

# Savannah National Wildlife Refuge Waterway for Wildlife

## **Junior Refuge Manager Discovery Program Ages 9 - 12**

Junior Refuge Managers at Savannah National Wildlife Refuge have fun learning, discovering, and creating while becoming familiar with native wildlife and basic refuge management practices.

This booklet belongs to \_\_\_\_\_.

## Let's Get Started

To work on becoming a Junior Refuge Manager, check out a backpack and a weather kit at the visitor center information desk. The backpack contains binoculars, bird identification books, and a magnifier.

You may explore:

- The movie and exhibit area at the visitor center
- The Beech Hill Nature Trail, butterfly garden, and bird feeding station outside the visitor center
- The Laurel Hill Wildlife Drive, Kingfisher Pond Recreation Area, and hiking/biking trails in and around the impoundment area

Carry water whenever you are hiking. In hot weather, be sure to put on bug spray, sunscreen, and hat.



**The Blue Goose is the symbol of the National Wildlife Refuge System. How many Blue Goose symbols can you count in this workbook?**

The Junior Refuge Manager Discovery Program is family-oriented. Feel free to help your future Junior Refuge Manager complete the activities.

**Complete 8 of the 12 activities to earn a Junior Refuge Manager badge.**

**Complete all activities to earn a Junior Refuge Manager badge and a refuge patch.**

After completing your activities, return to the visitor center information desk for assistance in finalizing the process to become a Junior Refuge Manager.

# Safety Comes First

Junior Refuge Managers know that safety comes first. Do your part to be sure you have a fun and safe experience by following the refuge safety practices and procedures.

- Always keep a safe distance from wildlife. Do not feed or disturb any animals you see.
- If animals eat plastic, food, glass, or metal that people throw away, they can become sick or die. Do not litter.
- For your own safety, swimming is not allowed on the refuge.
- Move slowly and stay on the trails. Plant growth on trail shoulders may hide snakes, alligators, poison ivy and stinging insects. Do not enter areas posted as closed.
- Leave wildlife, plants, or other natural objects on the refuge where you found them for other visitors to enjoy as well. A good motto is: "Take only memories, leave only footprints".
- Dogs, cats, and other pets are not allowed on the refuge.

## National Wildlife Refuges

Currently there are over 560 refuges in the United States. Refuges provide a place for wildlife to live. The mission of the U.S. Fish and Wildlife Service is to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people.



# Waterway For Wildlife

As you look at the “Waterway for Wildlife” exhibits in the visitor center, read the panels, and see if you can answer the following questions by filling in the blanks to complete the statements. As a hint, each panel title is listed before the questions.

## **Tidal Freshwater**

Tidal freshwater occurs when a \_\_\_\_\_ tide from the ocean interacts with \_\_\_\_\_ from the river.

## **Riceland Legacy**

Vast fields of rice once covered river lands now part of Savannah National Wildlife Refuge. In the 1800's slave laborers and Irish immigrants cleared virgin bottomland forests and constructed \_\_\_\_\_ (levees), canals, and \_\_\_\_\_ (floodgates) to control water flow for rice cultivation. \_\_\_\_\_

The restored former rice field area now contains?

\_\_\_\_\_ wildlife impoundments  
\_\_\_\_\_ acres  
\_\_\_\_\_ miles of dikes

## **Plentiful Fish**

Three fish found on the Savannah National Wildlife Refuge are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

## **Refuge Habitats Have Their Roots in the Living Soil**

Find the clapper rail. This bird might be seen in which type of soil environment?

\_\_\_\_\_

### **The Wonder of Bird Migration**

Migrating birds follow general routes called \_\_\_\_\_.

The Savannah National Wildlife Refuge is located on the \_\_\_\_\_ Flyway.

### **Upland Sanctuaries**

Small tree islands called \_\_\_\_\_ are scattered throughout the freshwater impoundments. High ground is uplands free from \_\_\_\_\_ and is rare on Savannah National Wildlife Refuge.

### **Bottomland Hardwoods**

On the lower Savannah River, \_\_\_\_\_ freshwater periodically floods the bottomlands. What ~~do~~ ~~owls, ducks,~~ and songbirds need for nesting?

