

Junior Refuge Manager

Wallkill River National Wildlife Refuge

Activity Book



This Book Belongs To

Welcome to the Junior Refuge Manager Program

Wallkill River National Wildlife Refuge needs people like you to help us succeed with our goals to protect wildlife. The refuge has several thousand acres of land and water conserved in its natural state for the benefit of wildlife and people. We invite you to explore the trails, find out about the wildlife that lives here, and discover the ways that we can enjoy nature. The pages in this book will guide you and your family in this adventure.

To earn your Junior Refuge Manager certificate and badge:

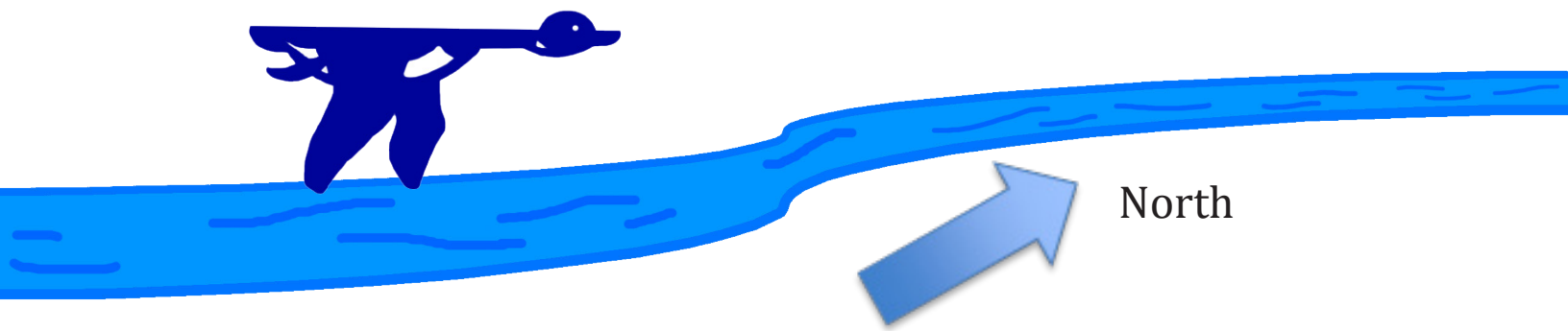
- You should be between 5 and 14 years old.
- Complete each activity page with your family and have it signed by a Refuge staff member or volunteer when you visit the Headquarters.
- You need to visit the Wallkill River National Wildlife Refuge at least twice to complete the program. You can take as much time as you need to complete the activities. You can do them in any order you choose.
- Several programs are offered at the Refuge during the year where volunteer guides will be available to assist you with your observations.



Note to Adult Companions

Your Junior Refuge Manager candidate will gain from this experience and hopefully you will, too. Thank you for helping them pursue this goal. Encourage them and guide them, but let them complete the answers in their own words. The important lesson is to help them to make discoveries and develop an appreciation of nature. Do not worry about getting all of the answers correct.

Feel free to ask Refuge volunteers for assistance and information. The refuge has brochures listing many of the animals to be found here. These are available at the headquarters office and most trail heads.



Wallkill River National Wildlife Refuge

The National Wildlife Refuge around the Wallkill River was established in 1990 by an act of Congress. It is one of over 550 national wildlife refuges created to protect wildlife and the natural resources of our country for everyone. The first refuge, Pelican Island in Florida, was established by President Teddy Roosevelt in 1903 to protect nesting and roosting Brown Pelicans and other water birds.

