



Explore *the* Deep Woods

Level

3

Forestry
Youth
Activity
Guide

Name _____

County _____



REVIEWED & RECOMMENDED
National 4-H Curriculum

Note to the Forestry Project Helper

Thank you for volunteering your time and talents to assist one or more young people in this project. This activity guide will introduce them to the exciting world of Forestry. Your involvement will make a real difference in the quality of their experiences. You will play a valuable role in helping them learn the subject matter and practice the important life skills along the way. Your interest, enthusiasm and, most importantly, your time will be key ingredients to positive and successful experiences. With your guidance and support, youth will set goals and challenge themselves to work through the activities in this guide. It will be a journey into the world of Forestry that everyone will enjoy.

Your Role

- Become familiar with the material in this activity guide and the *Forestry Project Helper's Guide*.
- Support youth in their efforts to set goals and complete the activities.
- Date and initial the activities on the Achievement Program as the youth complete them.
- Help the youth know themselves, including their strengths and weaknesses.
- Incorporate the use of the experiential learning cycle in all learning experiences.

Youth Outcomes

1. Practicing the life skills of decision making, problem solving, communicating with others, interpreting information, teaching others
2. Recognizing the importance of forests
3. Identifying different types of forests, trees and forest products
4. Developing skills necessary to keep forests healthy



The Forests of Fun Forestry Series

Follow the Path
Reach the Canopy
Explore the Deep Woods
Forestry Group Activity Guide

4-H BU-08038
4-H BU-08039
4-H BU-08040
4-H BU-08041

The three youth guides have been designed for grades 3–5, 6–8 and 9–12, respectively, but may be used by youth in any grade based on their forestry project skills, experience and interest.



Forestry Helper's Guide

The *Forestry Helper's Guide*, provides additional learn-by-doing activities that can be adapted to 4-H forestry project groups, clubs or other groups. You'll also find helpful hints about characteristics of youth, life skill development, teaching experientially, project meeting ideas and resources for organizing a community Forestry program.

Activity Elements

Each activity is designed so the young person has an opportunity to learn by doing before being told or shown how. Your role as Helper is to "take a back seat" while the youth explores the activities and learns from the experiences, even when something doesn't work the first time the way you might think it should. You can help with the learning most effectively by listening as the young person considers the questions and draws conclusions. At times the activity may call for you to be a resource person for content or other ideas.

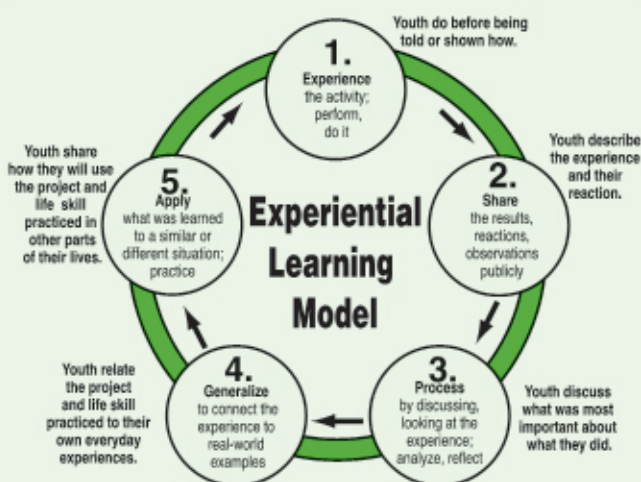
All activities support the experiential learning model endorsed by the 4-H Program. Each activity lists the project skill, the life skill to be practiced, educational standard and a success indicator. The success indicator indicates what the youth will do to successfully complete the activity. In addition, in the *Helper's Guide* you will find an evaluation piece to use to determine what the youth have learned from each activity.

Take a Hike! gives the youth direction for completing the activity.

Tall (Tree) Tales asks youth to share their experience by recording brief answers to questions and sharing these with the Project Helper. The questions help youth process the experience through the five important steps of the experiential learning cycle shown on this page and more fully outlined in the *Helper's Guide*—Share, Process, Generalize and Apply.

Branching Out includes additional activities the youth may choose to do to expand the experience. These activities may be used to complete the Achievement Program for this level. Also included in most activities are additional resources such as **Budding Knowledge** and **Forest Factoids** that support the subject matter of the activity. Internet and additional information and activities are included in the **Forestry Project Online** website.

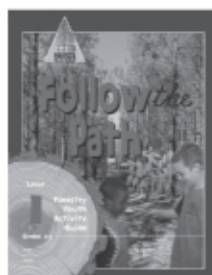
Good luck in your role as Project Helper.