### **Lifblood of the Refuge**

Flowing through the heart of Savannah National Wildlife Refuge, the Savannah River gives life to diverse wildlife habitats.

\_\_\_\_\_ and \_\_\_\_\_ saltwater tides from the Atlantic Ocean cause the freshwater to rise and fall twice a day.

### **Tidal Freshwater**

Tidal freshwater occurs when a saltwater tide from the ocean interacts with \_\_\_\_\_ in the river. Incoming seawater forms a \_\_\_\_\_ under the outgoing fresh river water.

### **Saving the Resource**

How does the refuge manage water levels?

# Refuge Crossword

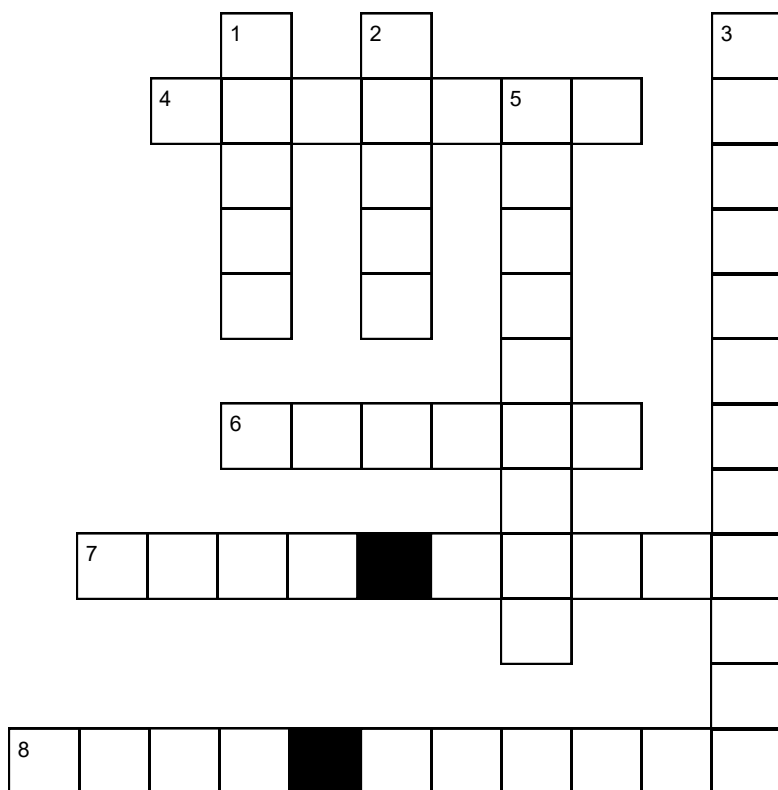
Read the clues and place the correct answer in the appropriate spaces on the grid.

## Across

4. Food, water, shelter, and space
6. Route migratory birds use
7. Symbol of National Wildlife Refuge System
8. Allows water to move into and out of impoundments

## Down





1. Grassy wetland
2. Highs and lows; happen twice daily
3. Former rice fields flooded for wildlife
5. Large reptile



# Wildlife Bingo

Did you know that an alligator can reach a length of 14 feet or more and weigh over 400 pounds? You can see alligators in refuge impoundments and canals, and on levees where they like to sunbathe. There are lots of other animals you can see along the wildlife drive and other refuge trails.

Use the spaces to play a game of wildlife bingo. Fill in the name of the animal in a box every time you can find a new type of animal. Once you get five boxes in a row (across, down, or diagonal) you win. See if you can win without counting the same species twice.

Bird	Wading Bird		Bird	Mammal
Duck	Amphibian	Duck	Wading Bird	Bird
	Bird	Mammal	Duck	
Mammal	Duck	Bird	Wading Bird	Reptile
Wading Bird	Reptile		Amphibian	Bird

# Scavenger Hunt

Write the first five letters of your name on the lines below. Beneath the letters of your name, list, birds, animals, plants, habitats, or objects you see in the exhibit area or outside on the refuge that begin with a letter of your name. Try to list all you can.