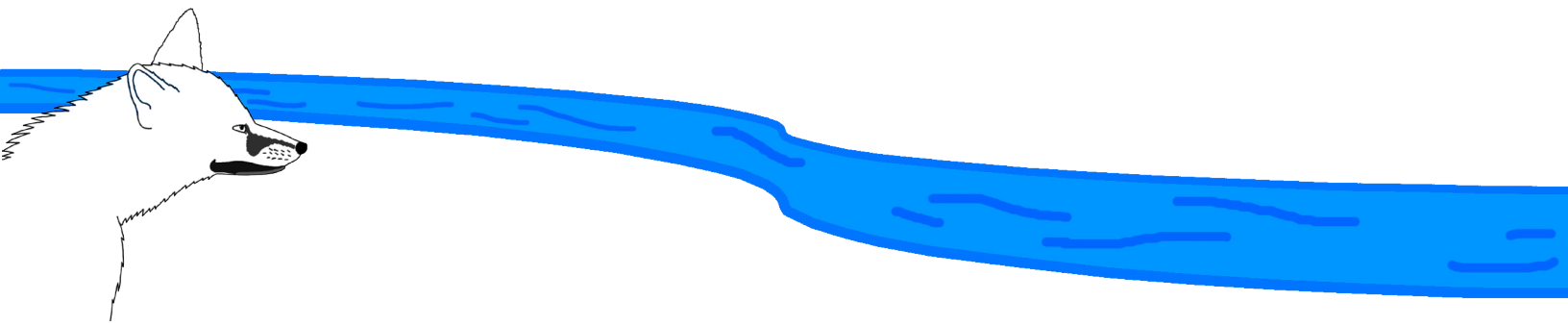
Wallkill River National Wildlife Refuge is centered along a 10-mile stretch of the river. The Wallkill River is unusual because it flows north. Only 10 percent of the world's rivers flow north. The waters of the Wallkill flow out of Lake Mohawk in Sparta and into Roundout Creek in Kingston, New York and finally empty into the Hudson River. The early Dutch settlers called this river valley the "Drowned Lands" because of the frequent spring flooding.

Today Wallkill River National Wildlife Refuge is over 6,000 acres in size with plans to expand to over 17,000 acres. Contained within the refuge lands and waters are many species of wildlife that live, feed, nest, and visit here. The refuge manages over 300 acres of wetland impoundments, raising and lowering water levels at different times, to attract water birds. White-tailed deer are common along with Beaver, Muskrat, and Mink. Numerous frogs, salamanders, turtles, insects, and fish make their home here.

There are numerous opportunities for people to enjoy the refuge. There are trails for people to hike including a portion of the Appalachian Trail and opportunities to observe the wildlife. People can come here to canoe, kayak, fish, hunt, and enjoy being close to nature.

What would you like to do in the refuge?

Come explore with your family and use this book to help you discover the wildlife at Wallkill River NWR.



Detecting Mammals

Mammals are the furry animals that take care of their young by feeding them milk. They range in size from smaller than a mouse to as large as a bear in the Wallkill River National Wildlife Refuge. Well-developed senses are adapted to help them survive and can make it difficult for people to have a good look at them. They may hear, see, or smell that you are coming long before you see them.

Look for signs of mammals

Draw or describe what you find and try to identify the animal

Mammal tracks

Hole dug in the ground

Signs of teeth chewing

Droppings or scat

Fur or bones

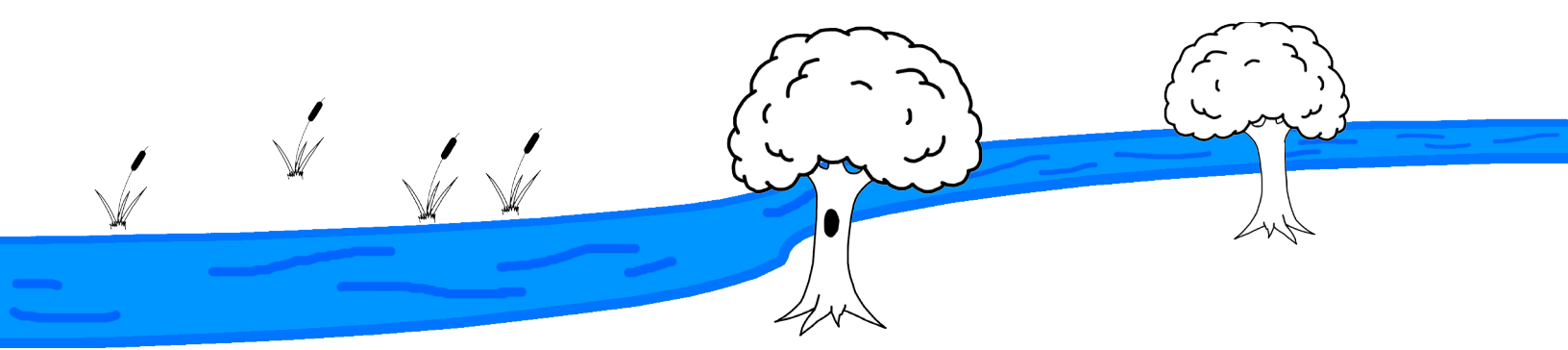
Sound of a mammal

Did you see any mammals?



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Wallkill River National Wildlife Refuge is home to a variety of animals -- some that live in the river, others that live in the woods, fields, or wetlands around the river. An animal's habitat includes all of the areas it needs to raise its young, find shelter, food, and water.

