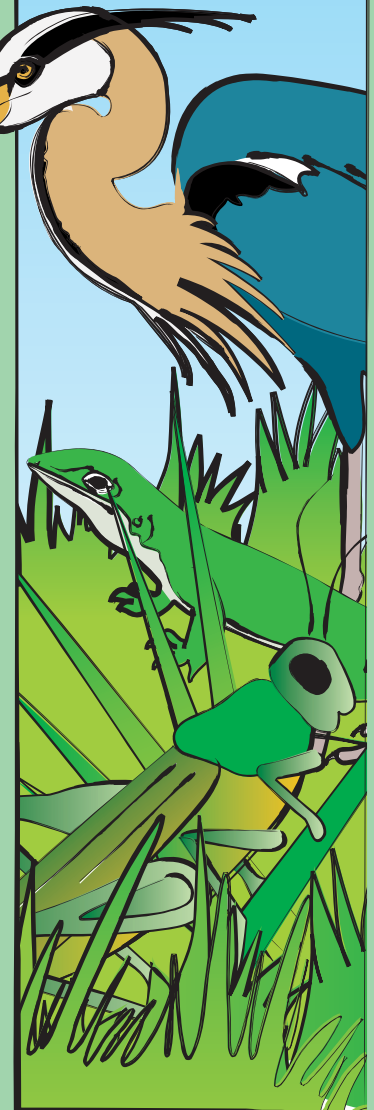
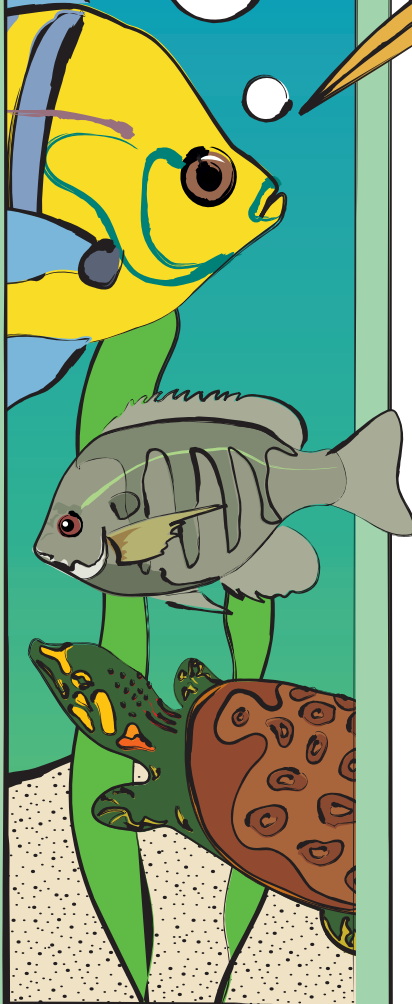
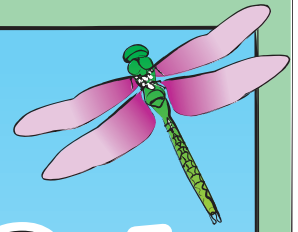


# Exploring Our Wonderful Wetlands



Southwest Florida  
Water Management District

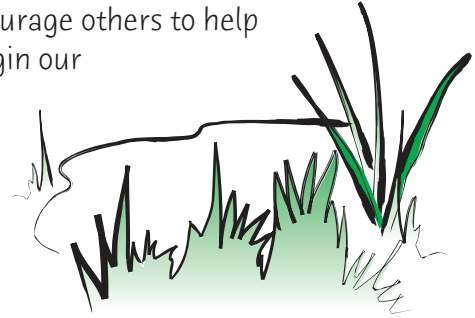
WATERMATTERS.ORG • 1-800-423-1476

Student Publication  
Grades 4-7

# Dear Wetland Students:

Are you ready to explore our wonderful wetlands? We hope so! To help you learn about several types of wetlands in our area, we are taking you on a series of explorations. As you move through the publication, be sure to test your wetland wit and write about wetlands before moving on to the next exploration. By exploring our wonderful wetlands, we hope that you will appreciate where you live and encourage others to help protect our precious natural resources. Let's begin our exploration now!

Southwest Florida Water Management District



## Exploring Our Wonderful Wetlands

Exploration 1

**Wading Into Our Wetlands** ..... Page 3

Exploration 2

**Searching Our Saltwater Wetlands** ..... Page 5

Exploration 3

**Finding Out About Our Freshwater Wetlands** ..... Page 7

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**Discovering What Wetlands Do** ..... Page 10

Exploration 5

**Becoming Protectors of Our Wetlands** ..... Page 14

**Wetlands Activities** ..... Page 17

**Websites** ..... Page 20

Visit the Southwest Florida Water Management District's website at [WaterMatters.org](http://WaterMatters.org).



# Exploration 1

## Wading Into Our Wetlands

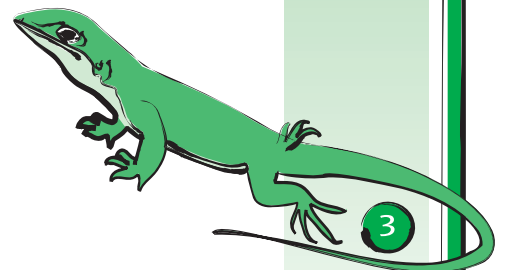
What exactly is a wetland? The scientific and legal definitions of wetlands differ. In 1984, when the Florida Legislature passed a Wetlands Protection Act, they decided to use a plant list containing plants usually found in wetlands. We are very fortunate to have a lot of wetlands in Florida. In fact, Florida has the third largest wetland acreage in the United States.

