

Oklahoma WETLANDS

Wet, Wild and Wonderful



Introducing you to Oklahoma's wetlands
in a way that is easy to understand, is
interesting and puts you knee-deep in fun.

Oklahoma Wetlands

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Remember those days when you were a kid and loved playing in a mud puddle. It felt so weird, yet so wonderful to squish your toes in the water, in a wetland. Whether you're young at heart or young of age, wetlands make the perfect place to explore and learn life lessons, to appreciate and protect its many forms of wetness and wildness.

The soggy, boggy wetlands of Oklahoma allow you to get up close and personal with nature. You can watch a bug walk on water, listen to a bullfrog holler for his mate, touch the fuzzy navel of a cattail or stick your nose to the wetland's edge and smell its sweet, misty dampness.

Not too many students know that Oklahoma's wetlands are more common than its tallgrass prairies, more varied than its mountains and as important to wildlife as its forests. Just scoop up a handful of mud from a wetland's bottom and let the mud run through your fingers. You've just stuck your hand into history thousands of years old, the remains of fish, birds, mammals, insects, grasses, leaves, seeds and flowers. These decaying bits, which smell like rotten eggs, have settled for years and make the soil that will nurture future generations by providing balance to our ecosystem.

This teachers brochure introduces you to Oklahoma's wetlands in a way that is easy to understand, is interesting and gets you and your students involved. Through hands-on projects, students will learn how to recognize wetlands, understand the value of wetlands and take responsibility for protecting nature. Plus, they'll learn the basics. Wetlands are a great way for you to creatively study history, math, science, social studies and language arts. You can easily adapt the projects to include the class, whole family or community. And remember, it's a great excuse to take off your shoes and squish your toes in the mud. Come join us as we take a walk on the wild side through the wonderful world of wetlands.

Wet + Land = Wetland

We don't want to "bog" you down with too many facts on the definition of a wetland. So to keep it simple, a wetland is land and it's wet and it's in-between, not just between your toes, but between the earth's ecosystems. Wetlands attract water because they consist of low or depressed areas of land.

There are more than 50 definitions of a wetland, but the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency use this official definition:

"Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include bogs, marshes and swamps."

Wetlands house much more than weeds and water. They provide homes to more than 5,000 species of trees and plants and provide shelter to birds, fish, amphibians, reptiles and mammals. They are also the source of many superstitions and legends, inspiring such stories as that of a hairy monster that kidnaps children venturing too close to the swamp. There's really no boogeyman just a misunderstanding of what a wetland is.



There are many kinds of wetlands, and all are unique.

- ★ **BOGS** - Covered mostly with thick blankets of plants and spongy mosses, known as floating mats of vegetation. Walking on a bog is like walking on a waterbed! It's springy. Each step shakes the whole bed. Sometimes bogs have a pond in their center. Most are located in glaciated areas of the north and central states. In these mountain lakes, the water is still and cold and contains so little oxygen, few animals live there. They come only for a brief visit.
- ★ **MARSHES** - Have no trees, but are filled with many plants, including grasses, sedges, cattails, water lilies and orchids. They have soft muddy bottoms where many plants take root. The depth varies from 6 inches to 3 feet deep. The water level changes with the season, rising in the spring and falling in the summer. Watch out for the alligators!
- ★ **SWAMPS** - When marshes fill with soil and water becomes shallow, trees root here and it's called a swamp. Water depth ranges from standing water to a foot deep. Trees, such as black spruce, red maple and mangrove, love this highly organic swamp soil called "black muck."
- ★ **DON'T FORGET** - Roadside ditches, shallow muddy ponds, bottomlands or wet meadows. They also work as wetlands filled with waving cattails and frolicking frogs.



Pass the salt please.

Just as our tastes vary, so do the taste of wetlands! There are inland (freshwater) wetlands and coastal (saltwater) wetlands scattered all over the earth. Some stretch as far as you can see; others are as small as a puddle. Some stay wet year-round, others just part of the year.