Explore a Habitat Habitats can be named by the plants that grow there and the water. In a wetland the water is on the surface with plants growing up from the wet ground.

What kind of habitat are you exploring today?(circle one):
 River Woods Field Wetland Upland shrub

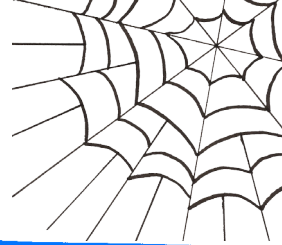
What type of plants are there? (Trees, flowers, grasses, shrubs...)

Pick an animal and see if you can find food, shelter, and a place to nest in that habitat.

	Food	Shelter	Nest
Insect			
Frog			
Bird			
Mammal			

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Investigating the smaller wild animals - Arthropods

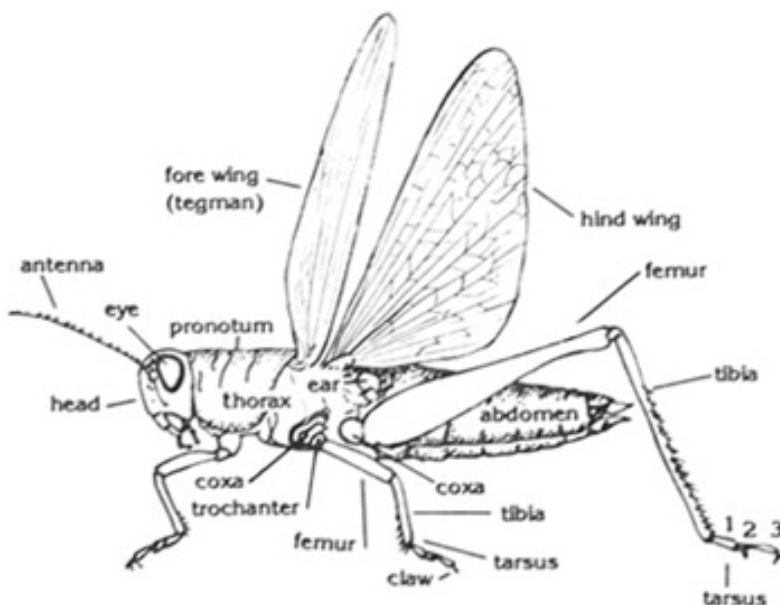
Animals called arthropods do not have a skeleton or bones inside their bodies, but have a hard outer covering - something called an exoskeleton. Their bodies are divided into segments and their legs have joints. There are more arthropods in the world than all the other animals known. Can you match the arthropods below with their names? Circle any you find in the refuge.

1. Spider
2. Crayfish
3. Centipede
4. Tick
5. Grasshopper

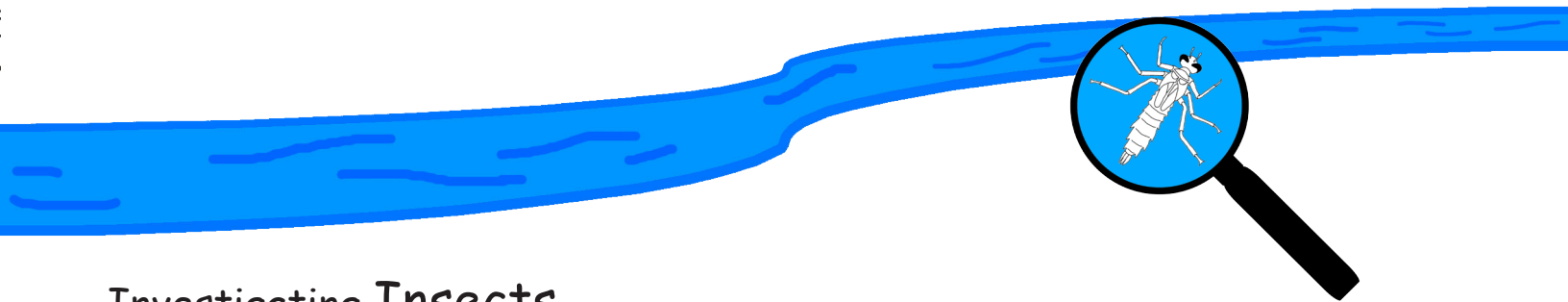


Insects are one type of arthropod.

An insect has three main body parts and six legs that attach to the middle section (thorax). Color the head yellow, thorax brown, and abdomen green.



- Insects have a pair of antennae on their heads they use to smell and feel.
- Insects have compound eyes made up of several to many lenses or facets. A dragonfly eye has over 50,000 facets.
- Some have two wings, some have four wings attached to their thorax
- The abdomen is divided into segments. There are tiny openings along the sides that help the insect to breath.