The term **wetlands** includes a wide variety of **aquatic** habitats. Wetland ecosystems include swamps, marshes, wet meadows, bogs and fens. Essentially, wetlands are transitional areas between dry uplands and aquatic systems such as lakes, rivers or oceans. To be considered a wetland, a region must have wet soils or be covered by a shallow layer of water for at least part of the year. Some wetlands are always covered with water and others are flooded only for a short time. Try to think of at least one wetland area that is located near your home.

Wetlands are natural **reservoirs** that hold water and attract a wide variety of plants and animals especially suited for wet environments. They are characterized by water and soil that is saturated, or “hydric.”

### Types of Wetlands

The two main types of wetlands are **saltwater wetlands** and **freshwater wetlands**. Saltwater and freshwater wetlands may be further divided into more specific categories. For example, a **swamp** contains trees and shrubs, while a **marsh** is filled with grasses and soft-stemmed plants. The kinds of trees, plants and animals that exist in wetland areas may also vary. Explorations 2 and 3 describe several types of wetlands in southwest Florida.



## Exploring Wetlands

Did you know that there is a wonderful place to experience natural Florida and several types of wetlands in west-central Florida? It is called the Green Swamp.

The Green Swamp spreads across approximately 870 square miles and includes parts of Pasco, Polk, Lake, Hernando and Sumter counties. It's amazing that four major rivers have origins in the Green Swamp. The Hillsborough, Peace, Withlacoochee and Ocklawaha rivers all begin here.

On a visit to the Green Swamp, you can explore several kinds of wetlands. You will identify special plants, shrubs and trees that grow in the different areas. In sections where water covers the ground for most of the year, only a few **species** of trees can survive. One example is cypress trees. These spectacular trees are easily found in cypress wetlands. By looking very closely at the soil in a wetland area, you will find that it is different from soils in other surface land areas. The soil in wetlands is made up of peat or muck deposits that have built up from the surrounding wet environment.

### Wetlands Wit

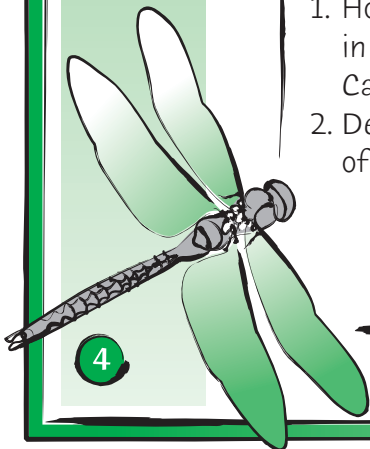
1. How many major rivers begin in the Green Swamp? Can you name all of them?
2. Describe three features of a wetland.

During your visit, don't forget to observe the abundance of **wildlife** that live and breed here. Take a virtual tour through the Green Swamp at [WaterMatters.org/greenswamp/](http://WaterMatters.org/greenswamp/).

For additional information about other natural sites in west-central Florida, or directions to the Green Swamp Wilderness Preserve, visit [WaterMatters.org/Recreation/](http://WaterMatters.org/Recreation/).

### Writing About Wetlands

1. Make a list of several words that describe a wetland. Use these words to write a paragraph that could be used to describe a wetland to someone who has never seen a wetland area.
2. Explain why you think wetlands are important to us in Florida. Try to include at least three reasons in your answer.



# Exploration 2

## Searching Our Saltwater Wetlands

As you learned earlier, wetlands can be divided into two main categories: saltwater wetlands and freshwater wetlands. During this exploration, you will learn about saltwater wetlands found along the edges of estuaries such as Tampa Bay, Charlotte Harbor and Sarasota Bay. **Estuaries** are areas where fresh water from inland sources mixes with salt water from the Gulf of Mexico or the ocean. These wetlands are known as saltwater wetlands because they contain salt water. The two kinds of saltwater wetlands that we are going to examine more closely are salt marshes and mangrove swamps. Let's find out more about them now.

### Salt Marsh

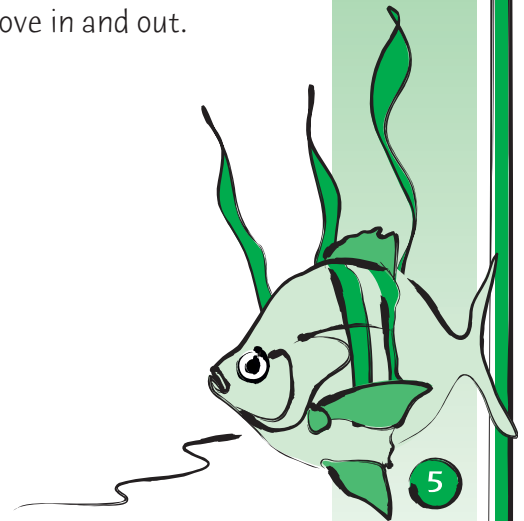
Salt marshes are nonforested saltwater wetlands that form in areas of low elevation along Florida's gulf coast where the ocean meets the land.

