UNIVERSITY OF FLORIDA

EXTENSION

Institute of Food and Agricultural Sciences

Adopt a Tree

4H FOM11

Florida 4-H Project Book
Forest Resources
Series Book 1

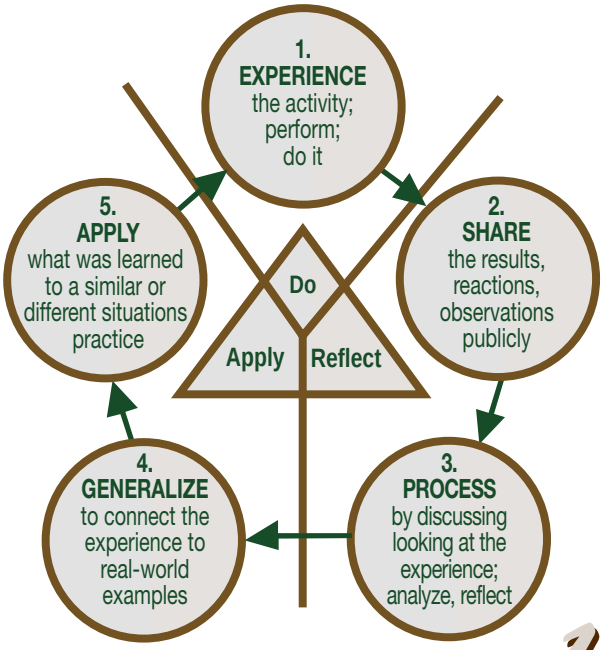
Note to the Project Helper

This project book can be used by a 4-H club leader, a teacher, a parent, or a camp counselor – anyone wishing to introduce a youth to the amazing world of trees. The only necessary ingredient for success with this project is for the youth to have access to a tree. This may be a tree in the front yard, a tree in a cemetery, or a tree in a forest. The project book can be completed in a week as a concentrated unit, or over several months of visiting the same tree in different seasons. You might use this material with an entire club or class, or sponsor an individual. The ideas are here to help guide the exploration, and should not limit the journey. There are other resources you might tap, and experts in your own community who will have ideas of interesting projects.

This book is the first in a series of three. A Leader Guide for this series provides background information and suggestions for assisting youth with the activities in each book. Youth can continue in the Forest Resources Series with *Trees and Me* and *Florida's Fabulous Forests.* Groups can conduct a service project with *Give Forests a Hand*. Teachers may wish to use these activities to enhance their work on the following Sunshine State Standards:
SC.G.1 – understands the competitive, interdependent, cyclic nature of living things in the environment.
SC.D.2 – understands the need for protection of the natural systems on Earth.

Additional activities to teach young people about trees and forests are in the national curriculum resource Project Learning Tree (PLT). A list of PLT activities for most of the exercises in this project book can be found in the Forest Resources Series Leader Guide. Contact your County Extension Office or the Florida Forestry Association (850-222-5646) for the next PLT workshop near you.

An Experiential Model for Effective Teaching and Learning Experiences



Experiential Learning

The activities in this book were designed to include the three basic steps of the Experiential Learning Model. 4-H members should 1) do an activity, 2) reflect on this experience by discussing it with you and by answering questions, and 3) apply this information to a new situation.

What's Inside

Welcome to Adopt A Tree

Trees are very special plants. They are the tallest living things on our planet. Most trees live longer than we do; a tree that is planted on the day you are born can grow along with you! We use trees in many different ways -- for shade, for climbing, for wood, for paper, and for making our communities pretty places.

Some people 'adopt' whales because they want to have a connection to these amazing creatures; some people 'adopt' roads because they want to enjoy a cleaner environment. In this project, you will select and 'adopt' one tree that will be special for you. You won't actually take care of it because trees are quite self-sufficient in most situations, but through your special tree you will have an opportunity to develop a better understanding of trees and the environment. Through the pages of this book, you will be able to explore your special tree and some other trees in Florida. You will also have a chance to choose at least two projects to learn more about Florida's interesting trees.

Charting Your Progress

Use this chart to keep track of your project. As you do each activity, ask your Project Helper to sign that you have finished it.

When you have done all the activities and two Challenges, ask your Project Helper to sign that you have completed the Adopt a Tree Project Book.