\_\_\_\_\_



## Wildlife Word Search

Circle the wildlife related words in the puzzle.  
Words can be across or down.

ALLIGATOR

DIKE

FLYWAY

HAMMOCKS

IMPOUNDMENTS

MARSH

MIGRATION

WILDLIFE

RICE TRUNKS

TIDES

STURGEON

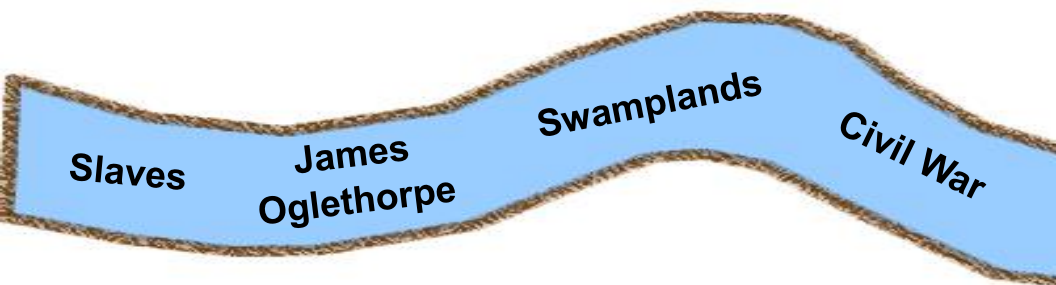
WATERWAY

I	M	P	O	U	N	D	M	E	N	T	S
W	A	T	E	R	W	A	Y	A	M	H	Y
T	I	D	E	S	D	U	D	T	S	A	R
D	R	T	A	I	K	T	U	S	E	M	U
M	F	L	Y	W	A	Y	I	T	L	M	S
R	I	C	E	T	R	U	N	K	S	O	M
D	I	K	E	I	A	M	L	R	R	C	A
E	I	L	T	R	T	A	T	E	R	K	R
S	T	U	R	G	E	O	N	R	N	S	S
W	I	L	D	L	I	F	E	A	D	S	H
C	A	L	A	L	L	I	G	A	T	O	R
M	I	G	R	A	T	I	O	N	W	D	A

# A Journey

Archaeologists often act as detectives, using their findings to fill in “Waterway For Wildlife ” exhibit area, use your detective skills to filling in the blanks with words from the river below.

Giant animals lived in the vicinity of the \_\_\_\_\_  
\_\_\_\_\_ lived along the Savannah River  
\_\_\_\_\_ permanent towns. The Englishman, \_\_\_\_\_  
\_\_\_\_\_ of Rice” in Savannah (1830-1861), at least \_\_\_\_\_ plantations  
and itinerant Irish laborers established rice fields by clearing  
levees (dikes) around fields near the Savannah River. The  
River area. In 1927 the 2,352 acre Savannah River Bird Refuge  
acres and renamed the Savannah National Wildlife Refuge.



# Back in Time

the blanks in history and understand life. While exploring the complete the story of the Savannah National Wildlife Refuge,

\_\_\_\_\_ 18,000 years ago. From 1150 to 1740,

\_\_\_\_\_ and Atlantic Coast. They occupied small villages and

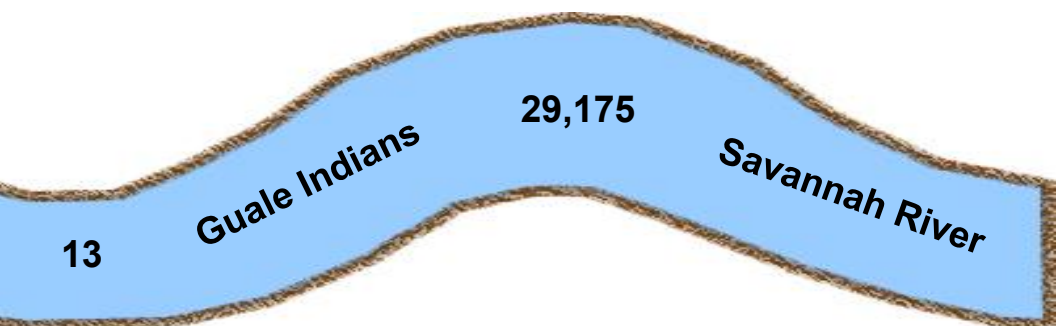
founded the Georgia Colony in 1733. During the “Golden Age  
\_\_\_\_\_ were located in the present-day refuge.