### Animals

Salt marshes are among the world's most productive **habitats** for fish and wildlife. They are nurseries for fish, shellfish, crabs and shrimp. The fresh water mixes with salt water making an environment for these young animals. Did you know that most of Florida's commercial seafood harvest is made up of fish and shellfish that depend on these coastal wetlands? Salt marshes also provide habitat for birds, small mammals and turtles.

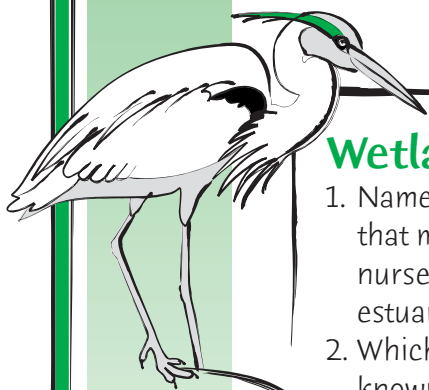
### Plants

On a visit to a salt marsh, you will most likely see many plants such as the black needlerush. It is a gray, grassy plant that grows well in high, marshy areas. You will also see cord grass, the most common species of plant found in a coastal marsh, growing two to six feet tall. Its intricate root system helps keep the soil anchored as the tides move in and out.



## Mangrove Swamps

On a trip along one of Florida's many bays, you are bound to come across a forest of **mangroves**, or a mangrove swamp. Mangroves are unique because of their ability to grow well in salty environments. Some mangroves actually separate fresh water from seawater. Some mangroves give off excess salt through their leaves, while others are able to block out the intake of salt at their roots.



### Wetlands Wit

1. Name several young animals that may be found in the nursery environment of an estuary.
2. Which kind of mangrove is known as the walking tree? Why?

## Types of Mangroves

There are three kinds of mangroves that make up the approximately 500,000 acres of mangrove forests that exist within our state.

- The red mangrove is the most common and found near water. They often look like they are standing or walking because their roots stick out well above the surface. This feature has earned them the title of "walking trees."
- The black mangrove is easily identified by numerous fingerlike roots that wrap around the base of the tree trunk.
- The white mangrove's roots are below the water's surface.

## Role of Mangroves

Mangroves play an important role in saltwater forested wetlands. Their roots and branches provide homes for many **waterfowl**, such as brown pelicans and roseate spoonbills. They also serve as nurseries for a variety of fish, crustaceans and shellfish, which, in turn, supply food to many marine species, including snook, snapper, tarpon, jack and sheepshead.

### Writing About Wetlands

1. Describe how mangroves are able to survive in a salty environment.
2. List several reasons why mangroves are important for keeping saltwater forested wetlands healthy.



# Exploration 3

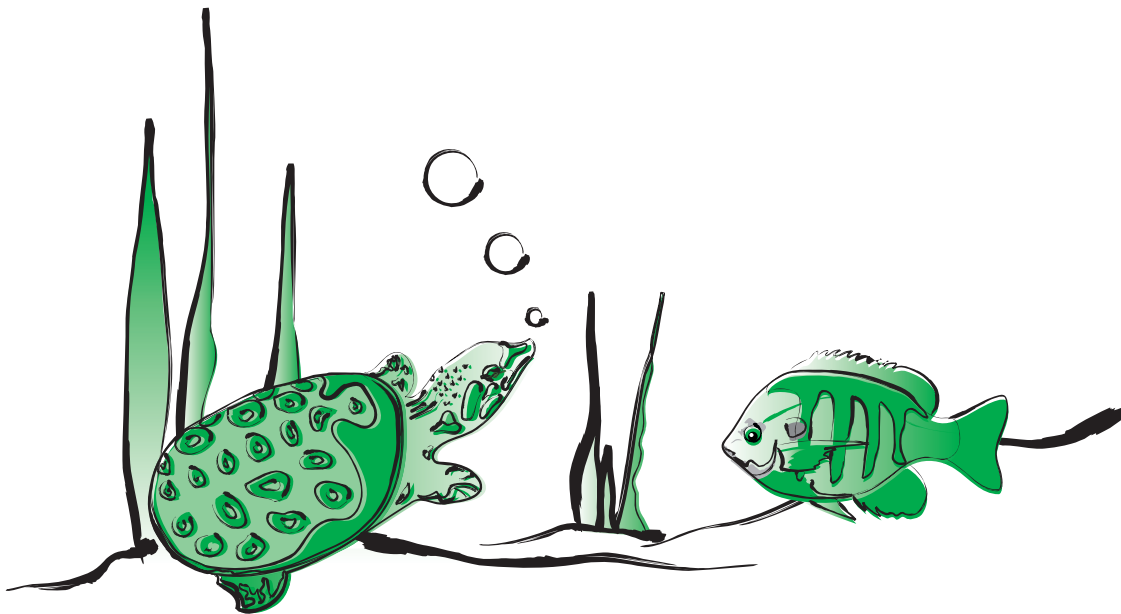
## Finding Out About Our Freshwater Wetlands

Freshwater wetlands contain fresh water. The freshwater, forested wetlands we will explore include cypress swamps, hardwood swamps and hydric hammocks. In addition, we will look at freshwater marshes and wet prairies, which are examples of nonforested freshwater wetlands. Let's begin our exploration of these freshwater wetlands now.