Investigating Insects

Insects can be found everywhere within the refuge. They are important to the environment in a variety of ways. Some help carry pollen to flowers (needed to produce seeds), others help break down dead plants into healthy soil, some can be harmful to plants, and many are food for other animals.

Try to match the insect with its name and something it eats by drawing a line from the answer to the drawing. Color in any you see and draw or photograph another insect you find:

Butterfly



Dragonfly



Leafhopper



Ladybug



It eats:

mosquitoes

aphids

nectar

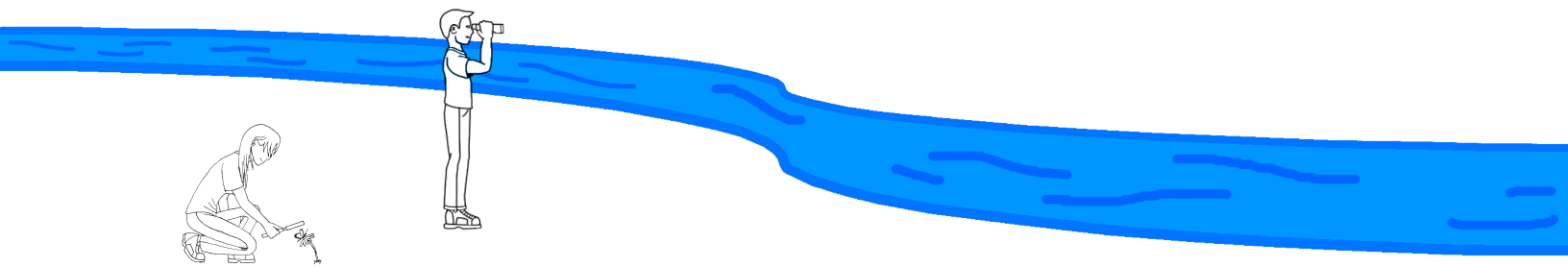
plant sap

Use your magnifying lens to try to get a close look at an insect that is sitting still. Show what you observed below:

You could visit the refuge every day for a whole year, find 100 insects each time, and still not see half of the insects in the refuge!

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Be a Nature Detective -- Observing Nature Around You

One of the best ways to find wildlife is to let it come to you. Find a spot you like in the refuge along one of the trails and a comfortable seat. Plan to sit still for at least 15 minutes, longer is better.

Record your observations. If you can, take a photo or draw a picture.

What kind of habitat are you in?

Describe or name the plants around you.

What is the weather like?

Close your eyes and use your other senses. How many different sounds do you hear?
Can you smell anything?

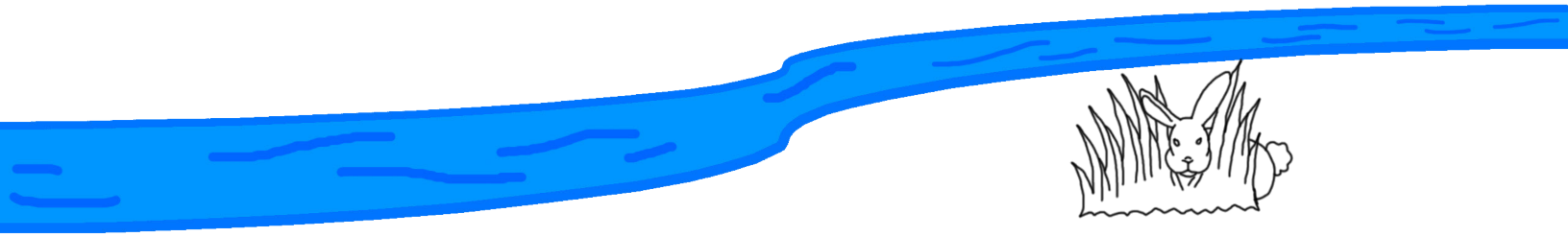
What is the tiniest living thing you can see?

What is the biggest?

What animals or signs of animals can you find?

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Observing Nature Around You

On another visit to the refuge return to the same spot you visited before to observe the changes.

Record your observations. If you can, take a photo.

Are there any changes to the habitat?

Do the plants look different from your last visit? Have they grown?

What is the weather today?

Listen to the sounds? What do you hear?

Can you smell anything this time?