- ★ **COASTAL (SALTWATER) WETLANDS** - They are called the prairies of the coasts. A sea of grasses characterizes these wetlands, found extensively between the coasts of southern Massachusetts and northern Florida. These saltwater prairies are intersected by tidal creeks that rise and fall with the tide. Many fish and animals have adapted a taste for salty water and thrive in these wetlands, animals such as blue crabs, fiddler crabs, great blue herons, raccoons, snails, ducks, brown pelicans and American crocodiles.
- ★ **INLAND (FRESHWATER) WETLANDS** - Inland wetlands are associated with ponds, lakes and streams. The difference between a lake and a pond is size and depth. Lakes are much deeper than a shallow pond. In a freshwater wetland, you'll find largemouth bass, bullfrogs, salamanders, green-backed herons, beavers, muskrats, snapping turtles and snakes. You'll also enjoy the shade of many trees, such as cypress, willow and sycamore.

Welcome to the Water's Edge

Let's meet some of the critters that call the wetlands their home.



- ★ More than 150 species of **BIRDS** find a place to nest and rest in wetlands and depend on wetlands to survive. Look to the sky! Depending on the time of the year, you'll probably see a belted kingfisher, willow flycatcher, ducks, geese, hawks, snowy egrets and sparrows. Watch as the great blue heron, with his long legs, wades the water looking for his dinner or listen to the persistent woodpecker. He just won't give up and the owls, well everything in the wetlands is a hoot!



- ★ As many as 200 species of **FISH** live in lakes, ponds, streams and wetlands. In Oklahoma, you'll find largemouth bass, bluegill, trout, gar and catfish. Shrimp, oysters, clams and other shellfish begin their life in coastal wetlands.



- ★ Wetlands are favorite roaming places for all kinds of animals. **RACCOONS** dig up a worm, rub it around in the water and give it a good washing before devouring it for lunch. **BEAVERS AND MUSKRATS** live all their life in wetlands, as do amphibians such as **TOADS, NEWTS, SALAMANDERS** and **SNAILS**. **BUTTERFLIES** flit and flutter from tree to tree, chased by the buzz of a **BEE** and the threat of a **DRAGONFLY**, whose name is much scarier than its sound. And those bitsy, but itchy **MOSQUITOES**, they love the wetlands. You can hear a bird's beak snap. Mosquitoes make a great afternoon snack.



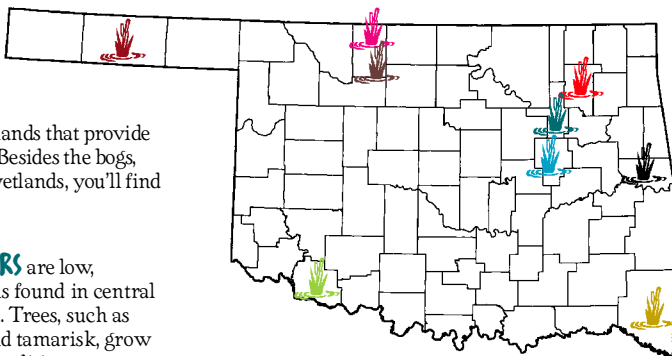
- ★ **TURTLES** everywhere! They find comfort sticking their pointed noses just where they belong, in the mud.



- ★ Wetlands make a great place to raise the **YOUNG**. The brown swamp grass hides birds' nests and serves as birthing nurseries for hundreds of insects. In this squishy, misty and damp part of the world, you'll find a **BEETLE** zigzagging across the water, a **WATER FLEA** spinning in circles and, just beneath the surface, tadpoles playing hide-and-seek.
- ★ **BLOOMING BEAUTIES** - Look for the marsh marigold, blue flag iris, lady's slipper and the orchid. Definitely eye-catchers with their brilliant colors.

Where Are the Wetlands in Oklahoma?

Oklahoma has a diversity of wetlands that provide a wide variety of uses and benefits. Besides the bogs, swamps and marshes common to wetlands, you'll find several other types in our state.












- ★ **RIPARIAN CORRIDORS** are low, frequently flooded plains found in central and western Oklahoma. Trees, such as willows, cottonwood and tamarisk, grow well in these wetland conditions.
- ★ **OXBOW LAKES** are old river and stream channels that were cut off from the main channel. Oxbows have shallow to deep water. Green ash and willow trees line the banks. These areas seldom dry up.
- ★ **CLOSED DEPRESSIONS** are found throughout the state wherever wind or water has deposited soil. Water levels are high. Here, you'll find cattails, smartweeds and barnyard grass along with willow trees and buttonbush.
- ★ **PLAYA LAKES** are found only on the high plains. They are depressed areas with no outlets and seasonally hold water. Blue lake weed and smartweed take root here.
- ★ **FORESTED WETLANDS** are found on frequently flooded plains in the eastern third of the state. The soil is saturated with water for long periods of time. Sphagnum moss, rushes and sedges along with water oak, overcup oak and green ash trees thrive in these conditions.