### Cypress Swamps

Cypress swamps are usually flooded for five to eight months each year and are known for their mysterious appearance. You'll see bald and pond cypress trees with moss drapes and gnarled roots along with cypress knees and tree stumps. Other trees include the black gum and red maple. **Epiphytes**, such as spanish moss and other air plants, can be found here. The American alligator makes this wetland its home, along with raccoons, river otters, frogs, Florida snapping turtles, snakes and fish.



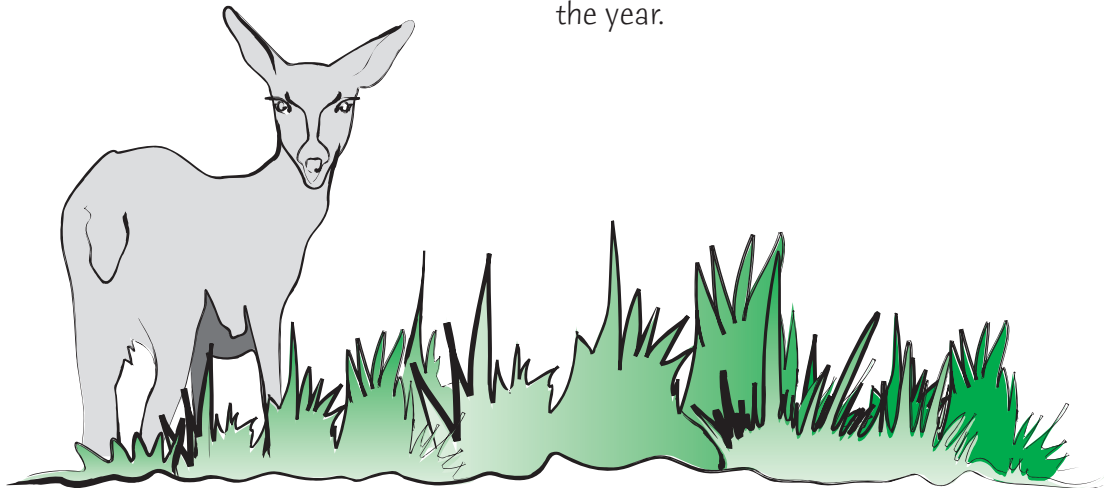


## Hardwood Swamps

Hardwood swamps are forested wetlands filled with hardwood trees. Standing near or in the glassy tea-colored waters are black gum, red maple, water ash, laurel oak, water elm, cypress and willow trees. These swamps often border rivers, streams and lakes. It is a place where you can observe wood ducks on the water and gray squirrels in the trees. Hardwood swamps are submerged or saturated part of the year due to seasonal periods of flooding.

## Hydric Hammocks

Hydric hammocks are located between river swamps and at the edge of flatwoods. These forested wetlands are filled with a mixture of broad-leaf evergreens and **deciduous** trees that shed their leaves every year. The area is filled with cabbage palms, laurel oaks and climbing vines. In addition to blue violets, longspur and green fly orchids, many other beautiful flowers grow wild here. Animals such as the gray fox, striped skunk and bobcat may be seen roaming the area. Although these areas are seldom flooded, the soils are saturated most of the year.







## Freshwater Marshes

A freshwater marsh is a wetland area that resembles a pond, except that it is covered with water plants and other kinds of vegetation. Although you won't see any trees here, you will find many woody plants, grasses, sedges, rushes and other soft-stemmed plants. The marsh provides food, protection and breeding sites for many animals, including alligators, turtles, various water birds, otters and raccoons.

### Wetlands Wit

1. Which swamp is often found along rivers, streams and lakes?
2. Which wetland looks like a pond?



## Wet Prairies

Wet prairies are large fields of grasses, sedges, rushes and wildflowers. They are also known as wet meadows. These areas are flooded for short periods of time and usually stay saturated the rest of the year. Garter snakes, frogs, ducks, rabbits and deer are just a few of the animals you might see on a visit to this area.

### Writing About Wetlands

1. Cypress swamps are often described as mysterious or scary. Imagine that you are exploring a cypress swamp. Write a paragraph that describes your thoughts and feelings about being there.
2. Compare the features of a wet prairie and a cypress swamp. Make a list of the things you would include in a picture of each wetland.

# Exploration 4

## Discovering What Wetlands Do

Until recently, most people thought of wetlands as dirty, smelly, unpleasant places filled with mosquitoes, pests and scary creatures. Wetlands used to be called wastelands and were drained so the land could be used for homes, businesses and farming. Now we realize that they play a very important role in helping to keep our environment clean and healthy. Fortunately for us, laws have been enacted to save and protect our valuable wetlands.

Study the following list to discover what wetlands do for us in west-central Florida. When you have finished, try to think of additional ways wetlands are important to us and help our environment.

### **Wetlands help improve our water quality.**

Wetlands are natural cleaning systems. They have often been called “nature’s kidneys” because they help clean out the pollutants that move through them. They purify and filter contaminants from agricultural activities and from water that drains or flows off the surface of the land. The plants in a wetland help clean water by trapping solids and absorbing them in their roots. Bacteria and other microorganisms improve the quality of water by eating and digesting organic wastes.