Activity	Completion Date	Signature
Selecting Your Tree		
Clothes of Green		
The Great Tree Cover-up		
Upward and Outward		
Who Lives There?		
Our State Tree		
A Gracious Southern Tree		
A Florida Pine		
Challenge #____		
Challenge #____		

I certify that _____ has successfully completed *Adopt a Tree Project Book.*

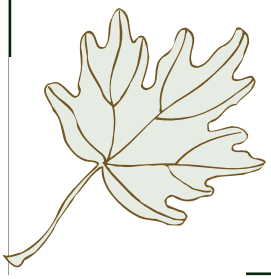
_____ Project Helper_____Date

Selecting Your Tree

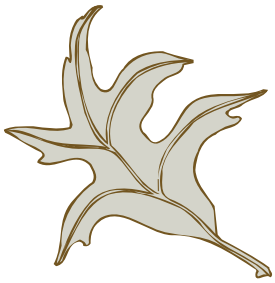
Skill: Observation
Project: Find and get to know a special tree

1. With your project helper, think about a tree that you would like to adopt. The tree should be easy for you to walk to, and one you'd like to get to know a little better.

Draw a picture of your adopted tree here:



2. Look carefully at your adopted tree and notice the things that make your tree different from the others. You might add these things to your picture or draw them here.



3. Now draw a map so others could get to your tree.

Discuss with your Project Helper:

1. What do you think makes a tree a tree, and not a bush or another type of plant? Write your definition of a tree here:

2. Now look up a definition of a tree in a dictionary. Is this definition similar to yours? Explain which one you like the best.

3. What are some things that make your adopted tree a special tree to you?

If you want to do more:

Challenge #1: Visit your tree every day for a week. Visit your tree once a week for a month. Visit as often as you can, for as long as you can. Notice the things about the tree and around the tree that change and the things that stay the same. Keep a record of your observations at your tree.

Clothes of Green

Skill: Comparing and Contrasting
Project: Make a leaf print

What green covering does your tree wear? Leaves cover a tree like clothes cover you. Some trees have broad, flat leaves, and some have needles, but all trees have clothes that help them store energy from the sun in the food they make in their leaves. Leaves are really food factories, and this food helps trees grow. For this activity you will need a crayon, paper, and a table.

1. First, investigate the leaves or needles on your tree. Find some that have fallen to the ground, or look at several on a low-hanging branch. Are they flat, wide leaves? Do the leaves have smooth or jagged edges? Are they long slender needles? Are the needles bundled together at the bottom? Are all the leaves or needles you can find the same? How are they different? Draw several of them here.

2. Measure two of your leaves or needles and record their measurements here.

Leaf 1 is	**____ inches long**	**____ inches wide**
Leaf 2 is	**____ inches long**	**____ inches wide**

3. Now take one leaf or needle from your tree and place it on a table – bottom side up – and lay a piece of paper over it. Take the paper wrapper off your crayon, place the crayon sideways over the leaf or needle, and rub gently. You should see the outline of your leaf or needle on the paper. Does it work better to slide the crayon across the paper lengthwise, or to write with it like a pencil? Do this several times and paste your best leaf or needle image in the box provided.

Green leaves and needles are the food factories of trees. Inside the leaves and needles, energy from the sun is used to combine water from the roots with carbon dioxide from the air to make food for the tree and for animals that eat the leaves or fruit.

Confusing Terms:

Trees with flat leaves are often called broad leaf or hardwood trees. Trees with needles are often called conifers, softwoods, or evergreen trees. However, there are trees that drop their needles every year (like baldcypress) so they aren't really evergreen, and there are broad leaf trees that keep these leaves through the winter (like live oak), making them evergreen!

Discuss with your Project Helper:

1. Describe the leaves or needles on your tree.
2. In what ways were all the leaves or needles from your tree the same, and in what ways were they different?
3. Which kind of tree do you have:

( ) hardwood ( ) softwood
( ) broad leaf ( ) evergreen

4. Find another tree that matches at least one of the boxes you checked and compare your tree's leaves to these. In what ways are they similar? In whatways are they different?
5. Why do trees need leaves?
6. Besides trees, what other things store the sun's food energy?

If you want to do more:

Challenge #2: Collect a leaf from at least 5 different trees and make a poster that explains how the leaves are different. Hint: look at the shape of the leaf, the edge of the leaf, and the size of the leaf.

Chlorophyll is the ingredient that makes green leaves green. In some plants, like cactus, chlorophyll is located in the stem. It is the machinery inside the food factory that does the work of making food.

The Great Tree Cover-up

Skill: Communication
Project: Make a bark rubbing

Bark is a great tree cover-up. It helps protect trees from things that could damage the wood – like insects, bad weather, or careless people. Trees have thin bark on their twigs, and thicker bark on their trunk. Some old trees have very thick, chunky bark. Other trees have bark that flakes off as it gets older. Different kinds of trees have different looking bark. People can identify some trees by the special appearance of their bark.

1. You can record your tree's bark by rubbing the tree trunk to make a picture, much like your leaf rubbing in the last activity. Take several pieces of paper and several crayons out to your tree, hold the paper on the trunk, and rub the crayon sideways until the texture comes through. On some trees this may be difficult. If you want, you could take a photograph of your tree's bark. Paste your best bark rubbing or photograph here.

