau Headland, Grand Isle, and the Plaquemines shoreline. With their fine sand beaches, low dunes, shallow nearshore waters, deep passes, and back-barrier marshes, the islands protect coastal bays from waves and storm surges. Juvenile fish seek refuge in the shallows behind the barrier islands. These sand-bottomed areas are unique to barrier islands and are prime feeding grounds for anchovies, menhaden, mullet, shrimp, crabs, and fish; during warm months, redfish are found in the deep passes and speckled trout in the surf.

## Urban/City/Rural Areas

The primary location where residents have built their homes is along banks of bayous and near higher

Examples of Ecosystem Services	
Ecosystem Resource	Uses
Clean Water	Drinking water, cooking water, water for bathing, water for cleaning, and water for gardening and for food production
Plants and Animals	Food such as shrimp, crab, oyster, fish, crops, animals and food from hunting
Timber	Home building, heating, carbon sequestration or storage, and climate regulation
Fuel	Oil and natural gas to power cars and homes
Plants for Clothes	Plants like cotton made into clothes
Pollinators	Bees and other pollinators for food production
Decomposers	Worms and other decomposers for removing organic wastes
Wetlands	Water purification, home to a host of animals and plants, flood control, storm wave reduction, recreation opportunities, carbon storage, climate regulation, cultural resource, recreation, and habitat for fish, birds, mammals, and many other organisms (biodiversity)

ground. Areas throughout the Barataria-Terrebonne Estuary (BTE) consist mainly of small towns, communities, and neighborhoods. The westbank of the Mississippi River near New Orleans is the primary exception; this area acts as a suburb to New Orleans.

The larger communities in the estuary include: Houma, Marrero, Harvey, Gretna, Thibodaux, Belle Chase, Morgan City, and Raceland.

Most of the residents in the BTES live in rural communities influenced by their native surroundings and complex blend of cultures.

## BTE: the Fastest Disappearing Land Mass on Earth

No other place on Earth is disappearing as quickly as the BTES where, “on average,” a football field of wetlands turns into water every hour. In 2010, the USGS calculated the land loss rate in Louisiana to be 16.57 mi<sup>2</sup> per year.

The BTNEP area has lost 865 square miles of land since 1935. That equals to loss of the land that includes: Hollywood, CA; Disney World, FL; Disneyland, CA; Washington, D.C.; New York, NY; and New Orleans, LA.

Not only was the land lost but the effects on ecosystem services and the human dimension continues to be an ever present limiting factor. So what are ecosystem services anyway? “Ecosystem services” is a term

Square Miles	
Barataria Basin Land Loss	415.80
Terrebonne Basin Land Loss	449.57
<b>Total Land Loss</b>	<b>865.37</b>
Hollywood, CA	3.51
Disney World, FL	40.00
Disneyland, CA	47.00
Washington DC	68.34
New York, NY	304.60
New Orleans, LA	350.00
<b>Total Landmass</b>	<b>813.45</b>

scientists use to describe how people benefit from the healthy land and water. Louisiana has abundant resources that come from our land and water. These resources provide humans with provisions or necessities for living.

All natural resources are also important in providing cultural resources and fostering creativity. Healthy natural resources provide motivation for humans to be creative through their interactions with nature that spark music, art, dance, and architecture, to name a few.

