



U.S. Fish & Wildlife Service

# Junior Refuge Manager Activity Booklet

## Mississippi Sandhill Crane National Wildlife Refuge

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Ages 8 through 12



Managing a National Wildlife Refuge takes a lot of work to protect wildlife. Refuge staff learn about a variety of subjects to help both the public and wildlife. Would you like to work at a National Wildlife Refuge? Perhaps you can become a biologist, a fire ecologist, and environmental educator, a wildlife law enforcement officer or even a refuge manager. First, you must learn about wildlife, their habitat, and how to protect them. You can start today by completing this booklet, respecting wildlife and helping keep the environment clean.

After you complete the activities in this booklet, return to the visitor center. A staff member or volunteer will review your answers with you, sign your booklet and give you an award. Please bring your booklet into the visitor center no later than one hour before closing time.

*Note to adult companions:* This is a family activity. Your assistance is needed; however, please allow the youths to answer in their own words.

# Junior Refuge Manager Activity Booklet

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## Endangered Means There's Still Time

The Mississippi sandhill crane has been designated as "critically endangered" because it is in immediate danger of becoming extinct. A plant or animal that has become extinct means there are none left -- gone forever...

When the Mississippi sandhill cranes were discovered, there were only 30 - 35 cranes left. Biologist Jake Valentine worked within the United States Fish and Wildlife Service to survey the cranes and create a National Wildlife Refuge that would protect their home.

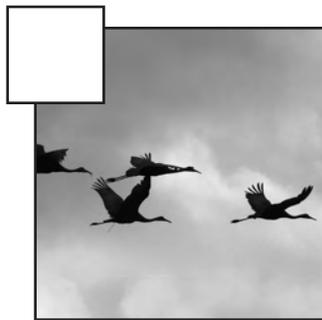
To help the crane population recover, biologists sometimes took one egg from nests and raised cranes in captivity. Cranes often lay two eggs, but generally they will only raise one chick. So that cranes won't think that humans are their parents, the cranes are raised using a puppet. When they are 6 months of age, the cranes are released onto the refuge.

Can you put the pictures below in order to match the story above?



### Puppets

Cranes are raised in captivity using a puppet that teaches them how to be cranes.



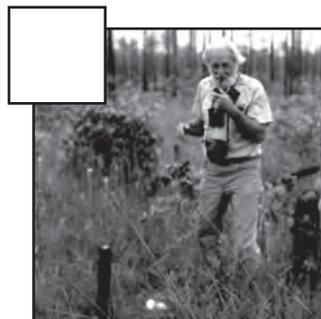
### New Kid on the Block

The captive-raised cranes join the rest of the cranes. Captive-raised and wild cranes are fully compatible.



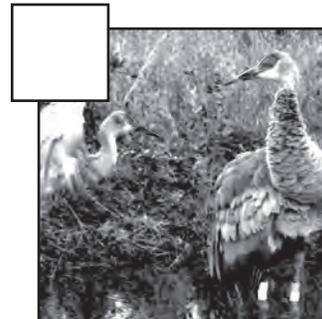
### Egg Snatchers

In the 60's and 70's, biologists sometimes took one egg to raise in captivity.



### Valentine

Jake Valentine is sent to find out how many cranes are left in Mississippi.



### Back to the Wild

When they are fully grown, the cranes are released onto the refuge.



### National Wildlife Refuge

The refuge is formed to protect the crane and it's home from being developed.

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## Who's Who on the Wildlife Refuge?

Today there are about 110 Cranes in the wild. Biologists monitor the cranes using colored leg bands to identify the birds. About 85% of the cranes have their own distinct color band combination. Using binoculars, biologists write down the bands that they see and then use a key to identify the bird. They can find out the age, gender and more about the crane by using the color band system.

**Help us band the cranes below by coloring their bands to match the code (crayons available in the visitor center.)**

 <b>Red</b>	<b>Single Crane</b>	<b>Dancing Crane #1</b>	<b>Dancing Crane #2</b>
 <b>Blue</b>	 	 no	 
 <b>Green</b>	 	 bands	 
 <b>Orange</b>			
 <b>Yellow</b>			
 <b>Purple</b>			



# Junior Refuge Manager Activity Booklet

## Savages in the Savanna

Pitcher Plants, butterworts and sundews may sound harmless, but these plants are the scourge of the savanna. Carnivorous plants feed on insects and other small creatures to get important nutrients they need to grow. Each type of carnivorous plant has it's own strategy for trapping their small prey.

Explore the C.L. Dees trail and check off any carnivorous plants you see. Look closely and make notes about any insects you see trapped in their sticky leaves.



### Yellow Trumpet Pitcher Plant

The tubular pitcher is actually a modified leaf. Insects are attracted to nectar on the lip of the pitcher and at the bottom of the tube. They are trapped inside by downward pointing hairs. slowly the plant digests it's prey and absorbs the nutrients.

What do you see?

