

# WOOD MAGIC FOREST FAIR

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Dear Educator,

We are offering this virtual field trip experience as an alternative to attending the in-person **Wood Magic Forest Fair** program. Students will still be able to watch a sawmill cut a log into boards, explore how paper is made, examine a web of life, and learn about the benefits of fire in an ecosystem... All in your own classroom! Enclosed is an educational packet full of materials and resources to lead lessons around the sustainable management of forest resources and the role of forests and forest products in our daily lives.

## INTRODUCTORY ACTIVITIES

- **Pre-visit Test, “How Much Do You Know About Our Forests?”:** This is the same test that we require students to take prior to and after attending the in-person program. This is an important assessment tool that we use to obtain grants and other funding to keep our program free of charge. Feel free to use this as a learning assessment tool for your class. The pre-test should be given before the students view the animated shorts or watch the learning station videos.
- **Animated Shorts – “Forest Fast Breaks”:** These are located on the SC Forestry Commission’s education webpage under the under the “Other education programs and resources” (<https://www.scfc.gov/education/other-programs/>). Scroll down the page to find the “Videos” section and show these animated shorts before you watch the learning station videos.
  - [Tree Biology](#)
  - [Forest Fire](#)
  - [Reforestation](#)
  - [Sustainability](#)
  - [Wood Products](#)
- In this educator packet, you will find a summary of the major points covered in these videos and a vocabulary list. There is a list of suggested activities that you may want to consider doing after viewing the Forest Fast Breaks. There is also a short activity titled “**GIFTS of a Forest**” that teaches students about the various products that come from our forests.

## MAIN EXPERIENCE

- **Wood Magic Forest Fair learning station videos:** As the main experience, students will view a recording of each Wood Magic Forest Fair learning station. These video links are imbedded into each learning station teacher outline. Each learning station has an accompanying student page that students can complete digitally.

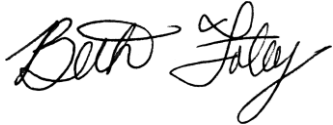
## ENRICHMENT

- **A Tree’s Dream video and lesson plans:** The “A Tree’s Dream” video is played during the introduction and follows Tim the tree whose dream is to become a house. It highlights the life cycle of a tree from seedling, to products created through sustainable harvesting, to

replanting. There are four supplemental lesson plans that have grades 3-5 and grades 6-8 variations. The video, lesson plans, as well as other additional resources can be found at <http://www.langdale-company.com/a-trees-dream>.

Should you have any questions concerning this virtual Wood Magic Forest Fair educator packet, please give me a call at (803) 896-8855 or e-mail [bfoley@scfc.gov](mailto:bfoley@scfc.gov). Don't forget that you can receive a teacher goodie bag if you email me a request. Thank you for your commitment to educating our youth about the importance of conserving Earth's natural resources!

Sincerely,



Beth Foley  
WMFF Assistant Coordinator



# **WOOD MAGIC FOREST FAIR**

## **HOW MUCH DO YOU KNOW ABOUT OUR FORESTS?**

### **PRE-VISIT TEST**

**TRUE OR FALSE:** Answer the following questions as True (T) or False (F) by placing the letter in the blank.

- \_\_\_\_\_ 1. There are more trees and forests in the U.S. today than there were 100 years ago.
- \_\_\_\_\_ 2. Trees are a non-renewable natural resource.
- \_\_\_\_\_ 3. Prescribed (controlled) fires are used to improve forests and wildlife habitat.
- \_\_\_\_\_ 4. When trees are harvested and brought into a sawmill, every part of the log is used.
- \_\_\_\_\_ 5. The main reason to recycle paper products is to save trees.
- \_\_\_\_\_ 6. Using trees to make everyday products is harmful to the environment.
- \_\_\_\_\_ 7. In South Carolina there are more trees planted and grown each year than are cut and used for wood products.
- \_\_\_\_\_ 8. Forests pollute the air we breathe and the water we drink.
- \_\_\_\_\_ 9. Natural resources such as oil and gas are renewable.

**VOCABULARY:** Match the terms on the right with the statements on the left by placing the correct letter for each in the blanks provided.