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals"
© 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

This five-step model is used in each activity in this series. The youth first attempt the activity independently. After the youth do as much as they can and answer the questions, you discuss the questions with them. What did they do? What was important about what they did? How does their accomplishment relate to their lives? And finally, how might they use the life and project skills practiced in the future? The more you can ask additional thought-provoking questions and help them clarify and expand on their ideas, the richer the youths' educational experiences will be.

For more on Forestry look for
other guides in this series.



Level 1
BU-08038

Follow the Path

Chapter 1: Know Your Trees

Talking Trunks
Leafing Out
Meet "Your Highness"
Hold On Tight!

Chapter 2: Know Your Forests

Home, Tree, Home
Bark Buddies
Straight and Tall
In the Tree's House

Chapter 3: Forests Have Needs

Down in the Dirt
Thirsty Trees
Spotlight: Trees
Makin' Maps

Chapter 4: People Need Forests

Where's the Water?
My Couch Is a Tree?
Fun in the Forest
Trees at Work



Level 2
BU-08039

Reach the Canopy

Chapter 1: Meet the Trees

Water on the Move
The Leaf Machine
Tick, Tock, Tick, Tock
Dead Ringer

Chapter 2: Know Your Forests

My State Forests
Ch-ch-ch-changes
A Home in the Trees
Forest Invasion

Chapter 3: Forests Have Needs

Someone Call a (Tree) Doctor!
Stop Bugging Me!
Fire in the Forest
Move Over, Please!

Chapter 4: People Need Forests

Growing Every Day
Breathing Easier
City Trees



BU-08041

Helper's Guide

Chapter 1: Planning for Success

Steps to a Successful 4-H Forestry Program
Evaluating Your 4-H Forestry Program
Ages and Stages of Youth Development
Teaching and Learning Experientially
Developing Skills for a Lifetime
Forestry Project Achievement Certificate

Chapter 2: Fun with Forestry

Let's Make Plans
Playing Birch Bingo
Conducting a Forestry Quiz Bowl
Forestry A to Z
Conducting a Mini 4-H Forestry Invitational

Chapter 3: Budding Knowledge

Fun with Forestry Pyramid
Forestry Glossary Games
Raising Christmas Trees

Chapter 4: Tall Tree Tales

Finding Your Way
A Crowded House
Piney Woods Squares
What Kind of Tree Is This?

Acknowledgments

2004 Forestry Design Team:

Bob Daniels, Coordinator; Robert Horton, Liaison;
Keryn Page, Principal Writer; Rae (Dehli) Wilkinson,
Jim Freed, Sanford Smith, Natalie Carroll, Rita
McKenzie, Jim Nichnadowicz, Peggy Preusch, Ralph
Johnson, Gwenda Adkins, Marcella Szymanski,
Martha Monroe, Kris Irwin, Julie Sexton, Carol
Hanley, Ed Faurot, Writers; Natalie Carroll, Sanford
Smith and Ralph Johnson, Photographs; Tom Zurcher,
Editor; and Northern Design Group, Design and
Production.

Supporters and Donors

U.S. Forest Service
Hardwood Forest Foundation
National 4-H Curriculum



Explore the Deep Woods

CONTENTS

Note to the Project Helper	Inside Front Cover
Explore the Deep Woods Contents	1
Let the Adventure Begin	2
Planning the Journey	3
Explore the Deep Woods Achievement Program	4
Explore the Deep Woods Completion Certificate	5

Chapter 1: Meet the Trees

Key That Tree!	6
Winter Trees	8
Fruity Finds	10
A Leafy Heritage	12

Chapter 2: Know Your Forests

Turn Left at the Tree	14
A World of Forests	16
Foreign Forests	18

Chapter 3: Forests Have Needs

City Trees	20
It's a Bird, It's a Plane, It's Super-Tree!	22
Recycle Me, Please	24
Trim the Trees	26

Chapter 4: People Need Forests

Wanted: Forest Owners	28
Anyone Need a Tree?	30
Houses & Chairs Are Harvested	32
My Boss Is a Tree	34

Tree Talk Glossary	36
--------------------	----

Let the Adventure Begin

Are you ready to continue the Forestry project? You'll soon discover even more about the many wonders of trees, forests, forest ecology and human reliance on forests. You will learn about forest resources near home and around the world. You'll also explore the relationship between trees, people and communities.

Through the activities in this guide, you will have many interesting and exciting challenges. You'll learn about different types of trees and tree parts, characteristics of different forests, what forests need to grow and thrive, and the many different products and benefits people get from trees and forests. You'll even learn about the many jobs you might want to do when you grow up!

