

# JUNIOR FORESTER

A PROGRAM OF THE SC FORESTRY COMMISSION

3-5 ACTIVITY BOOK





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3-5 ACTIVITY BOOK



This book belongs to: \_\_\_\_\_

I am \_\_\_\_\_ years old.

I live in \_\_\_\_\_, South Carolina.

I completed this book on \_\_\_\_\_.

# 3-5 Activity Book

## Backpack materials

Grades 3-5 activity book, clipboard, pencil, laminated trail map, "Tree ID for SC" booklet, "On the Nature Trail" book, tree cookie, garden trowel, viewfinder, binoculars, magnifying lens, compass and flashlight.

## Directions for adult who is assisting the student

Hike along the Discovery Trail to find our six educational signs. These signs will provide answers to the majority of the questions in this activity book. Please use the below map along with the laminated Harbison State Forest trail map to help locate them. Look through the "On the Nature Trail" book for some of the answers, to help identify things you find in the forest, and for some fun additional activities. An answer key is located in the back of this guide so you can check your student's learning as you progress.

If you find an interesting insect or organism, gently scoop it up in the viewfinder for a closer look without harming it. Make sure to put it back exactly where you found it so it can keep playing its role in our forest ecosystem. Please do not pick any flowers or plants so others can also enjoy their beauty!

Once you have completed this activity guide, bring it to the Harbison State Forest Education Center to get your certificate signed and receive your Junior Forester badge and Smokey Bear prize! Please call the Education Center at (803) 896-8890 if you have any issues out on the trail, and contact Beth Foley at (803) 896-8855 if you have any questions about this program.