- |   |                                   |
|---|-----------------------------------|
| _____ 10. Raw materials we use every day that come from the earth.                                      | <b>A. Non-renewable resources</b> |
| _____ 11. Resources that can be planted, grown, used, and replanted again for future generations to use | <b>B. Natural Resources</b>       |
| _____ 12. Resources that, once used, cannot be made again or be replaced by nature in our lifetime      | <b>C. Renewable resources</b>     |
| _____ 13. Materials that are able to be broken down by nature into simpler substances (decomposed)      | <b>D. Recycle</b>                 |
| _____ 14. When a material is used, then collected, reprocessed and made into a new product              | <b>E. Biodegradable</b>           |
15. On the back of this paper, make a list of as many things that you can think of that you use every day that come from trees. **Try and list at least ten (10).**

# Animated Shorts - “Forest Fast Breaks” - Major Topics:

## **I. Tree Biology: (Related standard: From Molecules to Organisms: Structures and Processes 4-LS1-1)**

- a. Trees use water, nutrients, sunlight, and carbon dioxide from the air to produce their own food (through a process called photosynthesis) and grow.
- b. The basic parts of a tree are the roots, trunk, crown, and leaves/needles.
- c. Trees have layers in their trunk (bark, phloem, cambium, xylem, and heartwood) that all have unique structures and functions to allow a tree to grow.
- d. Trees produce annual growth rings whose color and width is determined by growth factors such as sunlight and water.

## **II. Forest Fire: (Related standard: Earth and Human Activity 4-ESS3-2)**

- a. Before human intervention, natural-set fires would burn a forest every 5-30 years. These low-intensity fires were good to control underbrush, pests, and reduce competition for the surviving trees.
- b. Over 100 years ago in many places in America, we started putting out all forest fires to protect communities. This absence of fire caused underbrush and small trees to build up to unnatural levels increasing the fuel load (**amount of flammable material**). When forest fires did start, the increased fuel load increased the intensity and danger. This damaged trees, water, wildlife habitat, and communities affected by the fire.
- c. The removal of trees (**thinning**), the chopping and mulching of underbrush, and small controlled fires in forests can reduce fuel load and wildfire risk. Controlled (**prescribed**) burns imitate the environmental benefits of natural-set fires.

## **III. Reforestation (Related standard: Earth and Human Activity 4-ESS3-1)**

- a. To supply the wood and paper products we use every day, we need to harvest and replant trees. In America, about 1.5 billion trees are grown and shipped for replanting each year...almost 5 trees for each person.
- b. Reforestation can happen naturally or through planting.
- c. Trees are a **renewable resource** and reforestation makes the process of growing and harvesting trees sustainable.
- d. Sustainable forest management provides jobs, wood products, clean air and water, and wildlife habitat.

## **IV. Sustainability (Related standard: Earth and Human Activity 4-ESS3-1)**

- a. Clean water, fish and wildlife habitat, recreation, jobs, and forest products are a few **values of forests**.
- b. A sustainably managed forest meets our **environmental, social, and economic** needs for today and for the future.
- c. Scientific research and responsible forest management work together to maintain optimal forest sustainability.

## **V. Wood Products (Related standard: From Molecules to Organisms: Structures and Processes 4-LS1-1)**

- a. Trees use **carbon dioxide, water, and sunlight** to grow and make wood.
- b. Wood is used to make lumber, plywood, cardboard, paper, guitars, clocks, and many other solid wood products.
- c. Other products that contain wood derivatives include toothpaste, ice cream, artificial bones, and many other products (see [http://www.idahoforests.org/wood\\_you.htm](http://www.idahoforests.org/wood_you.htm))

## **“Forest Fast Breaks” Vocabulary Terms:**

1. **Photosynthesis** - the process by which green plants manufacture simple sugars in the presence of sunlight, carbon dioxide, and water
2. **Annual growth ring** - the layer of wood produced by a single year's growth of a woody plant
3. **Forest management** – the practical application of scientific, economic, and social principles to the administration of a forest
4. **Fuel load** - the total amount of combustible material in a defined space; quantified in heat units or in its equivalent weight in wood
5. **Prescribed burn** – the planned application of fire to a forest, stand, prairie, or slash pile with the intent to confine the burning to a predetermined area; also known as a controlled burn
6. **Renewable resource** – a naturally occurring raw material or form of energy which has the capacity to replenish itself through ecological cycles and sound management practices
7. **Sustainable** – using natural and human resources in a way that does not compromise the needs of future generations
8. **Thinning** – to reduce the number of trees in a stand of trees
9. **Wildfire** – any fire other than a controlled or prescribed burn occurring on wild land

**The Wood Magic Forest Fair program and pre/post-visit activities are designed to meet the following 4<sup>th</sup> Grade S.C. Academic Standards:**