2. You can also describe the bark on your tree in words right here. Is it smooth or rough? Does it have narrow or wide ridges? How about bumps or warts? What color is the bark? Do pieces peel off by themselves?

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3. Give a friend your bark rubbing and ask if he or she can find your tree from the image of the bark. Is your bark a good "cover-up?"

Discuss with your Project Helper:

1. Describe the bark of your tree.
2. What are some things that can't hurt your tree because of the bark?
3. Visit three more trees that are not the same kind of tree as yours. Make bark rubbings of each tree. How is the bark different from the bark of your adopted tree?

If you want to do more:

Challenge #3: Find 5 other trees to adopt and make a collection of leaf/needle and bark rubbings for each one of those trees. Assemble all your rubbings and drawings in a booklet.

Upward and Outward

Skill: Observation and Measurement
Project: Learn vocabulary and measure a tree

Trees and animals grow in different ways. When people grow, they get bigger all over, from the inside. Trees grow taller because they get longer from the tips of each branch in the spring. They get bigger around from special cells in the trunk right inside the bark, that make more wood and bark. The center of the tree is the oldest part, and it stays in the same place as the tree grows.

1. Visit your tree several times over several months and look carefully at the tips of the branches. Look at the base of the leaves or needles for buds. Over several months, watch how the buds change. If you can mark one branch with a piece of yarn near the tip of the branch, you'll be able to come back to that branch each time and see how it changes.

Draw a picture or describe in words the changes in your branch here:

A bud contains new branch growth. Some buds form leaves or needles; some create flowers. Buds at the branch tip will make it grow longer.

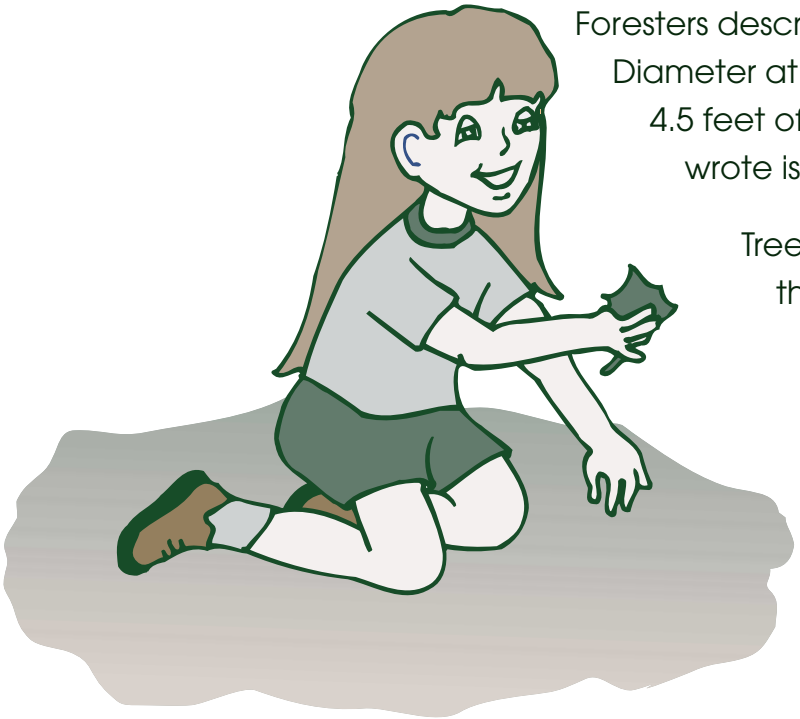
Buds, leaves, and branches are either arranged opposite each other, or alternately along the tree twigs. Circle the arrangement that is most like your tree.

3. How big is your tree? Take a measuring tape and wrap it around the tree trunk about 4.5 feet from the ground. This is your tree's circumference. Write the measurement here:

_____ inches

Can you calculate the tree's diameter from this measurement? Divide the circumference by 3.14 and write your answer here:

_____ inches

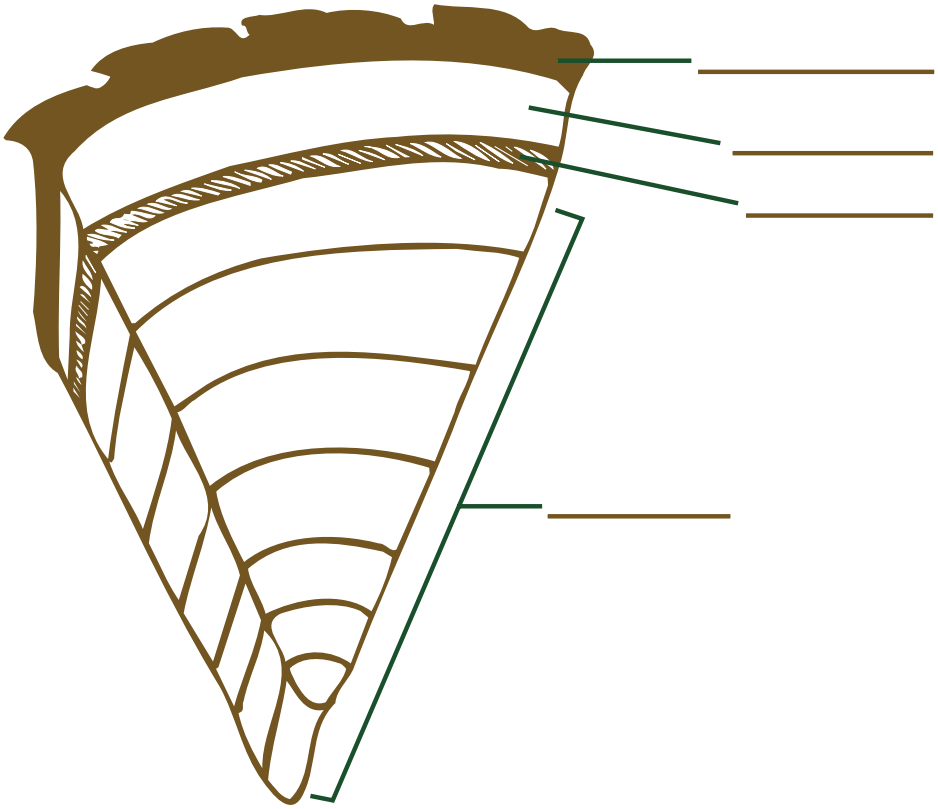


Foresters describe the size of trees by measuring DBH, Diameter at Breast Height. On an adult, that is 4.5 feet off the ground. The second number you wrote is your tree's DBH.

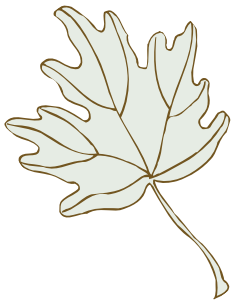
Tree trunks get larger over time, but usually this growth occurs too slowly to be able to measure. If your tree is young and growing quickly, however, you might be able to detect a change in your tree's circumference in a year or two! Whether or not you can see a change, your tree is growing wider and taller.

Most trees grow quickly in the spring and early summer and slowly in the late summer and fall. The wood they produce during these two times looks different. If you look at the cross section of a tree trunk, you would see rings of light and dark wood. The dark wood is the slow-growing wood. Together they represent one year's growth. You can determine the age of the tree by counting the number of dark rings at the base of the trunk. How old is this tree?

_____ years



Most of the wood in this tree helps carry water from the roots to the leaves, where some of it is used to make food. This wood is called *xylem*. On the outside edge of the xylem there is a small layer of special cells called *cambium cells* that make more wood. They make the tree fatter. They make xylem on one side and phloem on the other. *Phloem* carries food from the leaves so the trunk and roots can grow. *Bark* is found on the outside of the tree to protect that tree. Write these four words in the right places on the drawing above.

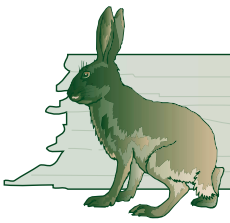


Discuss with your Project Helper:

1. Describe your tree's branch.
2. What does your tree's buds look like?
3. Are your tree leaves opposite or alternate?
4. What would a baby's hand look like in 10 years if people grew like a tree?
5. Where would a sign nailed near the bottom of a tree trunk be in 10 years if it grew like a person?

To count the rings of a living tree without cutting it down, foresters use a tool called an increment borer. This tool enables the forester to extract a straw-like rod of wood that shows the growth rings and can help reveal how healthy the tree is.

The tallest redwood tree ever measured stood 367 feet tall. That's as tall as a 30-story building, and 62 feet taller than the Statue of Liberty!



Who Lives There?

Skill: Communication and Observation
Project: Observe animal life near your tree

Trees are homes for many living things. Often a single tree will have many different plants and animals living on or near it. If you are patient, you can even see many of the animal neighbors.

1. Return to your tree and look for signs of other living things. Look for other plants, mushrooms, and animals: insects, birds, or mammals. Check the bark for holes and spider webs, the leaves for chewed marks or nibbled tips, and the branches for squirrel or bird nests. The ground around the tree may have holes, or half-eaten nuts and leaves. Finding a sign that the animal was there is just as important as seeing the animal. In the box below, record your observations in words or pictures.

Discuss with Your Project Helper:

1. What did you see on the tree?
2. What did you see near the tree?
3. What time of day may be the best time to find animals at home on your tree?
4. Why do you think these and other animals visit your tree?
5. Do you think the location of your tree affects the number and type of animals that visit it? Would there be more animals if your tree were in the middle of the woods? At the edge of a river?

