

A photograph of a swampy forest. In the foreground, a fallen log lies horizontally across the water. The water is covered with green lily pads. The background is filled with tall, slender trees, many of which have Spanish moss hanging from their branches. The lighting is bright, suggesting a sunny day.

TEXAS TREASURES  
WETLANDS

# Wetlands

## a vanishing treasure?

Imagine...

Rivers laden with silt  
and debris

Migrating birds without a  
place to rest

Young fish without food  
and shelter

Imagine Texas without  
wetlands

Wetlands are more important than you might imagine. They are one of Texas' most valuable natural treasures. Wetlands provide flood protection, improve water quality and provide millions of dollars in economic benefits each year. Yet, Texas has lost more than half of its wetlands in the past 200 years. Texas wetlands have been drained, filled, used as dumps and generally misunderstood.



WETLANDS ARE THE IN-BETWEEN PLACES WHERE THE WATER MEETS THE LAND.

THEY ARE LARGE AND SMALL, PERMANENT AND ONLY OCCASIONAL, ON THE COAST OR IN THE DESERT.

WETLANDS ARE SHORELINES, MARSHES, MUDDY SWAMPS OR STREAM BANKS.

WETLANDS ARE MORE THAN SIMPLE SWAMPS OR PONDS. THEY ARE COMPLICATED ECOSYSTEMS THAT WORK FOR ALL LIVING THINGS EVERY DAY, ALL THE TIME.

LIFE GATHERS AROUND WETLANDS, AND WETLANDS SUPPORT LIFE.

TEXAS WETLANDS ARE ONE OF OUR MOST PRECIOUS AND THREATENED ENVIRONMENTAL TREASURES.

## TYPICAL WETLAND FEATURES:



▲ *WATER that stands or flows gently through low areas for at least part of the year*

▲ *PLANTS that have adapted to life in wet environments*

▲ *SOILS that develop in oxygen-poor conditions and are saturated for at least part of the year*

### COASTAL WETLANDS

Salt water or a combination of salt and fresh water mixed together

Plants that have adapted to changes in salinity

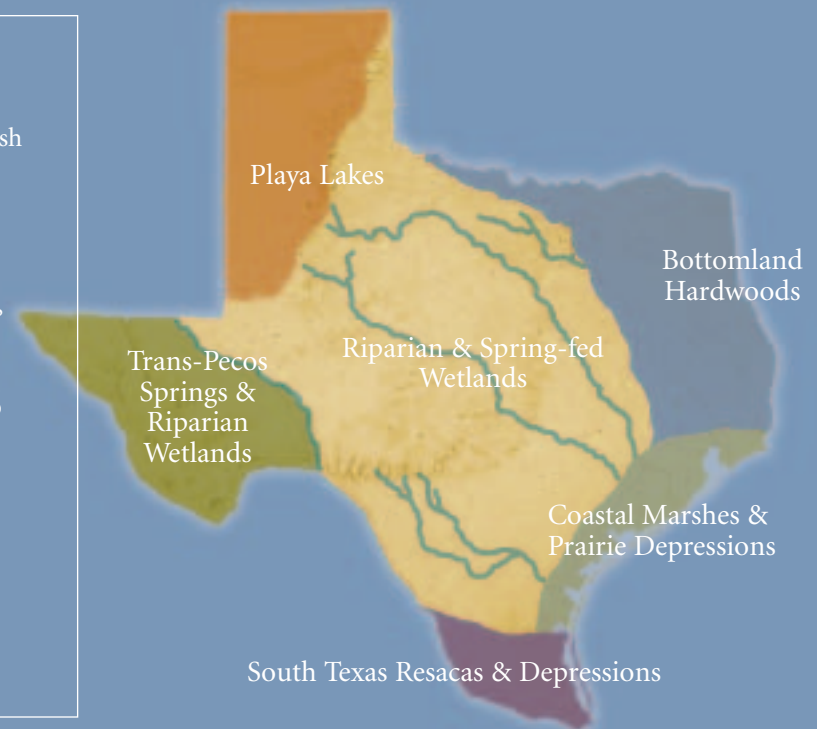
Coastal shorelines, shallow bays and inlets, swamps, marshes, mud flats and deltas

### FRESHWATER WETLANDS

Rainfall, springs, rivers and other sources

Plants that survive fluctuating water conditions

Riverbanks, streambanks, lake shores, floodplains, bottomlands, marshes, seeps, ponds and swamps





Up to 90% of Texas' salt and freshwater fish species depend on wetlands for food, spawning and nursery grounds.