Take a Walk on the Wild Side

We invite you to visit a wetland. Take a class, a group or just yourself. **Soak** up all the sights, sounds and smells. **Make** a list. **Carry** a journal. **Write** about your experience, your relationship to nature, the woods, the wetlands. **Sketch** a favorite tree, rock or flower. **Look** for animal tracks. **Breathe** deep. **Sit** on a stump. **Listen** to the beaver as he slaps his tail against the water. Nothing like making waves at home. **Get Muddy!**



Reminder—if a wetland is located on private property, make sure you first ask permission.

Wetland	Location	Number
 Byron Hatchery	Byron	580-474-2663
 Deep Fork National Wildlife Refuge	Okmulgee	918-756-0815
 Hackberry Flat	Fredrick	580-335-5262
 Little River National Wildlife Refuge	Broken Bow	580-584-6211
 Optima National Wildlife Refuge	Hardesty	580-664-2205
 Oxley Nature Center	Tulsa	918-669-6644
 Rogers University Conservation Education Reserve	Claremore	918-341-4147
 Salt Plains National Wildlife Refuge	Jet	580-626-4794
 Sequoyah National Wildlife Refuge	Vian	918-773-5251

Makes You Just Want to Croak!

Two hundred years ago, wetlands covered more than 391 million acres of the United States. That's bigger than the whole state of Texas! Until the passage of the 1972 Clean Water Act and the 1985 Farm Bill, wetlands were drying up at an average rate of 585,000 acres each year.

Most people thought of wetlands as "wastelands." As a result, many wetlands were drained or filled. They became crop or hay fields or were covered by new houses and barns, roads and even shopping malls. In some areas, people dumped garbage and trash to cover them up. Wetlands were disappearing as were the animals, that had depended on the wetlands for thousands of years. They had lost their food, home and protection and could no longer survive.

But thanks to government programs, which promote wetland conservation, education and awareness, the wetlands are making a come back. Oklahoma has made a commitment to "conserve, enhance and restore the quantity and biological diversity of all wetlands in the state." Since 1980, Oklahoma has restored more than 23,000 acres of wetlands.



Where Did the Wetlands Go?

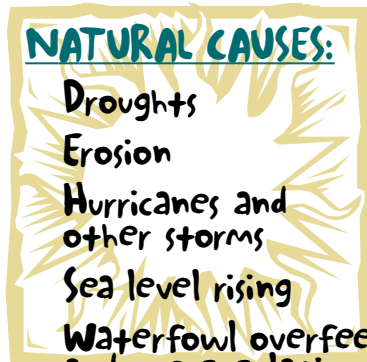
There are several reasons why our wetlands dried up, mainly due to lack of education. Here are some of the top reasons.

HUMAN'S ACTIONS:

- Conversion to farmland
- Drainage
- Dredging
- Depositing fill material
- Urban development

NATURAL CAUSES:

- Droughts
- Erosion
- Hurricanes and other storms
- Sea level rising
- Waterfowl overfeeding and overpopulation



WETLANDS

A Valuable Resource

They provide:

- ★ **BALANCE** for nature's ecosystems.
- ★ **SHELTER** and protection for animals.
- ★ **FOOD** for animals and humans.
- ★ **RECREATION** such as bird-watching, fishing, hunting, hiking, camping, boating, photography, adventure, nature studying.
- ★ **JOBS** for people. Each year, wetlands support a \$10 billion fishing industry, a \$400 million fur trade and a \$300 million bird-hunting industry.
- ★ **NATURAL PROTECTION** from flooding and droughts. During wet weather, wetlands act as a huge sponge. They catch and hold water to keep it from flooding homes, roads and fields. The U.S. Army Corp of Engineers says protecting 8,400 acres of wetlands prevents \$17 million in flooding damage.
- ★ **EROSION PREVENTION** by holding on to the earth with their roots and absorbing the wave action of ponds and lakes.
- ★ **WATER PURIFICATION.** Wetlands help make dirty water pure, fresh and sparkling. It's like attaching a water filter to your kitchen faucet. The roots and stems of wetland plants act as filters catching dirt and pollutants from rain or runoff water. The clean water seeps down into the ground where it supplies our wells with pure drinking water.