### **Wetlands help protect us from floods.**

Wetlands act as giant sponges. They can absorb heavy rainfall and release the water very slowly so that businesses and housing developments located nearby won’t be flooded. Wetlands located along the coast serve as natural barriers

that can reduce damage from storm surges.

### **Wetlands help store water.**

Wetlands are important storage areas that collect rainwater. Some of the water soaks into the ground to refill the aquifer. Some is gradually released either back to the atmosphere or to other surface bodies of water.

### **Wetlands help support a variety of fish, waterfowl and other wildlife.**

Wetlands are habitat for many animals and birds that cannot nest, breed or live anywhere else. Did you know that 22 species of wading birds depend on Florida’s wetlands? Nearly two-thirds of our marine fish and shellfish rely on saltwater wetlands for their survival. Other animals that can be observed in wetlands include: white-tailed deer, bobcats, gray foxes, black bears, panthers, raccoons, skunks, river otters and other large mammals.



### **Wetlands help serve as nursery areas.**

Wetlands are nursery areas that provide food and shelter for a wide variety of fish, birds, reptiles and mammals. Nutrients deposited in wetlands are the building blocks of food chains that are part of the complex network of feeding relationships in an environment.

### **Wetlands help stabilize our coastal shorelines.**

Wetlands located along the coast provide a barrier and buffer zone between salt water and fresh water. These vegetation-filled brackish water areas help prevent coastal erosion by trapping and stabilizing sediments through their roots.

### **Wetlands help provide recreational activities.**

Many recreational activities take place in and around wetlands. People use wetlands for outdoor experiences such as hiking, fishing, boating, bird watching and photography.

### **Wetlands provide habitat for threatened and endangered species.**

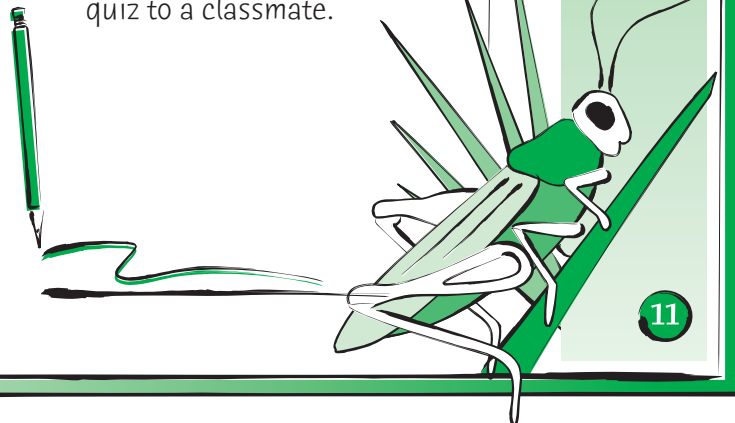
Wetlands provide habitat crucial to the survival of nearly one-third of the plant and animal species included on a federal list of endangered species. Endangered species that depend on Florida's wetlands to survive include the wood stork, limpkins, sandhill crane, osprey and little blue heron.

### **Wetlands Wit**

1. Why are wetlands often called nature's kidneys?
2. Name two endangered species that depend on wetlands for their survival.

### **Writing About Wetlands**

1. Select two ways that wetlands help our environment and explain why they are important.
2. Create a list of five true or false statements about what wetlands do, then give the quiz to a classmate.



# Exploring Our Wonderful Wetlands

## Wetland Metaphors

Many functions of wetlands can be explored through the use of **metaphors**. A metaphor is a figure of speech in which a word or phrase meaning one kind of object or idea is used in place of another to create a comparison between them. In other words, a metaphor represents a concept or idea through another concept or idea. Saying "Paul's brain is a powerful computer" is using a metaphor. Paul's brain isn't really a computer, but it is being compared to a computer to make the point that he is very smart. Other examples include "Books are windows of thought" or "The lion is king of the jungle."

**Directions:** Examine the following pictures. How could each be a metaphor for a wetland? Write your answers in the spaces provided.

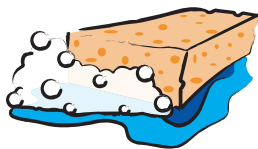
### Example



CRADLE

Wetlands provide nursery areas that shelter,  
protect and feed young wildlife.

1



SPONGE

2



FILTER

3



WATER TOWER

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4



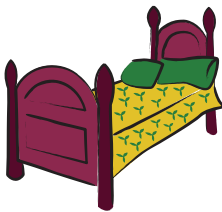
PLAYGROUND

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5



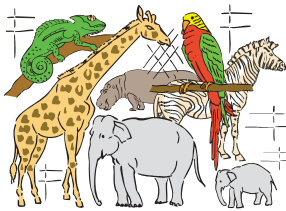
BED

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6



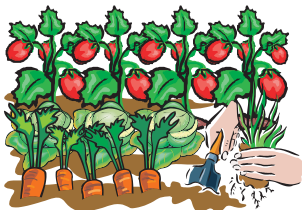
ZOO

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7



PRODUCTIVE GARDEN

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8



BARRIER

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# Exploration 5

## Becoming Protectors of Our Wetlands

More than 50 percent of valuable wetlands were lost in the United States between the 1780s and mid-1980s. As people moved into Florida, wetlands were drained and filled with dirt. These areas were developed for homes, businesses, agriculture, mining and other uses. The amount and quality of fresh water began to decrease as did the wildlife. Approximately 100 million acres of wetlands remain of the 215 million that once existed.