Texas is one of North America's most important waterfowl wintering areas. Every year, as many as 5 million migrating birds depend on Texas' wetlands for food, water, shelter and nesting areas.

The U.S. Fish and Wildlife Service estimates that up to 43% of North America's threatened or endangered species depend on wetlands for survival.

# Why are Wetlands so important

Different parts of wetlands do different jobs. Some jobs are **physical**, such as capturing sediments (soil and debris) during a flood; others are **chemical**, such as breaking down pollutants; still other jobs are **biological**, such as providing nursery and spawning grounds for fish and habitat for wildlife.

Wetlands provide many benefits to people as well, making our lives easier and safer.

## THE BENEFITS OF WETLANDS

### IMPROVE WATER QUALITY

Wetlands absorb and filter sediments, nutrients and other natural and man-made pollutants that would otherwise damage rivers, lakes and streams.

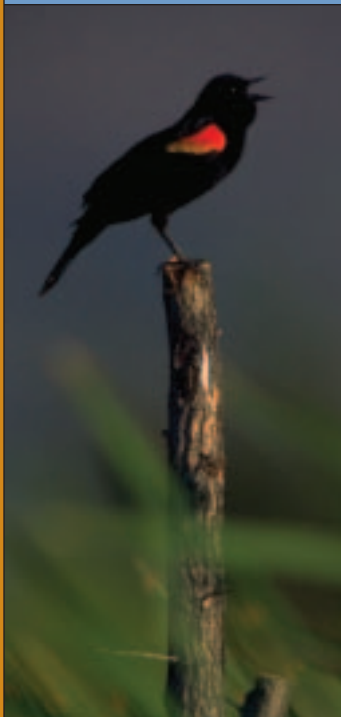
### SUPPORT THE FOOD WEB

Because wetlands trap and hold nutrients, they increase the food supply all the way up the food chain: from aquatic invertebrates and shellfish to

forage fish to larger predatory fish to birds, mammals and people.

### PROVIDE HABITAT

Wetlands provide both temporary and permanent homes for thousands of species of fish, mollusks, birds, amphibians, reptiles, mammals and insects. These animals, in turn, provide us with clues about the health of the ecosystem and its water quality.





## REDUCE FLOOD DAMAGE

During a flood, the force of the water flowing through an area often causes more damage than rain and wind combined. Wetland plants help stem the flow, reducing erosion and, over time, slowly releasing floodwater into rivers, streams, underground aquifers and the atmosphere. Protecting wetlands saves up to \$30 billion a year in flood-related repair costs in the United States alone.

## REDUCE POLLUTION

Wetlands trap oil, nitrogen, phosphorus, sewage and other pollutants. Because wetlands naturally help break down and absorb pollutants in the water, wetlands save cities and towns up to \$1.6 billion a year in clean-up costs to water supplies.

## CONTROL EROSION

Sediments settling in rivers and streams can kill aquatic animals and damage habitats. They can also clog waterways creating problems for boats and barges trying to navigate through the water. Wetland vegetation helps maintain a natural and healthy shoreline.

## RECHARGE GROUNDWATER

In many parts of Texas, water is stored naturally underground and is called groundwater. Water may be held in the tiny spaces between soil particles or in large underground caverns. Many areas of Texas depend on groundwater for drinking and irrigation. Wetlands help water seep into these underground reservoirs.



## HELP CREATE JOBS, PRODUCTS

Many of the natural products we buy or sell—from fish, shrimp and trees to crops like rice—depend on wetlands, too. Wetland-related businesses generate hundreds of millions of dollars each year.