**Sign 1:** Trees Get Sick - Diseases

**Sign 2:** Trees Get Sick - Insects

**Sign 3:** Forest Invaders

**Sign 4:** Trees of Harbison State Forest (triple kiosk)

**Sign 5:** Animal Tracks (triple kiosk)

**Sign 6:** Stump Stories (triple kiosk)



# SCAVENGER HUNT - NATURE WALK

## Directions

1. While you explore today, try to find all of the items on this scavenger hunt!



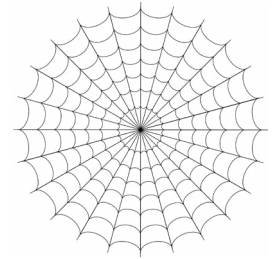
Bird



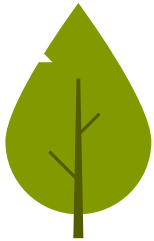
Tree roots



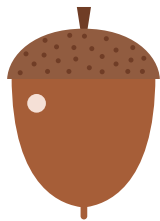
Ant



Spiderweb



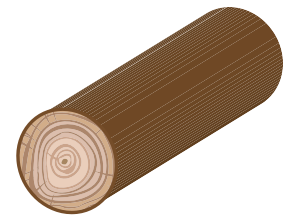
Green leaf



Acorn



Flower



Log



Two similar rocks



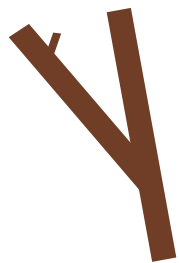
Mushroom



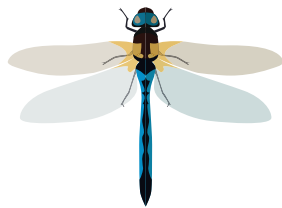
Squirrel



Tall grass



Y-shaped stick



Flying bug



Brown leaf



Cloud



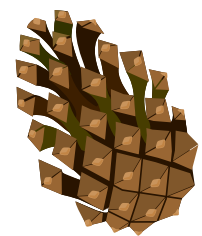
Dandelion



Animal tracks



Wild berries

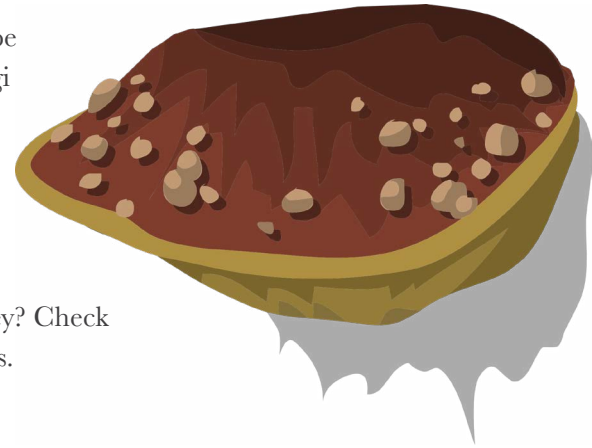


Pine cone

# TREES GET SICK - DISEASES

HIKE TO SIGN 1 FOR HELP WITH THIS ACTIVITY

Did you know that trees can get sick, just like humans can? Tree diseases can be caused by a variety of things including fungi, bacteria and insects. Not all fungi in the forest are bad; some even play an important role in the ecosystem. Mushrooms are a type of fungus that can typically be found on a dead or dying tree. They serve as decomposers that help break down dead wood and recycle the nutrients back into the soil.



1. Can you find any mushrooms growing in the forest? If so, what kind are they? Check out page 27 in the “On the Nature Trail” book to help identify the mushrooms.

2. What part of the tree helps protect it from disease and injury?



## FUNGUS AMONG US

3. Match the tree diseases listed on Sign 1 by drawing a line from each disease to the fungi that transmits it.

Armillaria root rot

Fungi carried by elm bark beetles

Chestnut blight

Soil-borne fungi attacks roots

Dutch elm disease

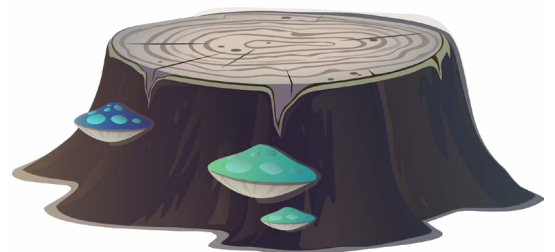
Fungi spores enter through wound on bark

Fusiform rust

Fungi kills everything but roots

~ Tree Jokes ~

Why did the leaf go to the doctor???. It was feeling green.



# TREES GET SICK - INSECTS

HIKE TO SIGN 2 FOR HELP WITH THIS ACTIVITY

Insects can attack all parts of a tree, from the roots, to the bark, all the way up to the leaves. Some insects are harmful and dangerous to trees, but others are beneficial and can even help trees. For example, around 80% of our trees are pollinated by insects! Bees, flies, ants, wasps, beetles and butterflies are all important pollinators for forest ecosystems.

Insects also play an important role in the decomposition of dead and decaying organic matter. Turn over a rotting log (check for yellowjackets and snakes first), and see if you can find insects underneath it. Carefully scoop them up in your viewfinder for a closer look. Use pages 11, 19, and 27 in the “On the Nature Trail” book to identify them. Make sure to put every organism back where you found it, including the log!

**1.** Draw a picture and label all the organisms you found underneath the rotting log.

*(Use pages 11, 19, and 27 in the “On the Nature Trail” book to identify what you found)*



# TREES GET SICK - INSECTS (CONTINUED)

HIKE TO SIGN 2 FOR HELP WITH THIS ACTIVITY

## Meet the trouble makers

Use Sign 2 and the word bank below to answer the tree disease questions.

## Word bank

EASTERN TENT CATERPILLAR, EMERALD ASH BORER, IPS ENGRAVER BEETLE, PINE SAWFLY, SOUTHERN PINE BEETLE

1. What is the most destructive pest of the southern pine forest? \_\_\_\_\_
2. \_\_\_\_\_ presence usually indicates something else is wrong with the tree.
3. \_\_\_\_\_ larvae feed in the bark, disrupting water and nutrients, ultimately killing ash trees.
4. Which insect uses its ovipositor to make slits in needles and then lays its eggs in them? \_\_\_\_\_
5. \_\_\_\_\_ makes webbing nests in the crotches of their host trees in the spring.
6. Match the below insects to their appropriate picture.