Fortunately, people began to change their attitudes about the value of wetlands. Florida has become a leader in reducing the loss of wetlands, and the state Legislature has decided to protect our precious wetlands through acquiring land or regulating its use. Today, many wetlands are enjoyed by millions of people as part of the local, state and federal park systems.

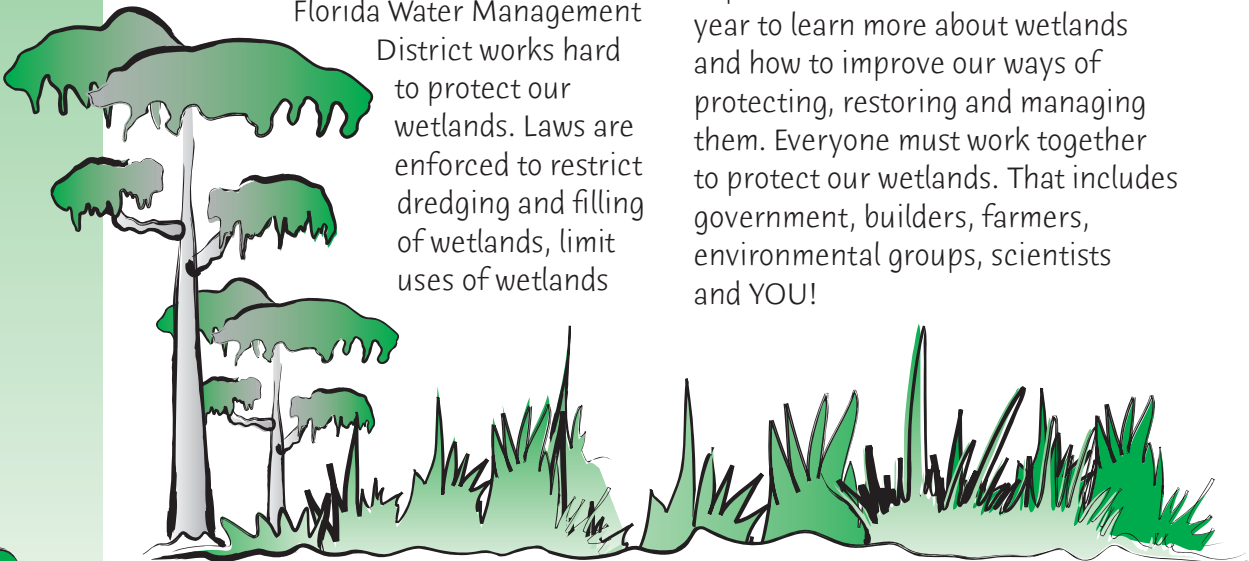
### Protecting Our Wetlands

Our federal and state governments have taken steps to preserve wetlands through protection programs. In addition, the Southwest

Florida Water Management District works hard to protect our wetlands. Laws are enforced to restrict dredging and filling of wetlands, limit uses of wetlands

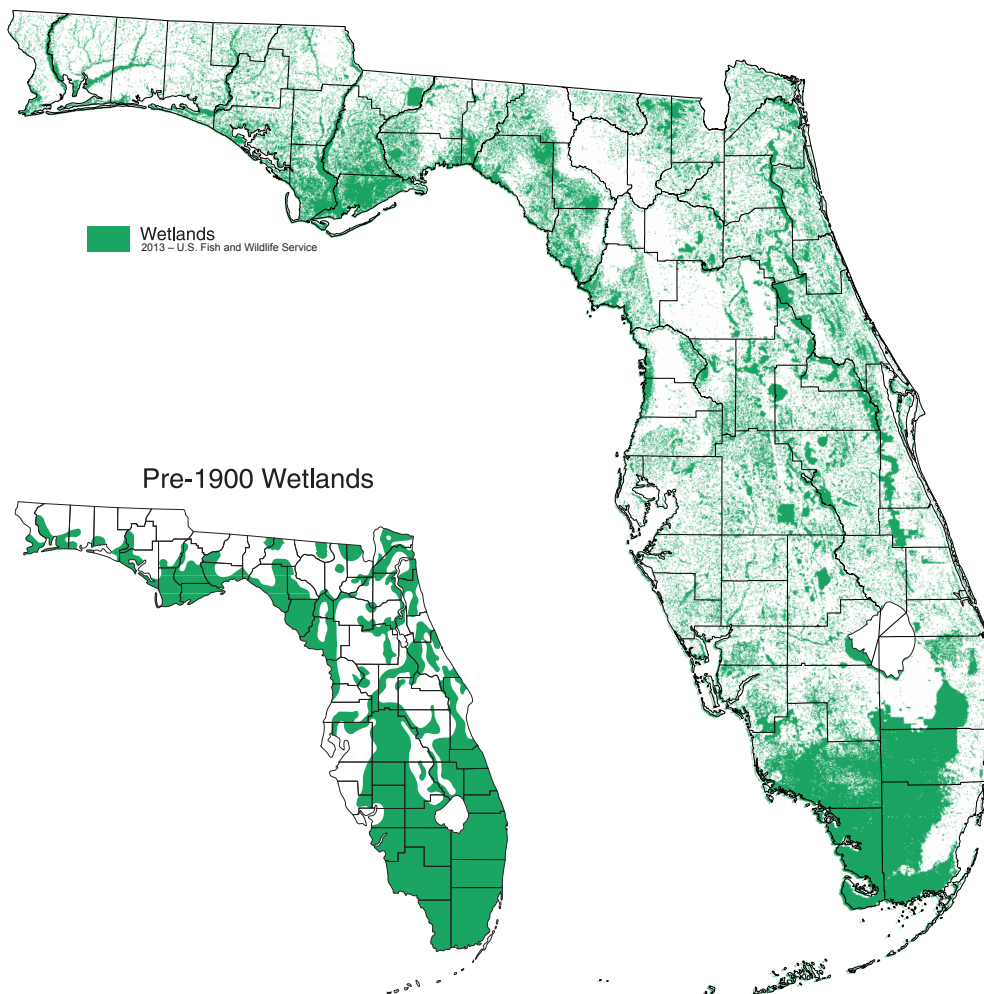
and minimize impacts caused by growth and development. The protection and purchase of wetlands will help to save them for future generations.