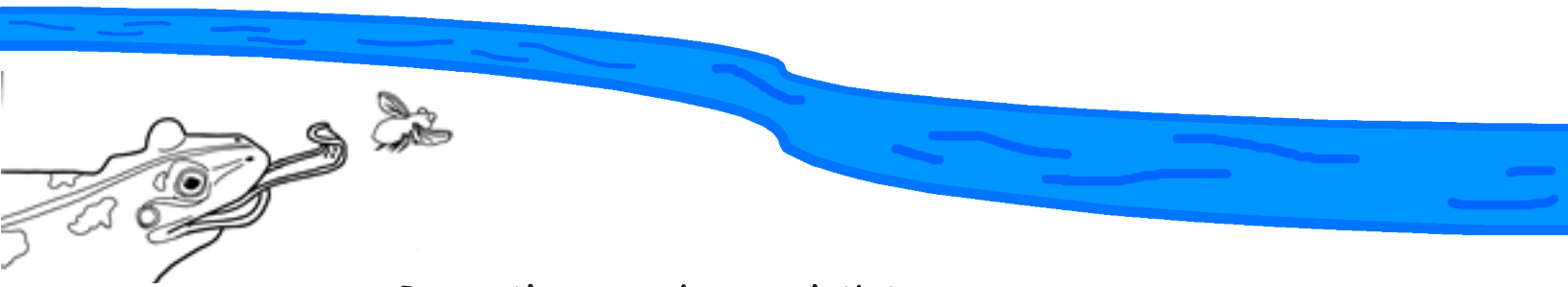
What is the tiniest living thing you can see?

What is the biggest?

What animals or animal signs can you find?

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Searching for Reptiles and Amphibians

Herpetology is the study of reptiles including snakes, turtles and lizards and amphibians including frogs, toads, and salamanders. All of these animals have a skeleton and are cold-blooded. That means their body temperature changes with the temperature outside. They may need to sun themselves to warm their bodies before they can be active.

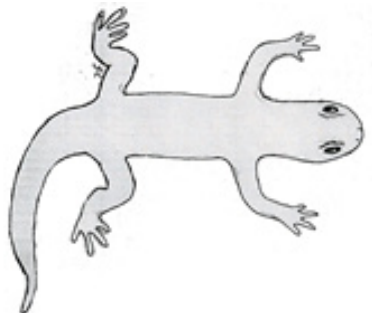
Their ears do not extend outside their heads as yours do, but they can hear you coming and are good at hiding. Approach slowly and use binoculars to avoid scaring them.

Amphibians

Most amphibians start out their lives as eggs in the water and hatch into larvae or tadpoles that swim and have gills like fish. As they grow they transform into air-breathing animals with lungs and legs to go up on land. Their skin is usually moist, and they can absorb air through it as well. Toads have drier, bumpier skin and can move distances away from water.

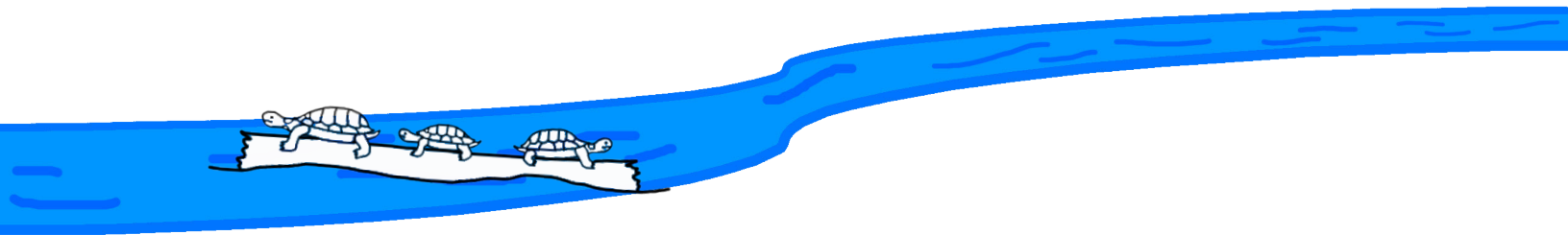
Where would you expect to find an amphibian?

Color in the drawing below with the markings of an amphibian you see.