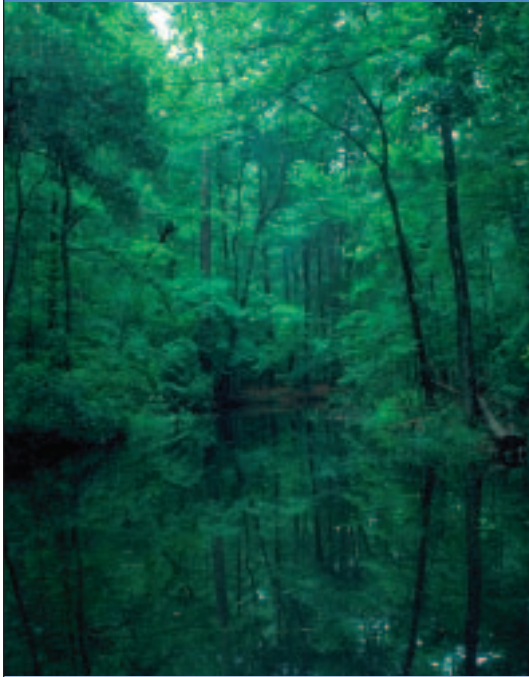
In 1992 alone, the wetland-dependent shrimp harvest had a dockside value of \$145 million.

## PROVIDE FUN AND RELAXATION

Texas is known around the world for great hunting and fishing. Without healthy wetland habitats the fish, birds and game animals would simply not be here. Wetlands are also enjoyed by millions of photographers, boaters, hikers and wildlife watchers who enjoy the natural beauty that wetlands provide.



## EAST TEXAS WETLANDS



**BOTTOMLANDS** in East Texas include forested wetlands, swamps, marshes, seeps and oxbow lakes.

Flooding rivers and streams shape bottomlands and affect the number and type of plants here. Bottomland plants help hold soil in place, preventing erosion and filtering pollutants from water.

Look for these plants and animals:

Bald Cypress • Water Oak • Willow Oak • Overcup Oak • Water Hickory • Green Ash • Pecan • Possumhaw Holly • Buttonbush • Planertree • Swamp Privet • Smartweed • Arrowhead • Sedge • Bladderwort • Cutgrass • Arrow Arum • Lizard's Tail • Spiderlily

Mallard • Wood Duck • Eastern Wild Turkey • Pine Warbler • Red-eyed Vireo • Swamp Rabbit • Gray and Fox Squirrel • Raccoon • River Otter • Beaver • Alligator • Snapping Turtle • Water Moccasin



Did you know?

101 species of birds breed in East Texas.

116 species of fish inhabit East Texas bottomlands during seasonal flooding.

## GULF COAST WETLANDS



William A. White

**GULF COAST WETLANDS** are defined by their mix of salt and fresh water, although sometimes the water is entirely fresh. Coastal wetlands provide habitat for millions of migrating waterfowl and protection from storms that erode the shoreline. Bays and estuaries are nursery and spawning areas for marine species and habitat for oysters and clams that filter tons of pollutants out of Gulf Coast waters.

**TIDAL WETLANDS** include barrier islands, tidal flats, bays, marshes and bayous.

**PRAIRIE DEPRESSIONS AND FORESTED WETLANDS** are found just outside of the tidal zone.

Look for these plants and animals:

Shoalgrass • Widgeongrass • Manateegrass • Turtlegrass • Mangrove • Sedge • Rush • Cattail  
Sandpiper • Plover • Red-winged Blackbird • Flounder • Redfish • Spotted Sea Trout • Kemp's Ridley Sea Turtle • Crab • Oyster • Clam • Mussel • Shrimp



Did you know?

Coastal wetlands support 60-90% of the commercial fisheries in the U.S.

Saltwater fishing in Texas generates \$2 billion annually.

## SOUTH TEXAS WETLANDS



**SAND SHEET WETLANDS** are small isolated depressions. They are found in places where wind exposes clay soils that trap and hold rain water. These depressions often provide the only fresh water for wildlife in a normally dry environment.