Ways You Can Help Keep the Lands Wet

- ★ **ADOPT A WETLAND.** Make it a classroom, family or community project.
- ★ **CONSERVE WATER.** Take short showers, turn the faucet off while washing dishes, let nature water your lawn. Americans use 60 gallons of water in the house each day!
- ★ **CREATE YOUR OWN WETLAND** in your backyard or at school.
- ★ **DISPOSE OF TRASH** and toxic wastes properly so they don't pollute the groundwater.
- ★ **LEARN** all you can about wetlands, and tell your family and friends about their importance.
- ★ **PARTICIPATE** in your local government. Know what the environmental issues are in your area.

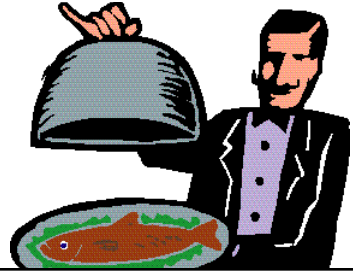


JUST FOR THE

Here are some fun, but educational projects and activities you and your students can try at school or at home.

Wetland à la carte

Serve a wetland meal. This is a great way to educate your class, family or community, and raise awareness and money for a wetland project. It's quite tasty.



The Wetland Café

Entrée

FISH

River and lake fish, such as bass, crappie and catfish, depend on wetland nutrients, as do ocean-dwelling fish, such as mussels, clams, oysters and shrimp. You may prepare fish in several different ways: baked, broiled or fried.

WILD RICE with WATER CHESTNUTS

Wild rice, the seed of a marsh grass, is grown in Minnesota marshes and sold at grocery stores. For an extra crunch, three minutes before the rice is ready, stir in water chestnuts.

Water chestnuts are the tubers - rootlike, underground parts of salt-marsh sedge.

Side Orders

CRANBERRY MUFFINS

Cranberries are native to North American bogs and are grown and harvested commercially in specially maintained cranberry bogs. Make muffins from scratch or use a mix that contains cranberries.

Beverage

CHILLED WATER with A TWIG OF MINT

Wetlands purify water by filtering out sediment and toxins before water enters streams, lakes and underground aquifers. This water provides drinking water. For an extra fresh taste, add a crushed sprig of mint to the water served. Mint species are common wetland plants.

FUN OF IT!



Get Down and Boggy

One of the best ways to help protect a wetland is to build one of your own. All you have to do is catch the rainwater that rolls off your roof. First, outline the proposed marsh site and then strip sod from about a 450-square-foot area. Dig up the soil to a depth of 14 inches. Connect a downspout from your roof to a solid, flexible plastic pipe. Angle the pipe down and away from the house so that the water enters on top of the marsh. Next, prepare a soil mixture containing some sand, a dozen buckets of compost, subsoil and as much peat as you can afford. Use a rototiller to mix together all these ingredients in the marsh. Really, it's easy, just like baking a cake. Now, the fun part, selecting your plants. Some favorites to consider: spicebush, buttonbush, silky dogwood, prickly ash, swamp milkweed, and arrowhead. They attract everything from butterflies to hummingbirds to frogs. Now just sit back and count the croakers!



Save a Wetland

Is there a wetland in your area that needs your attention? Ask your family, friends and school to help. Make it a community project. The best time to work on a wetland is in the fall, when animals are not breeding. First, clear away any trash that was dumped. If the wetland has filled with soil, then dig away some of the mud. Do this a bit at a time to avoid removing all the wildlife hidden in the mud. Take photos before and after. Give your local newspaper a call to cover the story. Ask a local company to sponsor your project. It's great publicity for the wetlands and for you.

My, How Big You Are!

Use a clear glass container to scoop up a pint of muddy water from the murky bottom of a wetland. Hold a magnifying glass up to the water and you'll see a whole new world. How many critters can you identify? Chances are you'll see a water flea with one eye; a roundworm that whips back and forth and forms the letter "S"; a flatworm that glides along like a snail without a shell; and jewels, lots of beautiful shapes and colors of algae living in the depths below.