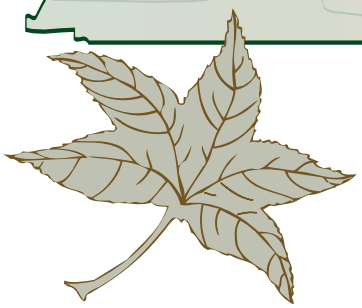
If you want to do more:

Challenge #4: Write a story, A Day in the Life of My Tree, about all the things that might happen from sunrise to sunset around your tree.

Challenge #5: Draw a Web of Life around your tree. Start by drawing your adopted tree. On one side of the tree, draw all the things a tree needs to live. Connect each of these to the tree with a line. Then on the other side of the tree, draw and connect all the things you can think of that need your tree.

Florida's forests and other natural ecosystems are home to lots of plants and animals, of which about 100 plants and animals are listed as endangered, threatened, or of special concern.

Many trees produce nuts and berries that wildlife eat. Some people plant certain trees and shrubs to attract birds, deer, and other animals. Hickory, pine, oak, magnolia, beautyberry, red maple, and holly produce food for wildlife in different seasons of the year all over Florida. Dogwood, sumac, and hawthorn are good wildlife shrubs if you live in northern Florida, and wild coffee and coco-plum are good plants for wildlife in southern Florida.

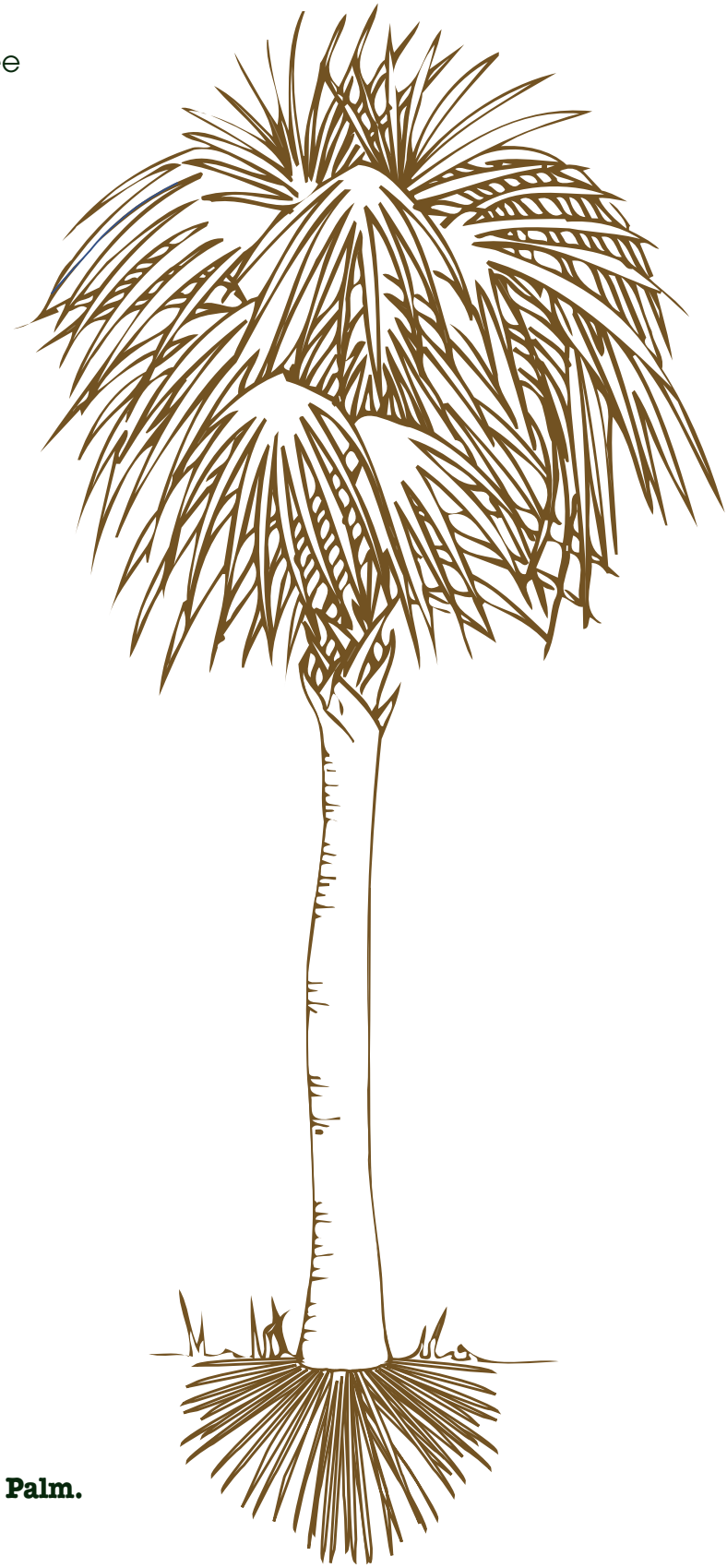


Our State Tree

Skill: Learning to Learn
Project: Color pictures of our state tree

You are not the only one who has adopted a tree. Every state in the United States has a State Tree. Florida's tree is the Cabbage Palm.