**2021 SCIENCE:**

**4-LS1-1, 4-ESS3-1, 4-ESS3-2**

**SCCCR ENGLISH/LANGUAGE ARTS:**

**4-I-1.1, 4-I-4.2, 4-I-5.1, 4-W-1, 4-W-1, 4-C-1**

**SCCCR MATH:**

**4-NSBT.2, 4-NSBT.5, 4.NSBT.6, 4-NSF.4, 4.ATO.2, 4-MDA.2**

## **"HOW MUCH DID YOU LEARN ABOUT OUR FORESTS?"**

### **SUGGESTED ACTIVITIES AFTER VIEWING: "FOREST FAST BREAKS"**

**1. Have the students look around their classroom and list all the things they observe that come from trees.** Have the students first make individual lists without looking at all the things in the classroom that come from trees. Next, divide them into small groups to compare their list and make a group list. Finally, make a classroom list of all the items.

**NOTE:** A lot of things like their desk, pencils and papers are easy. But don't forget items like soap, crayons, ink, glue, and dyes. See [http://www.idahoforests.org/wood\\_you.htm](http://www.idahoforests.org/wood_you.htm) for a list of items that come from trees. Students may also choose a wood product, do research on how that product is made, create a presentation on their findings, and then present their wood product to the class.

**2. Write a persuasive essay that defends the position "It is important that we have forests for the future."** Have students read their paragraphs to the class and compare their reasons and relevant evidence.

**NOTE:** Use your discretion for this, but accept any answer that mentions the benefits that trees give to us and the environment or any mention that trees are renewable and can be grown over and over.

**3. Nature is a great teacher!** Try these activity ideas from Project Learning Tree to connect your students and students' families to the outdoors and nature. Go to <https://www.plt.org/activities-for-families/>, then choose an activity that would fit into your setting or a lesson at school. These inquiry-based activities cover all the subject areas.

**4. Have the students write a narrative on "What would a day without trees be like?"**

**5. Make a bulletin board (physical or digital) or have students make drawings about forests, forest products, or life in a forest.** Students can bring in magazine pictures or actual items to add to the bulletin board.

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### **Answers to student activity "GIFTS of a Tree" on the following page:**

All of the items on the activity "Gifts of a Tree" come from trees or have parts that come from trees except LEATHER BELT, SILVERWARE, and GLASS JAR



## GIFTS of a Tree



Circle the items below that come from trees or may contain parts that come from trees.

Greeting cards

Tables

Drinking cups

Egg cartons

Beds

Baseball bats

Milkshakes

Poultry feed

Diapers

Musical instruments

Hair spray

Toothpaste

Mouthwash

Silverware

Envelopes

Boxes

Fences

Glass jar

Cosmetics

Paint

Turpentine

Photographic film

Vinegar

Cellophane tape

Eyeglass frames

Oxygen

Houses

Clothes

Shelves

Medicine

Paper

Furniture

Food

Leather belt

Chewing gum

Magazines

# WOOD MAGIC FOREST FAIR

## Main Experience

*The accompanying student pages for the learning station videos are saved all together in a separate document titled, "WMFF Student Pages\_ALL". Each student page is a fillable pdf which can be completed digitally.*

### INTRODUCTION

**Station video:** <https://www.youtube.com/watch?v=9vsNNCC0d14>

**Overview:** The students will watch the video, "A Tree's Dream", participate in a magic demonstration of a seed turning into a seedling, and discuss the concepts of renewable vs nonrenewable, recyclable, and biodegradable.

**Objectives:** Students will learn the meaning of the vocabulary terms: natural resource, renewable, non-renewable, recyclable, and biodegradable; be able to explain the difference between renewable and nonrenewable resources; and explain why using trees is environmentally friendly.

**Science Standards:**

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.

**Instructions:** Throughout the video, the instructors will reference a tree named Fred. Historically, a video of "Fred the tree" was played during the introduction. This video was remade in 2020 and the new main character's name is "Tim the tree." Whenever Fred is referenced by the instructors, please tell students that it should be Tim. At minute 3:55 in the "Introduction" video, pause it as the instructors start to play the "Fred" video and instead play the new "A Tree's Dream" video. Then switch back to the Introduction video to watch the rest of the learning station.