\_\_\_\_\_ and constructing miles of canals and

\_\_\_\_\_ ended the rice culture in the Savannah

\_\_\_\_\_ was established. The refuge has been enlarged to \_\_\_\_\_

Former rice fields have been restored to benefit wildlife.



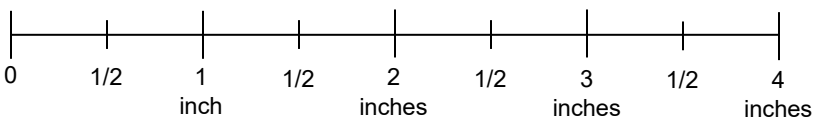
# Refuge Math

To make an educated guess of the length of an alligator, estimate the distance from its nostrils to its eyes. Guesstimate how many inches it is from the nostrils to the eyes of the alligator in the visitor center exhibit area. Each inch equals approximately one foot in length. Do not touch the alligator. Observe with your eyes.

If the estimated number of inches from nostrils to eyes is \_\_\_\_\_, then the approximate length of the alligator is \_\_\_\_\_ feet.

What length is the largest alligator you saw today? \_\_\_\_\_

**Alligators are wild animals and can be dangerous. Never try and approach, touch, or feed an alligator. Always view alligators on the refuge, or anywhere in the wild, from a safe distance.**



Alligators can weigh 400 pounds. Subtract your weight in the equation below. How much more does the alligator weigh than you?

Alligator weight: 400 pounds

Your weight: — \_\_\_\_\_ pounds

The alligator weighs \_\_\_\_\_ pounds more than you weigh.

The Savannah National Wildlife Refuge was established in 1927. Can you determine how old the refuge is today?

Today's year

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Year refuge established

—	1	9	2	7
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Age of refuge in years

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## Sounds Of Nature

Find a quiet, comfortable place outside the visitor center. This spot should be where you are not tempted to talk to anyone else. Relax and just listen to the sounds around you for 3 minutes. What do you hear?

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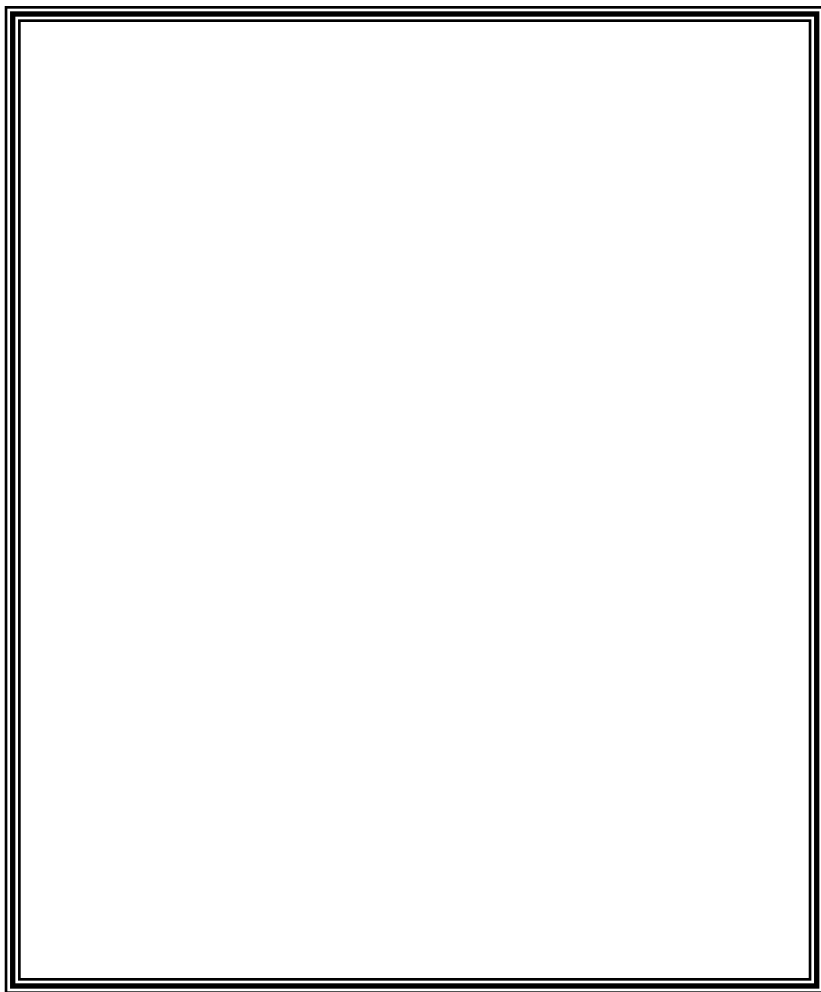
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## Art In Nature