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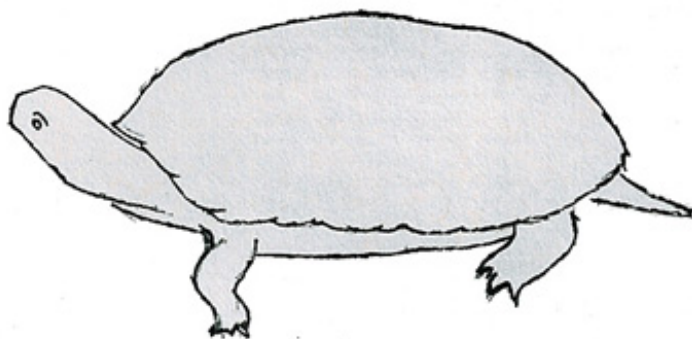
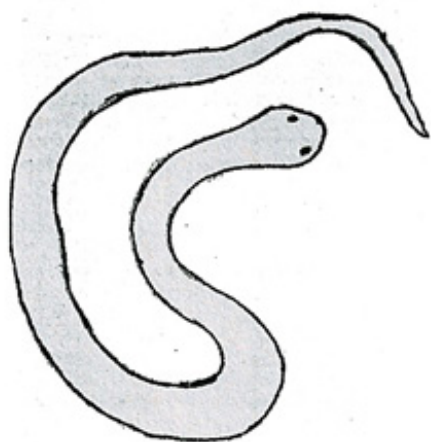


Reptiles

Reptiles have dry (not slimy) skin covered with scales. Their babies hatch or are born on land, not in the water. Snakes do not have legs, but travel and climb using their muscles and scales to grip and move. Turtles' shells are a part of their skeleton. The shells protect them and help us identify the species of turtle. The top of the shell or carapace is divided into sections called scutes. Look for the shapes, patterns, and colors on the skin and shell.

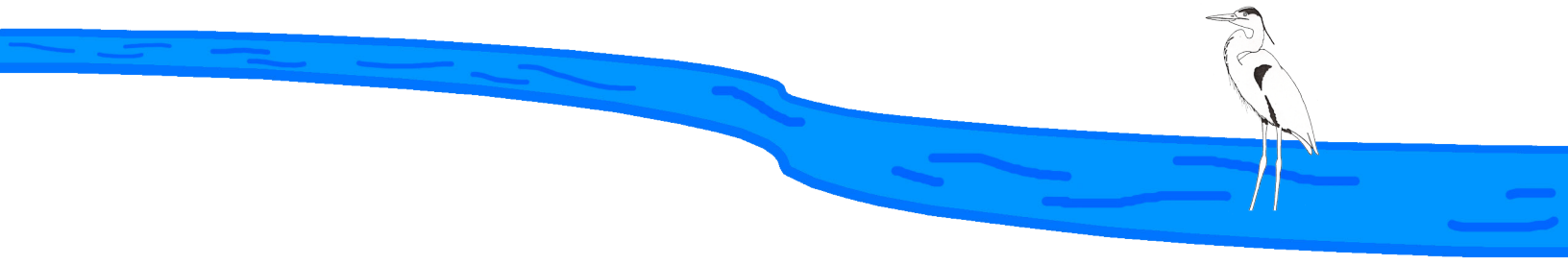
Why do you think it is hard to find reptiles in the winter?

Fill in the drawings below with the markings and colors you see on the reptiles you find in the refuge.



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Discover Birds

Birds are the only animals that grow feathers. Feathers keep a bird warm and dry, are important for flight, and help us identify the species. The color of the feathers are just one of the ways to tell different kinds of birds apart.

Ways to Identify Birds:

Habitat - where do you see the bird?

How big -- compare to birds you know (ex.: bigger than a robin?)

Shape of bill -- is it straight, pointed, hooked, flattened, cone-shaped, long?

Spots or stripes -- look at the feathers for patterns and markings, as well as colors.

Length and shape of tail -- long or short, is tip straight, rounded, or forked?

Look at the legs and feet - legs long or short, color of skin, webbed feet?

Behavior - what is the bird doing, is it alone or with others?

Sound - listen to any sounds the bird is making.

Draw a line from the words to the parts of a bird on the drawing.