New "A Tree's Dream" video: <https://www.youtube.com/watch?v=777wq0VIEFg&t=2s>

**Student Page – Answer Key:**

1. What is Tim the tree's big dream? **To be a house**
2. For every tree that we cut down, how many trees do we plant back in its place? **Five**
3. What is a natural resource that you can harvest, replant, and grow again? **Renewable nature resource**



# MAKIN' PAPER

**Station video:** <https://www.youtube.com/watch?v=WGHHiKH9-Ag>

**Overview:** Students will discuss the need for recycling, including the components of municipal solid waste. They will learn how paper is made; both from virgin fiber and from recycled paper and will recycle tissue paper into new paper.


**Objective:** Students will be able to explain why recycling is important and will be able to describe the basic steps in the paper-making process.

## **Science Standards:**

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.

4.NSBT.5 Multiply up to a four-digit number by a one-digit number and multiply a two-digit number by a two-digit number using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using rectangular arrays, area models and/or equations.

**Instructions:** Try making paper with your students in your classroom! This is a material heavy activity but the supplies can be found at an arts and crafts store (mesh screens, small wooden rollers) and from repurposed materials (baby food jars, small yogurt cups, old newspaper). Below is the instruction booklet that each student is given at Wood Magic. Their homemade paper is placed inside of this folded booklet and the edges are stapled to keep it inside and to carry home.

<h3>Making Paper From Paper</h3> <p><i>What Factories Do.</i></p> <ul style="list-style-type: none"><li>-Use lots of water (95% water, only 5% paper)</li><li>-Shred paper</li><li>-Mix water and paper to form pulp</li><li>-Pour pulp onto screens</li><li>-Use presses to remove water</li><li>-Dry paper on larger rollers</li></ul> <p>The <u>major</u> reason to recycle paper is to save landfill space, which is a non-renewable resource. Trees are a renewable resource. We are running out of landfill space, but we will always have plenty of trees if we manage them properly.</p> <p><b>DID YOU KNOW???</b> Each person in the U.S. uses about 750 pounds of paper each year. So...RECYCLE!!!</p> 	<p>Name _____</p> <p><i>What you can do.</i></p> <ul style="list-style-type: none"><li>- Fill a baby food jar 3/4 full of water</li><li>-Tear 3 squares of tissue into shreds</li><li>- Stir paper in water with your finger</li><li>- Put screen and bottomless cup on a yogurt cup; dump pulp into top cup</li><li>- Fold screen over paper circle</li><li>- Place inside folded newspaper</li><li>- Roll over the newspaper with the wooden rod</li><li>- Place damp paper inside this instruction sheet</li><li>- Let it dry over night</li><li>- Use your paper for something!</li></ul>
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## **Student Page – Answer Key:**

1. What are three main ways that paper can be made? **Wood scraps (chips and pieces left over when a board is cut); Cutting trees that are too small or twisty to make boards; Grinding paper that has been recycled**
2. What does NIMBY stand for? **Not In My Back Yard**
3. What is the main reason that we recycle paper? **To save landfill space**

## GOOD FIRE / BAD FIRE

**Station video:** [https://www.youtube.com/watch?v=gUbpjfxs\\_wY](https://www.youtube.com/watch?v=gUbpjfxs_wY)

**Overview:** Students will contrast fires that are helpful for man and nature and those that are harmful. They will then explore the benefits that properly conducted controlled burns provide by examining, comparing and contrasting an unburned area with a prescribed burned area.

**Objective:** Students will be able to describe several benefits of prescribed burning and the hazards of wildfires. They will construct scientific arguments to support claims that human activity affects the land and define how human activity can sometimes cause problems and sometimes be beneficial.

### **Science Standards:**

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

### **Student Page – Answer Key:**

1. How can a prescribed fire help healthy trees get more nutrients, water, and sunlight that they need to survive? **A prescribed fire can kill smaller unhealthy trees in the forest, giving the healthy trees more space to grow and collect the abiotic resources needed to survive.**
2. What are the three main elements or ingredients needed for a fire? **Heat, oxygen, and fuel**
3. How can a prescribed fire help prevent a large wildfire? **A prescribed fire can help burn some of the fuel on the forest floor so if a wildfire came through the area, it wouldn't get as big or burn as hot and kill the trees.**

# GIFTS OF THE FOREST

**Station video:** <https://www.youtube.com/watch?v=JiOiJ80NqEM>

**Overview:** Students will explore what benefits forests provide for man and the environment; first in terms of wood products, then with regard to wildlife habitat, soil and water quality protection, air and noise filtering, recreation, social benefits, and economic benefits (such as jobs).