Here is a picture of a Cabbage Palm. Cabbage Palm trees grow everywhere in Florida on sandy soil, especially near the coast. It can be confused with other palm trees. Have you seen our state tree in your community?



Color this Cabbage Palm.

Palm trees grow differently than other types of trees. They grow from the single bud at the top of the trunk. This bud sends out new leaves. Each leaf or frond has a long stem that forms part of the trunk.

There are many ways palm trees are different from other types of trees. Find a palm tree and compare it to a tree with leaves. Draw or write your differences in this chart:

Observation	Palm Tree	Other Tree
Branches		
Leaves		
Bark		

Discuss with your Project Helper:

1. Where have you seen a Cabbage Palm in your community?
2. Name two ways palm trees are different from other trees.
3. What might happen if the Cabbage Palm leaf bud were damaged in a storm?

If you want to do more:

Challenge #6: What should people do to protect and encourage Florida's trees? Make a poster that tells people how they can help trees in Florida.

Challenge #7: Find out about other state trees. Does anyone else honor a palm tree? Make a poster to show other states and their state trees.

Early settlers in Florida used palm fronds for baskets, mats, cabin roofs, and hats; the trunks were used for posts and logs to construct buildings. The bud can be eaten, but this kills the tree.

A Gracious Southern Tree

Skill: Learning to Learn
Project: Color pictures of a Florida oak tree

Perhaps more than any other tree, the Live Oak is a symbol of the southern United States. It only grows in the southeastern states. It is easy to recognize because it keeps green leaves throughout the winter, its branches often curve into a wide-spreading crown, and Spanish Moss often hangs from its branches. When Europeans came to Florida, they used its hard, strong wood to build sailing ships. Many kinds of wildlife like to visit Live Oak trees, not just people. Squirrels, raccoons, and hummingbirds might be found here. You can see Live Oak trees along roads, in community parks, and around homes across Florida's urban forest.

Color this Live Oak.

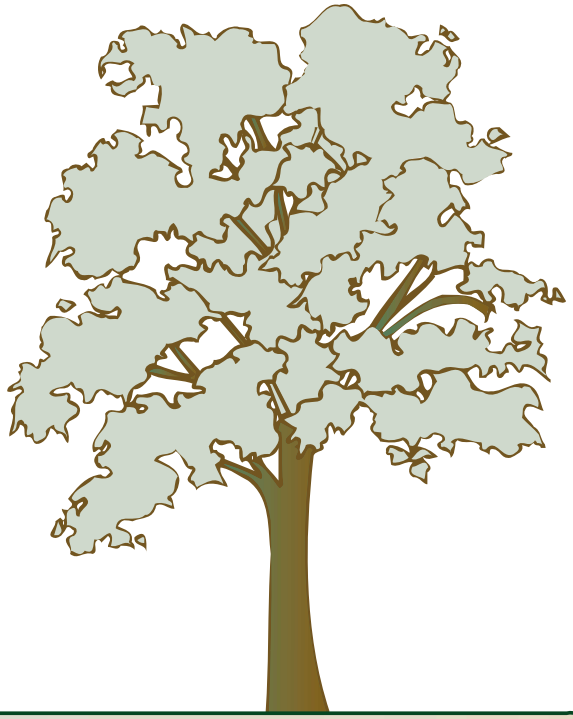
Discuss with your Project Helper:

1. Where is a Live Oak in your community?
2. In what season of the year do the acorns fall?
3. Even big, strong trees sometimes need help from people to continue to grow. What are some ways people can help the Live Oak trees in your community?

If you want to do more:

Challenge #8: Florida is full of special trees. Learn more about these trees: Gumbo Limbo, Baldcypress, Mangrove, Southern Magnolia, and Sweetgum. Make a booklet of the information you find and the drawings you make of these trees. Include a map of Florida and sketch where each of these trees normally grow.