But there is still a lot of work to do. Important research is conducted each year to learn more about wetlands and how to improve our ways of protecting, restoring and managing them. Everyone must work together to protect our wetlands. That includes government, builders, farmers, environmental groups, scientists and YOU!



# Major Wetland Areas

## Florida Wetlands



## Here are several ways that you can help protect our wetlands:

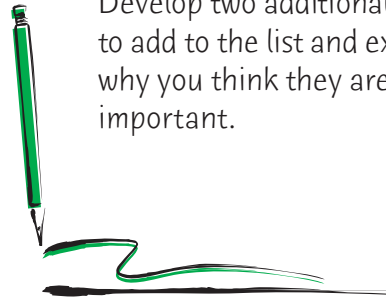
- Join in on a coastal cleanup or other project to improve the bay and coastline.
- Help protect endangered species found in our estuaries and wetland areas.
- Obey hunting, fishing and wildlife laws when visiting wetland areas.
- Reduce, reuse and recycle because trash is unhealthy and environmentally damaging to all wetland areas.
- Become an active volunteer to help improve your local estuaries and wetlands.
- Begin an environmental club at your school.
- Learn more about wetlands and natural systems.
- Visit your local wetland parks and experience the real Florida.
- Encourage others to help protect our valuable wetlands.

### Wetlands Wit

1. When were most of the wetlands lost in Florida?
2. Today, how many acres of wetlands are in the United States?

### Writing About Wetlands

1. Why do you think people changed their attitudes about the value of wetlands? Give three reasons to support your answer.
2. Nine ways were given to help protect our wetlands. Develop two additional ways to add to the list and explain why you think they are important.





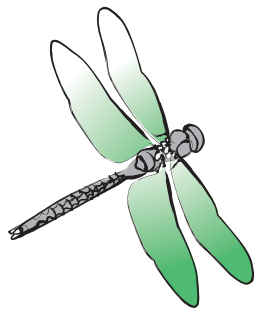
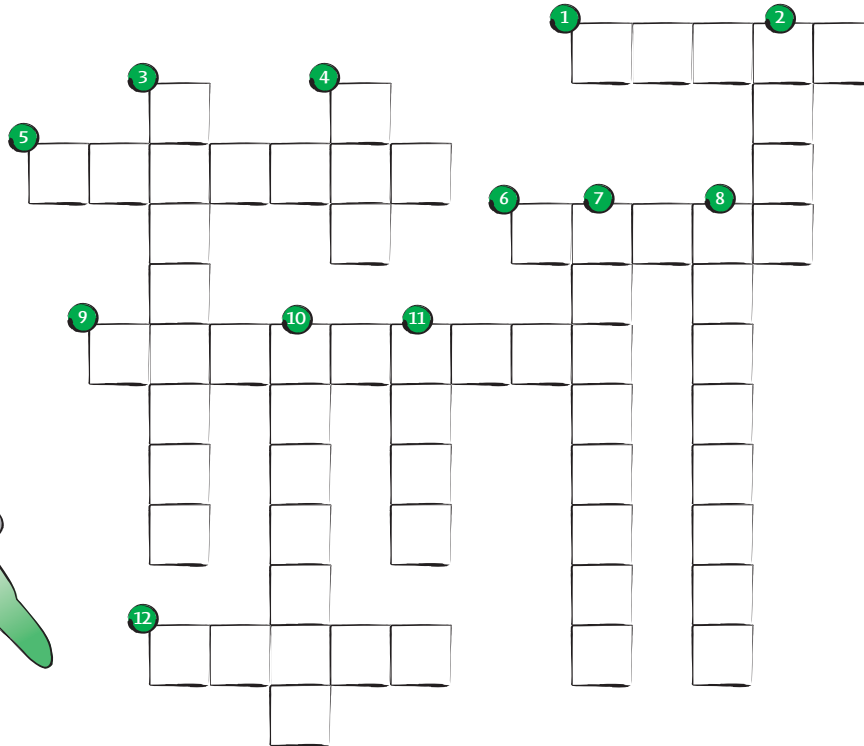
# Wetlands Activities

Complete the crossword puzzle using the information in this publication, including the vocabulary on page 20.