**Objective:** Students will be able to describe several environmental, social, and economic benefits of our forests.

## **Science Standards:**

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

**Instructions:** Try leading the web of life with your students! Check out this free activity from Project Learning Tree. <https://www.plt.org/learn-forests/web-of-life/>

## **Student Page – Answer Key:**

1. How do trees help protect soil and clean water? **Tree's roots help anchor soil and keep it from eroding when it rains, therefore keeping sediment out of our waterways. Leaf litter on the forest floor and a tree's branches also helps intercept rain and protect the topsoil.**
2. What types of recreation can be done in the forest? **Examples given: Camping, hiking, bird watching, canoeing, and fishing.**
3. How do trees filter the air that we breathe? **Tree's leaves filter dirty dusty air and give us clean air. They also take in the carbon dioxide we breathe out and give us oxygen we need to survive.**

# SAWMILL

**Station video:** <https://www.youtube.com/watch?v=P6AYjxdMY9Q>

**Overview:** Students watch as a log is cut into boards on a sawmill and learn how finished lumber is made. They also learn how sawdust and bark are used for fuel and for the manufacture of other products. They are introduced to particleboard, plywood, and oriented strand board (OSB).

**Objective:** Students will be able to describe the process by which a log becomes a board and will be able to name several other solid products in addition to lumber. Construct scientific arguments to support claims that human activity affects the land and define problems caused by human activity that impacts landforms.

## **Science Standards:**

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.

## **Student Page – Answer Key:**

1. What is the name of the person who operates the sawmill? **Sawyer**
2. Does any part of a tree get wasted at the sawmill? How is the bark used? **No, even the bark can be used as mulch or be burned for energy.**
3. What type of wood product can be made from sawdust? **Particle board**

## MAGIC SHOW

**Station video:** <https://www.youtube.com/watch?v=UJOuQoHgZi8>

**Overview:** Through magic and storytelling, students recognize that there are differing opinions concerning environmental issues and that things aren't always what they appear to be. They learn that education is a key component of understanding environmental issues and bringing differing groups together. Using a dream sequence, instructors show that leaving logging debris is not aesthetically pleasing, but is environmentally and economically sound. As a finale, students are introduced to a variety of everyday items that are made from wood products. Through this demonstration the students come to realize the importance wood products have on the quality of their everyday lives and that using wood is an environmentally friendly thing to do.

**Objective:** Students will be able to explain the difference between renewable and non-renewable, will know the meaning of biodegradable and recognize that trees are both renewable, recyclable, and biodegradable. Students will be able to describe how they use forest products in their everyday lives and that these products improve the quality of their lives. Students learn that using wood is an environmentally friendly choice.

### **Science Standards:**

4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and how their uses affect the environment.

4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

4.NSBT.2. Recognize math periods and number patterns within each period to read and write in standard form large numbers through 999,999,999.

4.NSBT.5. Multiply up to a four-digit number by a one-digit number and multiply a two-digit number by a two-digit number using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using rectangular arrays, area models and/or equations.

### **Student Page – Answer Key:**

1. Which clearcut picture was more environmentally responsible, the “messy” one or the “clean” one? Why? **The messy one because the branches and leaf litter helped protect the soil and kept it from eroding away.**
2. How many pounds of paper does the average American person use per day? **Three times the world average – 15 pounds a day**
3. List five different products that come from trees. **All products listed in video: Paper towels, furniture, wooden bowl, wooden cutting board, wood chips for smoking meat, plastic wrap, cardboard egg carton, Pine-Sol, citrus soda, hair spray, lipstick, mascara, aspirin, artificial vanilla extract, bar soap, dish soap, sunscreen, diapers, and toilet paper.**



Forestry and education partners from across the Southeast collaborated to create the new environmental education program, "A Tree's Dream." These free materials teach youth about ways we are conserving Earth's natural resources and protecting the environment through the "A Tree's Dream" video and accompanying lessons. Follow the dream of Tim the tree as he fulfills his dream of becoming part of a family's home at: <http://www.langdale-company.com/a-trees-dream>

Lessons are correlated to the Next Generation Science Standards for grades 3-5 and 6-8.

#### **GRADES 3-5 LESSON PLANS:**

[Engineering Design Using Wood Products](#)

[Environmental Services](#)

[Tree Growth and Products](#)

[Stewardship and Sustainability](#)

#### **GRADE 6-8 LESSON PLANS:**

[Engineering Design Using Wood Products](#)

[Environmental Services](#)

[Tree Growth and Products](#)

[Stewardship and Sustainability](#)