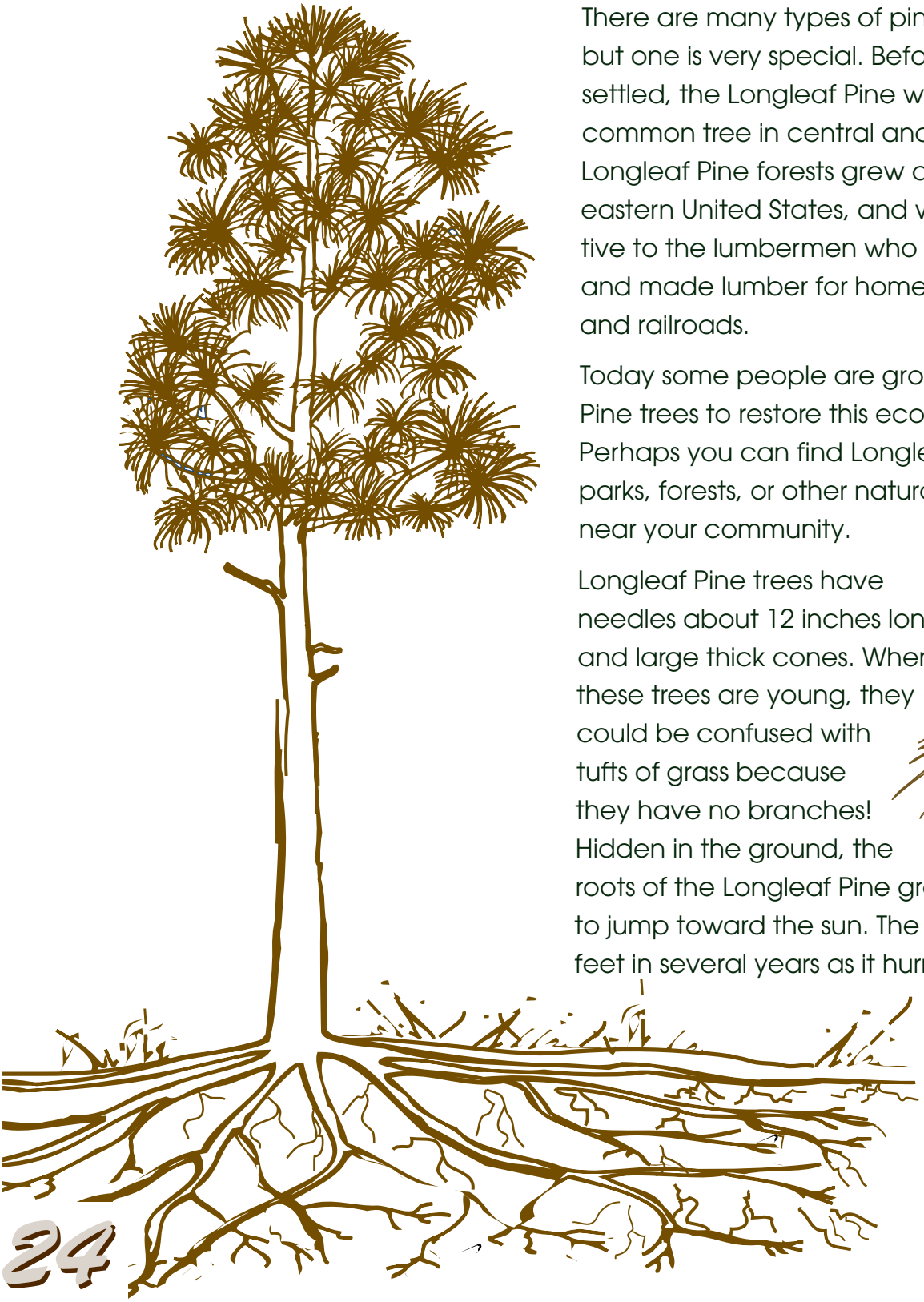
Trees in the city help provide a number of important benefits. They give wild animals a home, and help hold the soil in place. They can help reduce air conditioning bills; trees that shade the roof can keep a house 20% cooler in the summer. They can even reduce noise levels.



Spanish moss drapes across the limbs of many trees, especially live oak trees. Spanish moss is a plant that hangs on a tree branch, but it doesn't hurt the tree. It is not a moss, but belongs to the pine-apple family! It is an epiphyte, getting nourishment from the air and rain. In the early 1900's people picked and dried Spanish moss for stuffing furniture and bedding.

A Florida Pine

Skill: Comparing and Contrasting
Project: Learn about pine trees



There are many types of pine trees in Florida, but one is very special. Before Florida was settled, the Longleaf Pine was the most common tree in central and northern Florida. Longleaf Pine forests grew all over the southeastern United States, and were very attractive to the lumbermen who cut these trees and made lumber for homes, poles, cities, and railroads.

Today some people are growing Longleaf Pine trees to restore this ecosystem to Florida. Perhaps you can find Longleaf Pine trees in parks, forests, or other natural areas near your community.

Longleaf Pine trees have needles about 12 inches long and large thick cones. When these trees are young, they could be confused with tufts of grass because they have no branches! Hidden in the ground, the roots of the Longleaf Pine grow until it is ready to jump toward the sun. The tree may grow 10 feet in several years as it hurries toward the sky.