Crown

Bill

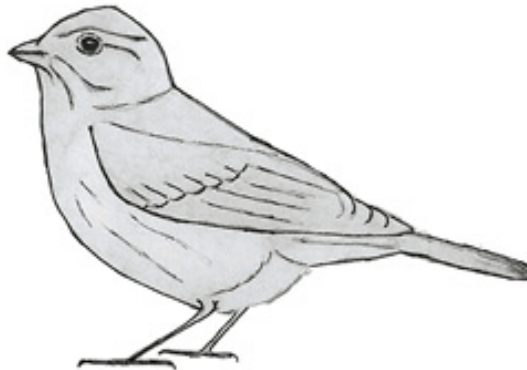
Eye stripe

Throat

Wing

Chest

Belly



Back

Rump

Tail

Flank

Leg

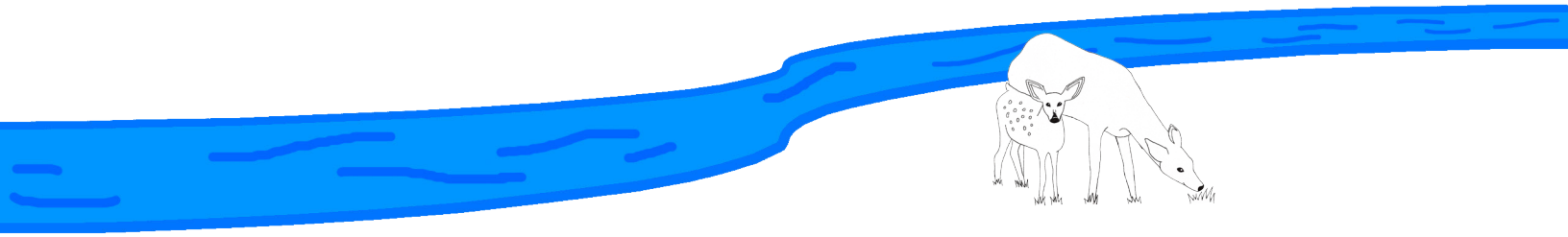
Foot

Look for some birds. There are over 250 species that visit or nest in the Wallkill River National Wildlife Refuge. Describe or identify some of the ones you see in the table below.

Name or Describe	Habitat	What was the bird doing?

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Watching Wildlife

Choose any kind of animal in the refuge you can observe for a few minutes and answer the questions below about it.

1. What type of animal are you watching? (Circle one)

Arthropod Amphibian Reptile Fish Bird Mammal

2. Where is it? (Circle all that apply)

In the water On the ground In a tree On a plant In the air
Somewhere else? _____

3. Is it moving around? _____

How is it moving? _____

4. Is the animal eating? _____

What is it eating? _____

5. Can you describe any sounds the animal is making? _____

6. Is this animal trying to hide? _____

Where and how is it hiding? _____

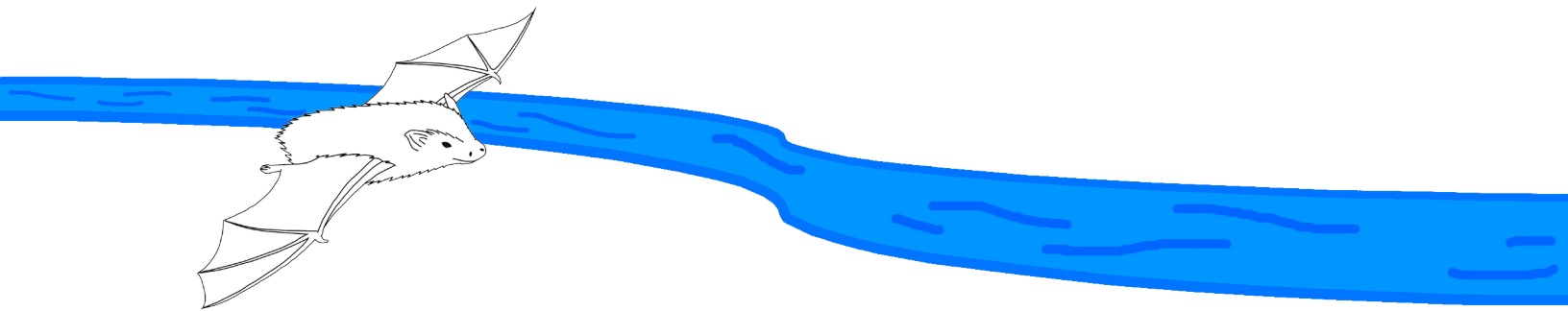
7. Are there other animals near this one? _____

Is it doing anything with the other animals? _____

8. Write down anything else you would like about your observations. _____

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Protecting Rare and Endangered Species

Some of the wildlife species at the Wallkill River National Wildlife Refuge are considered rare because there are not many found in the area. That could mean they may only visit occasionally.