Don't be afraid to jump right into an activity and give it a try. Don't give up if the activity doesn't work the first time. Learning takes place even when things don't turn out as planned. The most important thing is to try. Once you try, talk with your helper about what you did or tried to do.

You'll also be learning about yourself. In addition to what you learn in this project, many of the things you'll do are skills you'll use in other areas of your life, such as decision making, problem solving, communicating with others and more.

Explore the Deep Woods

Project Guidelines

- 🕒 Set your goals and record your Forestry project highlights.
- 🕒 Complete What do I know? on page 3.
- 🕒 Do a minimum of six activities in the *Explore the Deep Woods* Achievement Program each year and complete the entire program within three years. This program will help you set goals, record your successes and be recognized for your good work.
- 🕒 Practice and develop the life skills of relating to others, making decisions, learning to learn and communicating with others.
- 🕒 Increase your Forestry knowledge and skills.

Your Project Helper

Your project helper will support you in this project and make learning more fun. This person may be a parent, project leader or adviser, a neighbor or an older friend who knows about forests and is willing to support you. The choice of a helper is yours.

As you do the activities, you'll discuss with your helper what you did and the questions in the **Tall Tree Tales** part of each activity. Sometimes your helper will work with you to identify resources, including people, Internet sites, organizations, events, magazines and books necessary to complete an activity.

Once you have successfully completed an activity, your helper will date and initial your Achievement Program record. Write the name, phone number and e-mail address of your project helper here.

My Project Helper _____
Phone number _____
E-mail address _____

My Forestry Project Goals

Name _____

What I want to do and learn.

1. _____
2. _____
3. _____

What do I know? - Before and After

Here is a great way to see if you learn something new and develop important skills in this project. Before you start doing the activities in this guide indicate what you know **BEFORE**. Then when you complete the *Explore the Deep Woods* achievement program indicate what you know **AFTER**. You may be surprised what you learned. Share the results with your helper.

Begin each skill with the words *I know how to*

Then circle **1** (to a great extent)

2 (somewhat)

3 (not at all)

Explore <i>the Deep Woods</i>	Before	After
Identify an unknown tree using a tree key.	1 2 3	1 2 3
Make bark rubbings.	1 2 3	1 2 3
Recognize different tree fruits.	1 2 3	1 2 3
Determine the history of a neighborhood tree.	1 2 3	1 2 3
Create a community forestry map.	1 2 3	1 2 3
Identify major forest biomes by continent.	1 2 3	1 2 3
Identify how different cultures use forests.	1 2 3	1 2 3
Identify benefits and requirements of urban trees.	1 2 3	1 2 3
Identify ways of genetically improving trees.	1 2 3	1 2 3
Determine ownership of forests.	1 2 3	1 2 3
Decide how different values and needs influence forest uses.	1 2 3	1 2 3
Make harvest decisions.	1 2 3	1 2 3
Identify forestry jobs.	1 2 3	1 2 3

Project Highlights

Date and list the most fun and interesting things you do in this project.

[illegible]

Explore *the Deep Woods* Achievement Program

Guidelines

1. Complete at least six activities each year.
2. Have your project helper initial the activities as you complete them.
3. Complete at least 20 of the *Explore the Deep Woods* and *Branching Out* activities within three years to complete this Achievement Program and receive a completion certificate.

Explore <i>the Deep Woods</i> Activities	Date Completed	Helper's Initial
Chapter 1: Meet the trees		
Key that Tree!		
Winter Trees		
Fruity Finds		
A Leafy Heritage		
Chapter 2: Know Your Forests		
Turn Left at the Tree		
A World of Forests		
Foreign Forests		
Chapter 3: Forests Have Needs		
City Trees		
It's a Bird, It's a Plane, It's Super-Tree!		
Recycle Me, Please		
Trim the Trees		
Chapter 4: People Need Forests		
Wanted: Forest Owners		
Anyone Need a Tree?		
Houses and Chairs Are Harvested		
My Boss Is a Tree		

Branching Out

Select any of the Branching Out activities. Record the page number of each activity you complete and discuss with your helper.

Page #	Date Completed	Helper's Initials

Write your own activity.

Date _____ Helper's Initials _____

Write your own activity.

Date _____ Helper's Initials _____

Write your own activity.

Date _____ Helper's Initials _____

Write your own activity.

Date _____ Helper's Initials _____

Write your own activity.

Date _____ Helper's Initials _____



Explore *the* Deep Woods

COMPLETION CERTIFICATE

I certify that

_____ has completed all requirements of the
Explore *the* Deep Woods Achievement Program
in the Forests of Fun Series.

Helper's signature _____

Date _____



Key That Tree!