Let's Go Surfin'

Gently lay a needle or straight pin on the surface of a pan of water. Placed perfectly flat it will float. This strength is known as "surface tension" and allows some creatures in the wetlands to walk on water and others to cling to the surface from below. When air gets under the water, surface tension forms a bubble from below. One common water walker is the water strider. A half-inch long, it looks like a twig with legs. Another water surfer is the speedy whirligig beetle. Described by some as an active watermelon seed, this shiny black insect zips around in circles on the water's surface. Its eyes are in two parts. One looks up and the other looks down. Water also supports larger creatures such as ducks and geese.



The Seven Wonders of THE WETLAND

1

American Indians used the fluffy seeds inside cattails to pad their children's cradles. They made flour from the roots and used the leaves to weave mats.



2

Before grocery stores, pharmacies and department stores, families gathered their supplies from the wetland. In the bogs, families harvested cranberries, trapped and fished for wild game, and raised rice.

3

The first paper was made from papyrus, a wetland plant that grew along the Nile.

4

Reeds, thatches and palms from wetlands are used to thatch roofs in Jamaica and the Philippines.

5

French chefs who invented marshmallows made them gooey by using the roots of marsh mallow, a saltwater plant.

6

Wetlands make up 6 percent of the world's land mass and are found in diverse regions ranging from the frozen wilderness of Alaska to the tropics in South America. In the United States, we have 70 million acres of wetlands. Of that amount, freshwater wetlands make up 94 percent.

7

Anthropologists found 160 human bodies more than 7,000 years old in a bog in Windover, Florida.



Did you know that...

- * Oklahoma has **LOST 67 PERCENT** of its wetlands since the late 1700s. That's about 1.7 million acres.
- * **THE STATE OF OKLAHOMA** has 44.7 million acres of land of which 2 percent (950,000 acres) is wetlands.
- * **PRIVATE LANDOWNERS OWN** more than 87 percent of Oklahoma wetlands.
- * **HALF** of the threatened or endangered animals in the U.S. depend on wetlands.
- * More than 300 Oklahoma **CITIES AND TOWNS** depend on wells and lakes for drinking water.
- * Oklahoma, with its 4,500 lakes, has more man-made lakes than any other state.



Definitions

Amphibian - A group of cold-blooded vertebrates (animals) with smooth, moist skin; frogs, toads and salamanders.

Bog - A wetland characterized by waterlogged soils and dominated by spongy mosses.

Clean Water Act - Passed in 1972, it forbids the filling, dredging and polluting of wetlands unless permission is given by the U.S. Army Corps of Engineers.

Farm Bill Act - Passed in 1985, included in the act was a wetlands protection program, which is now called "swampbuster." The purpose of the Farm Bill Act was to discourage the conversion of wetlands to agricultural use.

Ecosystem - A community of living organisms and their interrelated physical and chemical environment.

Habitat - An environment where plants, animals and other organisms live.

Marsh - A wetland characterized by soft, wet, low-lying land, marked by nonwoody vegetation.

Riparian areas - Land areas directly influenced by a body of water, usually having a visible vegetation or other physical characteristics showing their water influence.

Runoff - An overflow of rainfall that cannot be absorbed by soil and vegetation.

Swamp - Saturated lowland or seasonally flooded bottomland characterized by trees or woody vegetation.

Wade - To walk in water.

Wetland - Wet + land = Wetland. Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Oklahoma Wetlands Wet, Wild and Wonderful

Books and Other Resources

Check your local library, bookstores and Oklahoma Conservation Commission for books and other resources on wetlands. You'll find quite a variety for all ages and levels of learning. Here's a list of some we used for reference in writing this brochure.

At the Edge of the Pond, by Jennifer Owings Dewey

Squish! A Wetland Walk, by Nancy Luenn

Squishy, Misty, Damp & Muddy, by Molly Cone

The Living Pond, by Nigel Hester

Vanishing Wetlands, by Anita Louise McCormick

Wading into Wetlands, by the National Wildlife Federation

Wetland, by April Pulley Sayre

Wetlands, by Lynn Stone

Wetlands, by Ronald Rood

Wetlands Habitats, by Ewan McLeish

WOW! The Wonders of Wetlands, by Environmental Concerns and the Watercourse

For more information call the Oklahoma Conservation Commission at 405-521-2384 or the Environmental Protection Agency (EPA) Wetlands' Hotline at 1-800-832-7828 or click on:

www.epa.gov

www.fws.gov

www.okcc.state.ok.us

www.state.ok.us/~odwc

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