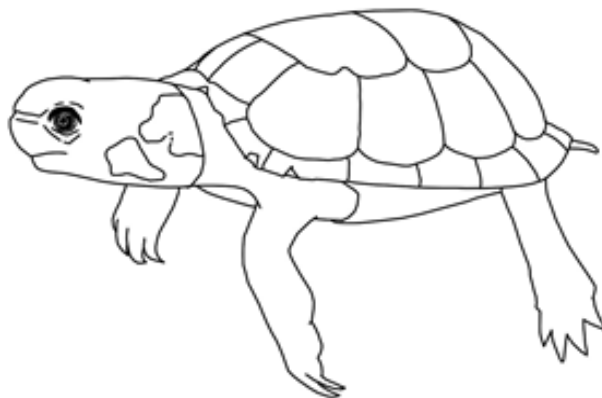
A Swallow-tailed Kite is a hawk that lives in the southern United States. One flew north to the refuge in the fall and it attracted many birdwatchers to see it.

Some rare wildlife species are considered **threatened** or **endangered**. That means that their population numbers have gone down. An endangered species could go extinct unless people do something to help.

Bog Turtle Status: Federally Threatened

The Bog Turtle is one of the smallest turtles in the world. It measures about 4 inches long. The shell and skin are mostly dark brown to black. There is a large reddish-orange to yellow patch on each side of the head.

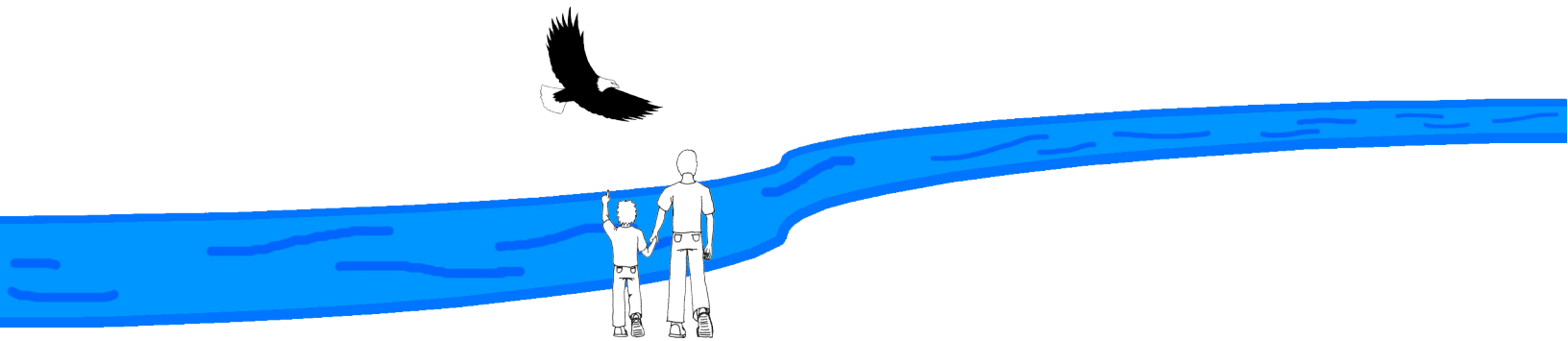
Bog Turtles live in swamps, marshy meadows and wet pastures with soft muddy bottoms and patches of drier areas. Loss of habitat and pollution are two reasons this turtle's population is low and may become an endangered species unless people help.



Color in the Bog Turtle and draw in a habitat around it with plants and water.

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Protecting the Wallkill River and all of the Wildlife

The Wallkill River is an important natural resource for the wildlife and for us. The water is critical for maintaining a healthy environment and for the habitats that are important to the many species that can be found here. Whether you enjoy visiting the refuge or you live in the area, protecting the land and water benefits you, too. The plants and soils clean the air and the water of pollution and reduce flooding by soaking up excess water. Having many different animal species helps keep a balance in nature.

To keep the refuge protected takes more than just naming it a wildlife refuge. It takes people doing things to help. The Refuge Manager's job is to make sure the species we want to protect can find what they need in the refuge.

Ask a volunteer or staff person to tell you some of the jobs people do in the refuge to protect it. List three below:

- 1.
- 2.
- 3.

Can you think of something you could do to help protect the Wallkill River National Wildlife Refuge?

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Safe Nature Exploration

Step lightly into nature and a world of wonder can surround you.

- Travel with an adult
- Stay on the marked trail
- Take only pictures, leave the lightest of footprints, and bring home only memories
- Remember you are a visitor to the animals' homes
- Know and obey the laws and regulations that govern the use of public lands
- Watch wildlife from a distance where the animal will feel safer
- Know how to recognize poison ivy - "Leaves of three, let it be"
- When hiking, check for ticks on your clothing and skin
- To see wildlife you must be patient, be quiet, and be observant



Created by Friends of Wallkill River National Wildlife Refuge
Artwork © Justin Smisko