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### Yellow Butterwort

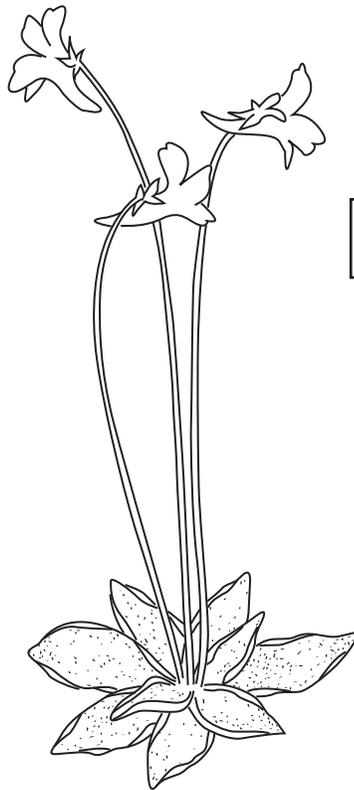
This carnivore gets its name from the yellow flowers it grows in March and from the butter-like feel of the leaves. Flat to the ground, the butterwort's leaves are slick and slimy. Small creatures walk onto the slime and are trapped. The butterwort slowly consumes its prey.

What do you see?

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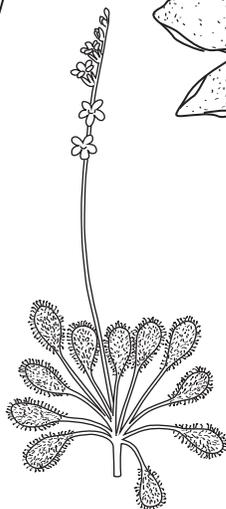
### Dwarf Sundew

This tiny red plant grows close to the ground. It's prey walk or fly onto it's sticky leaves which trap their lunch. Special enzymes are released and slowly digest prey.

What do you see?

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# Junior Refuge Manager Activity Booklet

## Mission: Trail Spy

Walking nature trails can be a lot of fun - you get to be outdoors and things are always changing! Your mission is to explore the trail and find the items below. Remember - don't pick the flowers!

### Animal Evidence

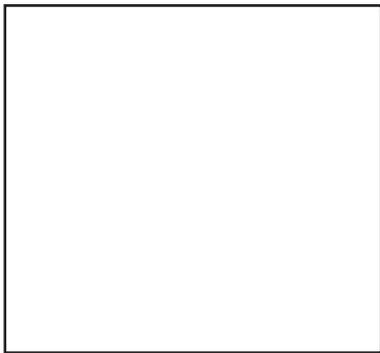
Find evidence that an animal has been here.  
What did you find? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### Flowering Plants

There are flowers on the trail all through the year.

Draw a flower you found. Maybe we can identify it in the office.



### Every Rose Has A Thorn

Find a plant with thorns or prickles.  
What kind of plant did you find? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### Berries

Berries are great food for wildlife.  
Can you find any berries on the trail?

What color is the berry? \_\_\_\_\_

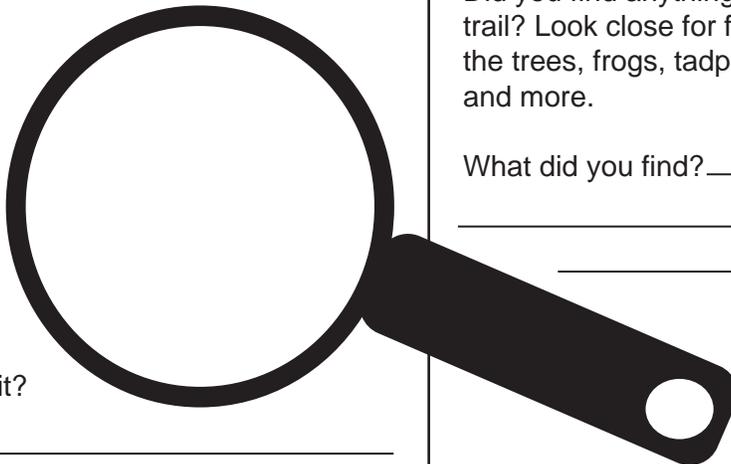
What kind of plant is it on? \_\_\_\_\_

### Bugs!

Bugs crawl and fly and some even swim!

Draw a picture of a bug that you found on the trail.

Where did you see it?  
\_\_\_\_\_



### Big Seeds

Pine cones drop from the tall pines in the sky.

Use the ruler to measure your pine cone. How big is the one you found?  
\_\_\_\_\_

### Music to My Ears

Listen carefully. Do you hear any birds? Describe their song:  
\_\_\_\_\_  
\_\_\_\_\_

### It Takes All Kinds

Measure 3 leaves from different types of plants. Record your measurements:

Leaf 1: \_\_\_\_\_

Leaf 2: \_\_\_\_\_

Leaf 3: \_\_\_\_\_

Try to find a really big one and a really tiny one.

### Additional Evidence

Did you find anything else exciting on trail? Look close for fence lizards on the trees, frogs, tadpoles in the pond and more.

What did you find? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10

1/2

9

1/2

8

1/2

7

1/2

6

1/2

5

1/2

4

1/2

3

1/2

2

1/2

1

1/2

0

# Junior Refuge Manager Activity Booklet

## Go or No-Go

Wet pine savannas are open grasslands with scattered trees. Maintaining the savanna requires the careful use of prescribed fire. Without fire, the savannas would be overgrown, brushy forests where cranes and sun-loving plants wouldn't be able to survive.