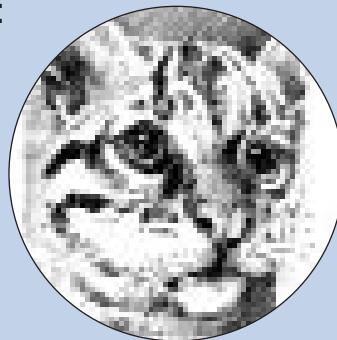
**RESACAS** are former channels of the Rio Grande River that have been cut off from the river and filled with silt and water creating marshes and ponds. Because most sand sheet wetlands and resacas are ephemeral (short-lived), the

plants and wildlife using them vary seasonally depending on the quantity and quality of the available water.

Look for these plants and animals:

Duckweed • Saltmarsh Spikerush • Common Cattail • Smartweed • Live Oak • Wax Myrtle • Plantain • Silverleaf Sunflower • Panic Grass

Greenjay • Caracara • Grooved-bill Ani • Red-winged Blackbird • Swallowtail Butterfly • Leopard Frog • Indigo Snake • Catfish • Sunfish • Bobcat • Ocelot



## HIGH PLAINS, ROLLING PLAINS WETLANDS



**PLAYAS** are shallow, depressional wetlands that are generally round and small, averaging 17 acres in size. They naturally fill with water periodically from rainfall. They produce a highly diverse plant community that provides important habitat for waterfowl and other birds which migrate and winter in the region. Most playa lakes are surrounded by agricultural fields. This situation can create a number of impacts on playas including pesticide and fertilizer runoff, contaminants from feedlot runoff, overgrazing and sedimentation.

**RIPARIAN WETLANDS** occur along banks of creeks, rivers and lakes. In an otherwise open prairie, riparian wetlands provide food and cover for many birds and animals.

Look for these plants and animals:

Spikerush • Curly dock • Bulrush • Cattail • Smartweed • Pondweed • Woolyleaf Bursage • Barnyard Grass • Plains Cottonwood • Buttonbush • Nettleleaf Hackberry • Native Plum • Roughleaf Dogwood

Long-billed Curlew • American Avocet • Killdeer • Mountain Plover • Lark Bunting • American Kestrel • Bald Eagle • Coyote • Fox • Raccoon



## CENTRAL TEXAS WETLANDS



**SPRING-FED WETLANDS** are pools and seeps (places where water oozes from the ground) shaped by rock, soil and rainfall. Rain water slowly percolates through limestone layers into underground water reservoirs or aquifers. Springs occur where faults, fissures and other cracks in the limestone allow the water from the aquifer to reach the surface. (The Edwards Aquifer; just one of many aquifers in Central Texas, provides drinking and irrigation water as well as recreational opportunities for millions of

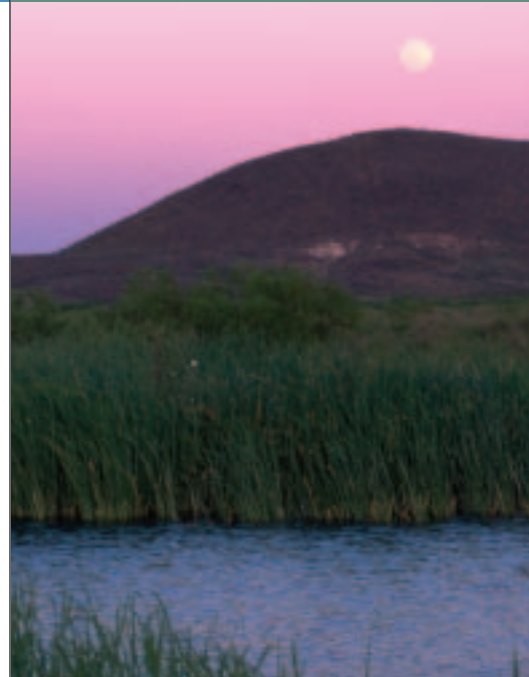
people.) **RIPARIAN WETLANDS** line many streams and rivers in Central Texas, offering food and cover for wildlife.