EASTERN TENT CATERPILLAR

EMERALD ASH BORER

IPS ENGRAVER BEETLE

PINE SAWFLY

SOUTHERN PINE BEETLE





# PLANTS ON THE MOVE

HIKE TO SIGN 3 FOR HELP WITH THIS ACTIVITY

Non-native or exotic species are organisms that have been introduced or moved to an area where they do not naturally occur. When these plants and animals start to harm their new ecosystem and outcompete native species, they are then considered invasive species.

1. What does the word invasion mean to you?

## Forest invaders

2. Match the pictures below by drawing a line to the correct plant name.

CHINESE PRIVET



CHINESE WISTERIA



JAPANESE CLIMBING FERN



JAPANESE HONEYSUCKLE



3. From what continent did these four forest invaders travel?

4. Have you ever seen any of these forest invaders? If so, then where did you see them?

# TREES OF HSF

HIKE TO SIGN 4 (BEHIND THE PICNIC SHELTER) FOR HELP WITH THIS ACTIVITY

During your exploration today, have you noticed the different types of trees around you? Every tree is special in its own way and a little different than the next one! You can identify trees based on several characteristics: leaf shape and arrangement, bark, twigs and buds, fruit and flowers, and the tree's shape. Use pages 2-5 in the "On the Nature Trail" book to learn more about identifying trees.

There are two main types of trees in Harbison State Forest – hardwoods and softwoods. Circle the correct answer for the below descriptions.

1. This tree is also called a conifer, has needle or scale-like leaves, and is typically evergreen (keeps leaves in winter).

Hardwood

Softwood

2. This tree is also called a broadleaf, has wide and flat leaves, and is typically deciduous (loses leaves in winter).

Hardwood

Softwood

## Tree identification

3. It's time to get to know some trees! There are five trees near the triple kiosk that are marked with numbered signs. Use your "Tree Identification for SC" guide to help identify these trees.

Tree Number	Species Name	Hardwood or Softwood	Use of Tree
1			
2			
3			
4			
5			

# TRACKING WILDLIFE



HIKE TO SIGN 5 WHICH IS BEHIND THE PICNIC SHELTER FOR HELP WITH THIS ACTIVITY

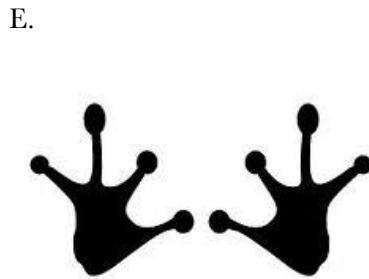
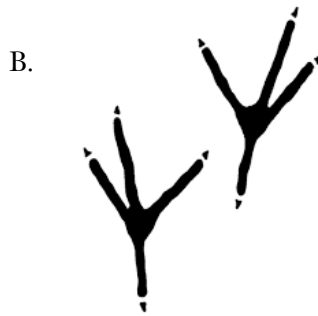
Animals leave behind all sorts of evidence or signs that they have traveled through an area. Sometimes you can find their fur, feathers or skin; other times you will find their scat (poop). Most of the time you can find their footprints or what we call tracks. Tracks can be found in mud or sand, especially near a body of water like a stream, river, or pond. Look on pages 46 and 47 of "On the Nature Trail" to learn more about animal tracks.

1. As you hike around in the forest today, keep your eyes peeled for some animal tracks! If you find any, list them here.