Historically, fires were started by lightning storms. Today, fire ecologists answer the questions of "when" and "how" by looking at fuel loads (trees, brush, grass), weather (wind, humidity, temperature), and other considerations such as roads and buildings.



Prescribed fire specialists routinely monitor weather conditions during a fire. They use handheld weather kits and contact the National Weather Service for updates.

In the event that the weather takes an unexpected turn, burns are cancelled, even if there is already fire on the ground.

Working with a refuge staff or volunteer, fill out the following weather information for today:

Today's Date: \_\_\_\_\_

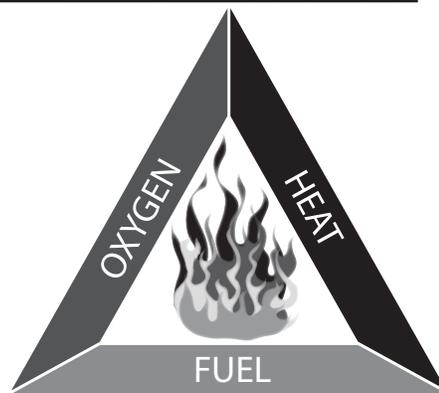
Temperature (dry): \_\_\_\_\_

Temperature (wet): \_\_\_\_\_

Relative Humidity: \_\_\_\_\_

Wind Speed: \_\_\_\_\_

Wind Direction: \_\_\_\_\_



### Fire Triangle

Fires require 3 elements to ignite. Removing one part of the triangle will put out the fire.

Can you match the Objectives to the Actions?

<u>Objective</u>	<u>Action</u>
Remove Oxygen?	Add Water
Remove Heat?	Rake away leaves
Remove Fuel?	Smother the fire

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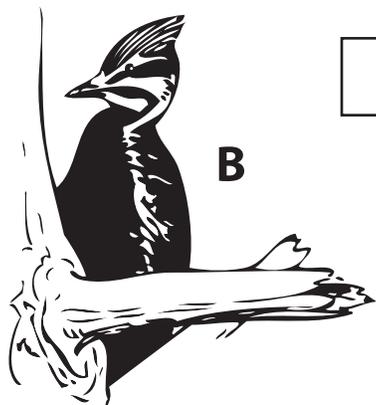
## Bird Identification

More than just cranes - many species of birds live at the Mississippi Sandhill Crane NWR! Keeping the savanna open for cranes is great for ground nesting birds and other animals too. Biologists have to be able to identify birds so that they can monitor their populations and notice any fluctuations over the years. Some birds are easy to identify and others require you to look very closely.

See if you can match the birds below to their descriptions.

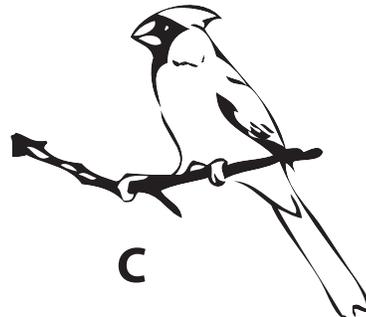
### Cardinal

The male of this bird is bright red. Both the male and the female have a crest/mohawk on their head and a dark mask on their face.



### Bobwhite Quail

Bobwhites chirp their name: "bob-white!" to let you know they are near. They are ground nesting birds that can often be found along the edges of the road or trail. They appear "chicken-like" and have a dark patch on the top of their head and through their eye.

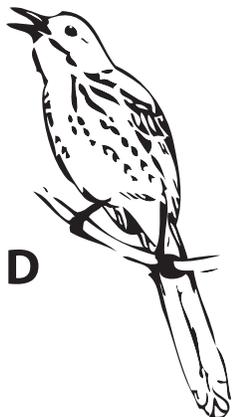


### Chickadee

This tiny bird with the black head sings its name "chik-a-dee-dee-dee" making it easier to find in the trees. Their white cheek patch makes their dark heads stand out.

### Pileated Woodpecker

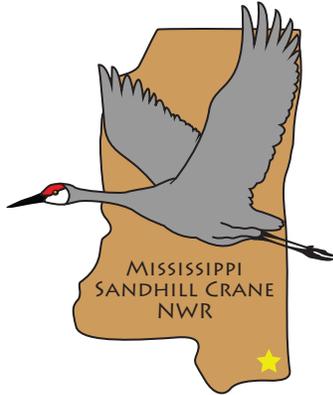
This woodpecker gets its name from its red crest which resembles the "pileaus" of a Roman soldier. It also has dark stripes on its face. Woodpecker use long tongues to feed on insects between tree bark and in the holes they peck into trees.



### Brown Thrasher

This bird has a white-ish chest with brown streaks. It has a long beak that is slightly curved. Thrashers love feeding in newly burned parts of the refuge.





# *Certificate of Completion!*

This certifies that



*has successfully completed the*

Junior Refuge Manager  
Program

*at*

Mississippi Sandhill Crane  
National Wildlife Refuge



*Signed*



*Date*