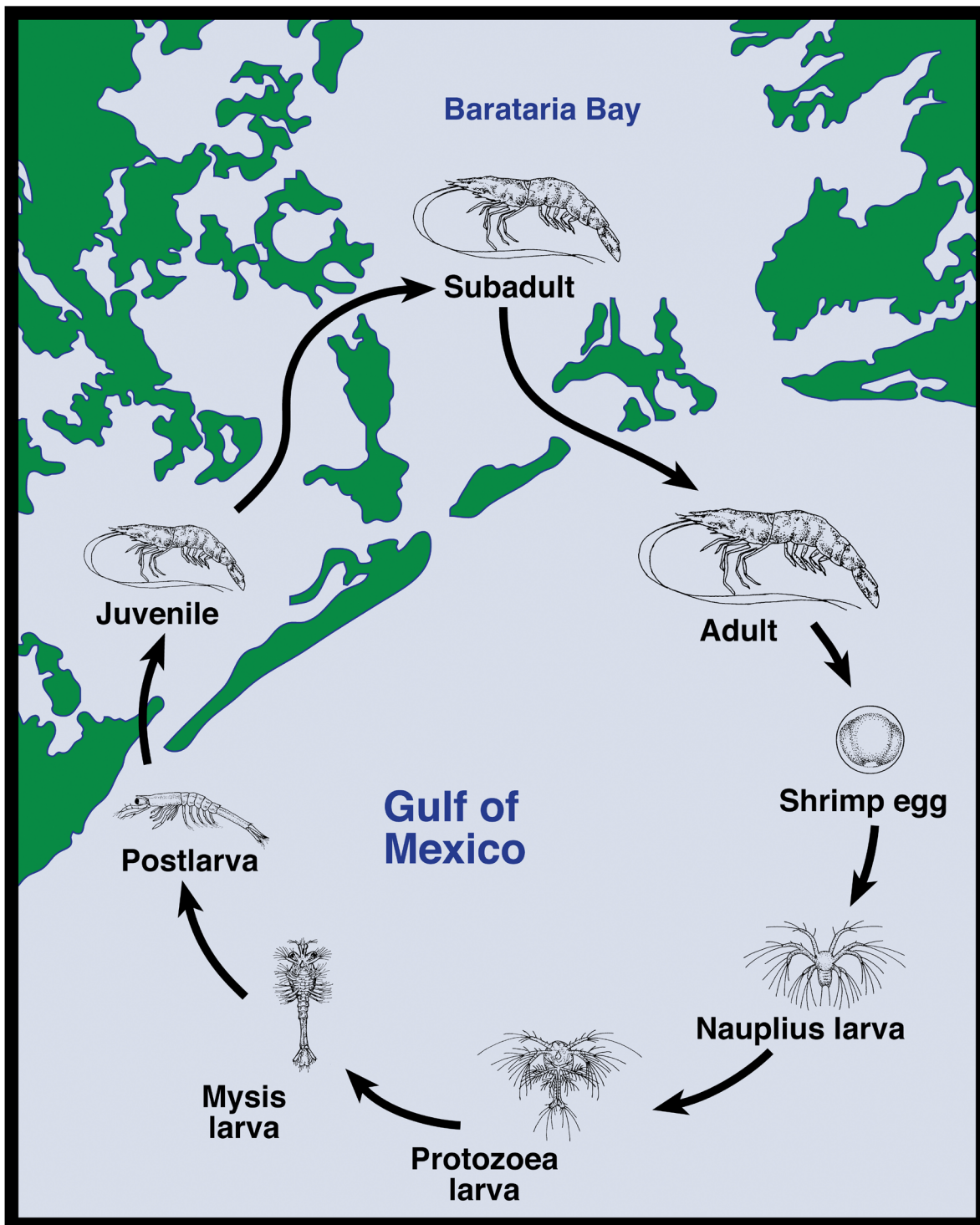
In the process of this land loss, we are losing not only valuable resources but also a natural flood protection system that absorbs storm water before it can harm low-lying communities. Many have heard about the alarming land loss rates so many times that locals have begun to take them for granted, even as we worry every year about flooding. Fortunately, residents of the estuary can save our “terre bonne,” or “good earth,” and our ways of life if we work together and make smart choices. BTNEP invites

citizens to join this effort now while we still have time to make a difference.

As part of this program, citizens throughout the region are tackling difficult problems. Questions abound: “How can we stop land loss in the BTES? How much fresh water and suspended sediment from the Mississippi and Atchafalaya Rivers can be diverted into the area? What can we do to maintain an abundance of fish and wildlife? How can we ensure that we have clean water to drink?”

This document presents recommendations for action that will help answer these questions by providing information about protecting the landscape, people, and wildlife that make up the BTES. By understanding the challenges facing the estuarine system, we, as a community, can decide how the national treasure that is the BTES should be protected, for ourselves, for our children, and for the nation.





## THE LIFE CYCLE OF A SHRIMP

*Shrimp are dependent upon intermediate marshes, using them as nursery habitat. Image: Sea Grant Louisiana*