2. Label the animal tracks below with the correct animal name.

## Word bank

COYOTE, DEER, FOX, FROG, GREAT BLUE HERON, OPOSSUM, RACCOON, SQUIRREL, TURKEY



# STUMP STORIES

HIKE TO SIGN 6 WHICH IS BEHIND THE PICNIC SHELTER FOR HELP WITH THIS ACTIVITY

If you look at the stump of a cut tree, you will find growth rings. Did you know that you can count these rings to discover the age of the tree? Each annual (yearly) growth ring has two parts: a light ring or “early wood” and a dark ring or “late wood.” The early wood grows during the wet spring growing season. During the transition from the drier summer to early fall, growth slows, and the late wood forms. Trees are dormant in the winter time and do not make growth rings. Only count the light rings or the dark rings when aging a tree.

1. We call a cross-section or a slice of the tree trunk a “tree cookie.” Find the tree cookie in your backpack. How old is it?
2. Find an old stump in the forest and age it. How old was it when it was cut?
3. Look at the two tree cookies pictured on Sign 6. Why is the older tree cookie smaller than the younger tree cookie?
4. Draw your life as a tree cookie by making one growth ring for each year of your age in the tree cookie below.



# THIS ACKNOWLEDGES THAT



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HAS BEEN RECOGNIZED AS A JUNIOR FORESTER BY  
THE SOUTH CAROLINA FORESTRY COMMISSION

JUNIOR FORESTER PLEDGE: "I \_\_\_\_\_

am proud to be a SC Forestry Commission Junior Forester. I promise to appreciate, respect, and conserve all forest habitats. I also promise to continue learning about the landscape, plants, animals and history of these special places."

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SCFC REPRESENTATIVE SIGNATURE

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JUNIOR FORESTER SIGNATURE

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DATE



# ANSWER KEY

## Page 6

2. Bark
3. Armillaria root rot; Soil-borne fungi attacks roots;
- Chestnut blight; Fungi kills everything but roots; Dutch elm disease; Fungi carried by elm bark beetles; Fusiform rust; Fungi spores enter through wound on bark

## Page 8

1. Southern pine beetle
2. IPS engraver beetle
3. Emerald ash borer
4. Pine sawfly
5. Eastern tent caterpillar

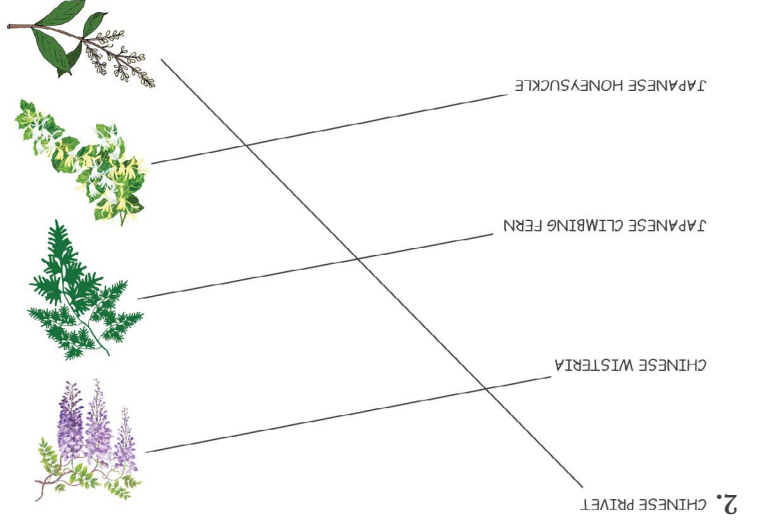
## Page 11

2. A. deer, B. great blue heron, C. squirrel, D. coyote, E. frog, F. raccoon, G. opossum, H. turkey, I. fox
- Page 12
1. It is around 30 years old.
  3. It had strong competition from trees around it for resources.

## Page 12

1. Southern pine beetle
2. IPS engraver beetle
3. Emerald ash borer
4. Pine sawfly
5. Eastern tent caterpillar
6. Southern pine beetle

## Page 9



## 3. Asia