Look for these plants and animals:

- Bald cypress • Pecan • Possumhaw Holly • Smartweed • Sugarberry • Boxelder • Buttonbush • Black Willow • Marsh Purslane • Water Pennywort • Cattail
- Salamander • Cricket Frog • Gulf Coast Toad • Grebes • Blue Heron • Green-backed Heron • Kingfisher • Deer • Raccoon • Opossum



## TRANS-PECOS WETLANDS



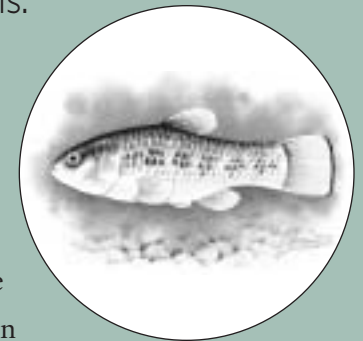
**CIÉNEGAS** are small, isolated spring-fed wetlands that occur only in desert areas of far West Texas.

In the Guadalupe Mountains, the Chisos Mountains and in other rugged highland areas of West Texas, **MOUNTAIN SPRINGS** create small wetlands in higher elevations.

Ciénegas and mountain springs provide water for plants and animals that don't normally survive in the desert, giving the desert a diversity of wildlife that attracts many visitors each year.

Look for these plants and animals:

- Cattail • Alkaline Sacaton • Sedge • Rush • Desert Willow • Cottonwood
- Pyrrhuloxia • Great Horned Owl • Vermillion Flycatcher • Bullock's Oriole • Jackrabbit • Blotched Watersnake • Rio Grande Tetra • Round-nosed Minnow • Catfish • Green Sunfish • Comanche Springs Pupfish







# Are Texas wetlands a vanishing treasure

Land managers estimate that Texas has lost more than 7 million wetland acres (nearly the acreage of Dallas, Fort Worth, Houston and San Antonio combined).

How does this happen?

## CONVERTING WETLANDS TO OTHER USES

In the past, people who drained and filled wetlands felt they were reclaiming the land for more “useful purposes” such as: cropland or pastures; roads, homes and businesses; waterways, canals and reservoirs. Today, being able to identify and understand the benefits of wetlands could modify development decisions. This will ensure that wetlands exist in future years for the benefit of all Texans and for the plants and animals that support us.

## POLLUTING OUR WATER RESOURCES

Although most Texans recognize the danger of toxic chemicals being dumped in our waterways, few realize that when it rains, water running off city streets, fertilized lawns, landfills and some agricultural fields can contain high levels of chemicals that damage many wetland plants and animals. In addition, when plants are removed from the sides of rivers, lakes or streams by overgrazing or development, soil is easily washed into the water, covering up aquatic habitats and destroying many plants and animals.

Look around.  
What's happening  
in YOUR  
neighborhood?

Look for wetlands in your community and when you travel. LEARN ALL YOU CAN ABOUT WETLANDS and the plants and animals that inhabit them.

USE NATIVE PLANTS when landscaping homes and businesses. Native plants usually require less water, pesticides and fertilizers.

Save more water for wetlands by fixing leaking faucets, using appliances and fixtures that USE LESS WATER and not overwatering your yard.

Encourage developers and city planners to PRESERVE NATURAL WETLANDS in new developments and to use permeable surfaces for parking lots so that rain water can seep slowly into the ground instead of running off.

BE AWARE of proposed zoning changes, drainage projects and United States Army Corps of Engineers permit applications in your community and find out if wetlands will be affected by developers.

Recognize and support PRIVATE LANDOWNERS who are involved in preserving wetlands on their property.

CONSIDER ADOPTING a wetland area as a school, class or community project.



*You can save our wetlands.*

# Wetlands Protection



Since the 1970s, the federal government has supported wetland protection and restoration. In Texas, agencies such as the Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency and the General Land Office implement wetland conservation programs and partnerships.

TPWD's State Wetlands Conservation Plan encourages and supports landowners who want to protect and restore wetlands on their property.