Color this Longleaf Pine

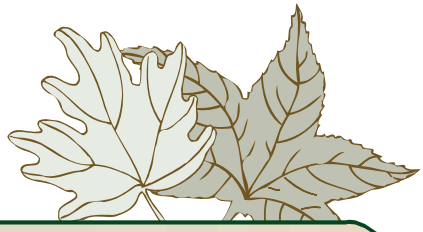
Discuss with your Project Helper:

1. Where are Longleaf Pine trees in your community?
2. Fire used to sweep across Florida, sparked by lightning and encouraged by early settlers. How might the Longleaf Pine's thick bark and quick growth spurt help it survive these fires?
3. Describe why people should be proud of these three trees: Cabbage Palm, Live Oak, and Longleaf Pine.

If you want to do more:

Challenge #9: Find several pine trees in your neighborhood and collect the needles. Measure the length of all the needles and count the number of needles in each bundle. Use the following chart to identify which pine trees might live near you. What other information about your trees might help identify them?

Tree Name	Needles per bundle	Length
Sand Pine	2	2-3 inches
Spruce Pine	2	2-4 inches
Shortleaf Pine	2 or 3	2-5 inches
Slash Pine	2 or 3	4-11 inches
Pond Pine	3	5-8 inches
Loblolly Pine	3	3-9 inches
Longleaf Pine	3	6-17 inches



Pine trees grow best where the moisture, soil, and temperature are to their liking. Slash, loblolly, pond, and spruce pine grow best in wetter areas than longleaf pine. Sand and shortleaf pine grow in drier places. When fires burned across the land on a regular basis, pine trees were more limited to their favorite spots. Today, without fire, they can grow in a wider variety of places.

Challenge #10: Find and take pictures of each of the three special trees you learned about in this booklet: Cabbage Palm, Live Oak, and Longleaf Pine. Describe how they look and what makes them special.

Congratulations!

You have completed the Adopt a Tree Project Book, and are well on your way to making some new friends in the forests around you. Whenever you see some of Florida's special trees – the Cabbage Palm, the Live Oak, and the Longleaf Pine, you'll know a little bit about these wonderful trees.

And you also have your own special tree that you adopted. Have you said hello today?

More Resources

Visit your local Division of Forestry office and pick up a free copy of *Forest Trees of Florida.* This guide describes over 90 of the most common native trees in Florida. Continue with the Florida 4-H Projects. In *Trees and Me,* learn about all the ways we benefit from trees, and in *Florida's Fabulous Forests,* explore the forests of Florida. Visit the 4-H Forest Ecology website: www.sfrc.ufl.edu/4h and your County Extension Office for more resources. Visit your local library and read some books on trees. Look for:

- *Ancient Ones: The World of the Old-Growth Douglas Fir,* by Barbara Bash, 1994
- *Big Town Trees: Adventures of Ranger Rick,* adapted by Doe Boyle, 1993
- *The Gift of the Tree,* by Alvin Tresselt, 1972
- *The Giving Tree,* by Shel Silverstein, 1964
- *The Grandpa Tree,* by Mike Donahue, 1988
- *Guess What Trees Do,* by Barbara Rinkoff, 1974
- *Life on the Land,* by Maria Ruis, 1986
- *Owl Moon,* by Jane Yolen, 1987
- *Red Leaf, Yellow Leaf,* by Lois Ehlert, 1991
- *The Seasons of Arnold's Apple Tree,* by Gail Gibbons, 1991
- *Sky Tree,* by Thomas Locker, 1995
- *A Tree in a Forest,* by Jan Thornhill, 1991
- *A Tree is Nice,* by Janice May Udry, 1956
- *Trees,* by Harry Behn, 1977

Your local library, bookstore, or nature center should also have tree identification books.

- *Eastern Trees* (Peterson Field Guides), by George A. Petrides, Janet Wehr, and Roger Tory Peterson, revised in 1998
- *Familiar Trees of North America: Eastern Region* (The Audubon Society Pocket Guides), by Jane Friedman and Jerry F. Franklin, 1987
- *Forest Trees of the United States and Canada and How to Identify Them,* by Elbert L. Little, 1980
- *Golden Field Guide to Trees of North America,* by C. Frank Brockman,1968
- *The National Audubon Society Field Guide to North American Trees: Eastern Region (Eastern),* by Elbert L. Little, 1980
- *Peterson First Guides: Trees,* by George A. Petrides, Olivia Petrides, Janet Wehr, 1998
- *Tree Finder: A Manual for the Identification of Trees by Their Leaves* (Nature Study Guide Series), by May T. Watts, 1991

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Adopt A Tree

Florida 4-H Project Book

Forest Resources Series Book 1

Written by:

Martha C. Monroe, Christopher J. Frost, and Alison W. Bowers

School of Forest Resources and Conservation

University of Florida

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