C  
R  
O  
S  
S  
W  
O  
R  
D

## Across

1. Wading \_\_\_\_\_ can often be found in a wetland.
5. A \_\_\_\_\_ is a group of plants or creatures with similar features.
6. A wetland that is often partially covered by water and filled with trees is called a \_\_\_\_\_.
9. A bird that swims or wades in water is called a \_\_\_\_\_.
12. A wetland that is usually characterized by grasses and similar plants is called a \_\_\_\_\_.



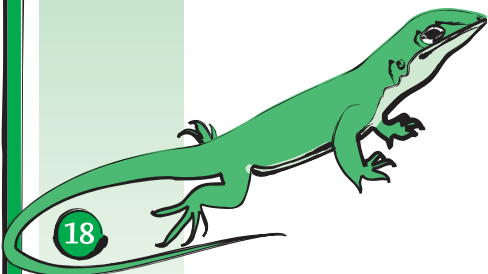
## Down

2. An area that is slightly wet or moist is \_\_\_\_\_.
3. Areas that lie between upland regions and aquatic systems that flood for certain periods of time during the year are called \_\_\_\_\_.
4. Something that is covered or saturated with water is \_\_\_\_\_.
7. \_\_\_\_\_ are animals and birds that live in the wild.
8. A \_\_\_\_\_ is a tropical tree that grows along flooded coastal banks.
10. An \_\_\_\_\_ is a coastal area where fresh water mixes with salt water.
11. Many kinds of freshwater \_\_\_\_\_ may be found in a healthy, freshwater wetland.

# WHO AM I ?

During this activity, you will learn about different types of saltwater wetlands and freshwater wetlands.

- 1 I'm a/an \_\_\_\_\_ and I'm filled with grasses and soft-stemmed plants.
- 2 I'm a wetland with trees and shrubs, I'm a/an \_\_\_\_\_.
- 3 Fresh water from inland sources and salt water come together to form me. I am a/an \_\_\_\_\_.
- 4 I am among the world's most productive habitats for fish and wildlife. I am a/an \_\_\_\_\_.
- 5 I'm unique because of my ability to grow well in salty environments. I am a/an \_\_\_\_\_.
- 6 Frogs, river otters, raccoons, snakes, fish and even the American alligator call me home. I am a/an \_\_\_\_\_.
- 7 I'm a forested wetland and filled with trees such as laurel oak, red maple, water elm and black gum. I am a/an \_\_\_\_\_.
- 8 Some of the plants that call me home are broad-leaf evergreens, cabbage palms, blue violets and other beautiful flowers. I am a/an \_\_\_\_\_.
- 9 I resemble a pond but am covered with water plants and vegetation such as grasses, sedges and soft-stemmed plants. I am a/an \_\_\_\_\_.
- 10 I'm a large field also known as a wet meadow. I am a/an \_\_\_\_\_.



# Wetlands Vocabulary

**aquatic:** growing or living in water

**deciduous:** falling off seasonally (as leaves)

**ecosystem:** a community of organisms and their environment

**epiphyte:** a plant that gets its moisture and nutrients from the air and rain and usually grows on another plant

**estuary:** coastal area where freshwater rivers and streams flow into and mix with salt water

**freshwater wetland:** a wetland that contains fresh water and is located inland

**habitat:** natural home for animals and plants

**hydric:** requiring an abundance of moisture

**mangrove:** tropical tree that grows along flooded coastal banks

**marsh:** a wetland usually characterized by grasses and similar plants

**reservoir:** an area where surface water is collected and stored. Reservoirs can be natural or constructed.

**saltwater wetland:** a wetland that contains salt water and is located along the coast

**species:** a group of plants or creatures with similar features

**swamp:** a wetland often partially covered by water and characterized by trees

**waterfowl:** a bird that swims or wades in the water

**wetland:** an area that lies between upland regions and aquatic systems that is wet part or all of the year

**wildlife:** animals and birds that live in the wild

## Websites

Below is a list of interesting websites that give information, present educational activities and provide links to other websites.

**Southwest Florida Water Management District**  
[WaterMatters.org/Education](http://WaterMatters.org/Education)

**Give Water a Hand**  
[uwex.edu/erc/gwah](http://uwex.edu/erc/gwah)

**U.S. Environmental Protection Agency Wetlands**  
[water.epa.gov/type/wetlands](http://water.epa.gov/type/wetlands)

**USGS National Wetlands Research Center**  
[nwr.c.usgs.gov](http://nwr.c.usgs.gov)

*Exploring Our Wonderful Wetlands* includes  
a student publication, a teacher's guide and a set of full-color activity cards.  
To order more copies of this set or other free water resources education materials,  
visit our website at [WaterMatters.org/publications](http://WaterMatters.org/publications) or call 1-800-423-1476 (FL only), ext. 4757.

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