Think about your favorite place on the refuge.  
Draw a picture in the frame below of what you see.



## Prescribed Fire on the Refuge

The planned use of carefully controlled fire in certain areas can be beneficial for wildlife. Prescribed fire adds nutrients to the soil and allows more productive plants to thrive, as well as provides fresh new food for wildlife. On Savannah National Wildlife Refuge, prescribed fire is most often used to maintain the impoundments.

Forestry technicians (wildland firefighters) use two instruments, an anemometer, which records wind speed, and a psychrometer, which determines temperature and relative humidity, to determine if weather conditions are appropriate for prescribed fire.





Open the Weather Kit and select the following tools to complete this activity:

- Pocket 1: Humidity tables
- Pocket 2: Anemometer (wind meter)
- Pocket 3: Psychrometer
- Pocket 4: Mobile Fire-Weather Observer's Record.  
Follow the directions inside the front cover of this notebook for the weather tools you will use for this activity.

There are many factors to evaluate to determine if the weather is appropriate to burn. If we were looking for the temperature to be between 40 and 80 degrees F , the humidity to be between 30 and 60 %, and the wind speed to be no more than 15 mph, would today be a good burn day?

Temperature reading \_\_\_\_\_

Humidity reading \_\_\_\_\_

Wind speed \_\_\_\_\_

Would today be a good day to burn? \_\_\_\_\_

Throughout the prescribed burn, the weather is recorded every hour. Record your weather in the Mobile Fire-Weather Observer's Record. Show this to the refuge staff member after you have completed the activities to be a Junior Refuge Manager.

# Refuge Field Notes

Use this space to record some of the special animals, habitats and points of interest you have seen during your visit to the Savannah National Wildlife Refuge.

Ideas to consider: What did you see? What did you hear? What was the area like? What was the weather like? Were there any animals? What were the animals doing? What habitats were around you?

Date: \_\_\_\_\_

Weather: \_\_\_\_\_

Animals: \_\_\_\_\_

Habitats: \_\_\_\_\_

Points of Interest: \_\_\_\_\_

Your Observations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Draw Your Migration Route

Many species of birds migrate each year. Birds migrate due to changes in food availability, habitat, or weather. Each species uses a special flyway to migrate. There are four flyways in the United States. Refuges are like stepping stones for birds because they provide safe places for them to stop and rest along their migration routes.

Place a star next to your home area and then draw a line from your home marking the migration route you traveled to arrive at Savannah National Wildlife Refuge.



## Back at Home Activities

- ⇒ Invite wild bird visitors to your yard by erecting bird houses and bird feeders.
- ⇒ Visit a national wildlife refuge close to your home.
- ⇒ Do something to help the environment.



# Junior Refuge Manager Pledge

I pledge that I will protect and preserve the animals and land of the Savannah National Wildlife Refuge. I will visit other refuges and learn more about the conservation mission of the National Wildlife Refuge System.

Junior Refuge Manager \_\_\_\_\_

Refuge Manager \_\_\_\_\_

Date \_\_\_\_\_