The Playa Lake Joint Venture and the Gulf Coast Joint Venture bring together representatives from state and federal wildlife agencies, corporations, non-profit groups, landowners and educators to protect and restore wetland habitat.

## FOR MORE INFORMATION ABOUT WETLANDS:

The Environmental Protection Agency (EPA)'s web site is a remarkable resource for all issues relating to wetlands and their conservation.

[www.epa.gov/](http://www.epa.gov/)

For wetland education materials, go to:

[www.epa.gov/gmpo/education/index](http://www.epa.gov/gmpo/education/index)

The Texas Parks and Wildlife Department web site has a wealth of information about Texas wetlands with maps, photos, a short video and links to other informative sites as well as the Wetlands Assistance Guide.

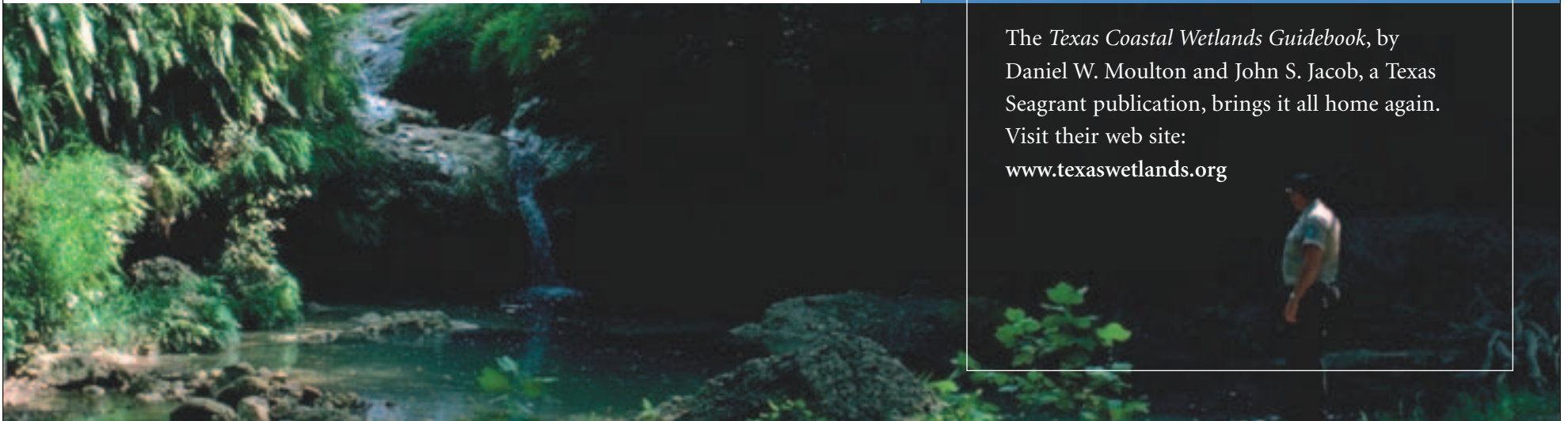
[www.tpwd.state.tx.us/wetlands/](http://www.tpwd.state.tx.us/wetlands/)

The Texas General Land Office has a web site called Wet Net, the Texas Wetland Information Network. [www.glo.state.tx.us/wet-net/](http://www.glo.state.tx.us/wet-net/)

The *Texas Coastal Wetlands Guidebook*, by Daniel W. Moulton and John S. Jacob, a Texas Seagrass publication, brings it all home again.

Visit their web site:

[www.texaswetlands.org](http://www.texaswetlands.org)





Published by the Texas Parks and Wildlife Department through a grant from the Environmental Protection Agency, Region 6. Written by Karen Stephenson, Ann Miller and Nancy Herron. Reviewed by Jeff Raasch, Rollin Macrae, Tom Heger, Jennifer Key, Brenda Justice, Steve Campbell, Christina Conner and Vicki Sybert.

Photos from Texas Parks and Wildlife Department unless otherwise noted. PWD BK K0700-908 8/03