Forestry Skill:
Identifying trees using a tree key

Life Skill:
Problem solving

Success Indicator:
Identifies an unknown tree using a tree key.

Education Standard:
Matter, energy and organization in living systems

Have you ever tried to identify trees? Did you do it by matching the tree with the pictures in a field guide or other book? In this activity you will learn to identify trees using a tree key.

Take a Hike!

First, choose one of the leaves marked A, B, C or D. Now start at the top of the simple **dichotomous key** shown in Budding Knowledge. Notice that there is a pair of leaf characteristics marked “a” and “b.” Read both of these characteristics, and choose the one that most closely matches the leaf you selected. Next, follow the “go to” instructions to another pair of characteristics. Follow the steps in the tree key until you find the name of your selected tree.

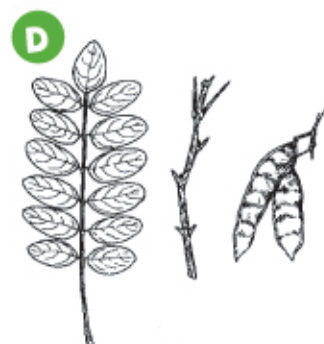
Now try this for the other three leaves until you have mastered the tree key technique. Write the steps you took to identify each leaf in the space provided beneath the leaf.

Steps to Identify a leaf









These leaves are broad and flat.

Tree Talk

Compound leaf
Dichotomous Key
Simple leaf
Tree key



Botanists and plant scientists use tree keys to identify trees and other plants. Keys are available for fruits, twigs, wood, flowers, bark and other tree characteristics. Keys are also used to identify many other living creatures such as mammals, reptiles, birds, fish and insects.



Share

Which tree was the easiest to key out? Which was the hardest? Why?



Process

Why do you think this method of identification is called a “key”?

Why do you think a tree key is considered more accurate than matching leaves to pictures?



Generalize

Why do you need to know how to identify trees in your yard at home or school?



Apply

How could you use a “key” to identify other natural objects?



Find the Suspect

A Simple Dichotomous Tree Key

If the Tree Has:	Go To Pair Number:
1a leaves needles	2
1b leaves broad and flat	3
2a long needles in groups of 2	Red Pine (not shown)
2b long needles in groups of 5	White Pine
3a leaves simple (a single leaf blade)	4
3b leaves compound (more than one leaflet)	5
4a leaves heart-shaped	Catalpa
4b leaves in three different shapes, one like a mitten	Sassafras
5a leaves compound with round tip leaflets	Black Locust
5b leaves compound with 7 leaflets	Ash (not shown)

A key is really a “decision map” to help you proceed from one characteristic to another until you decide the type of tree you’ve found. This decision-making method is useful for lots of situations in life besides tree identification.

The best way to get into the forest is with a good key to the trees!

Branching Out

Use a key for the trees in your state or region to identify five trees you do not know. Share what you learn with your helper.

Winter Trees



When trees lose their leaves during the winter, it can be pretty tough to identify them. In this activity, you'll learn to make bark rubbings to identify trees even when they don't have any leaves!

Take a Hike!

Go to a wooded area and find five trees with very different bark. Hold a sheet of paper to each tree's bark and make a rubbing with a crayon. Number each tree 1 through 5 and be sure to write down where the tree is located so you can find it later. Tape small sections of your rubbings in the spaces provided.

Next, use a tree identification manual to match the bark from your five tree rubbings to the bark pictured. Once you know each tree's species name, write that name on the line below the rubbing.

Forestry Skill:
Identifying trees by their bark

Life Skill:
Decision making

Success Indicator:
Makes bark rubbings to identify trees.

Education Standard:
Matter, energy and organization in living systems.

Tree #1

Tree #2

Tree #3

Tree #4

Tree #5

Tree Talk



Fissured bark
Furrowed bark
Lenticil



If you're not sure what tree you're looking at, don't bark up the wrong one!

The bark of trees provides many useful products and benefits. Everything from chemicals for tanning leather and medicines for helping people are produced from tree bark!

Share

Why might it be important to make bark rubbings instead of just describing the bark?

Which tree was the easiest to identify by the bark?

If you were a tree, which of the five tree barks you studied would you prefer to have?

Process

How could you produce a "bark key" for the five trees you rubbed similar to a tree leaf key?

What are some of the advantages for a tree to have a specific type or pattern of bark?

Generalize

What other tree can you immediately recognize by their bark?

Why do you think it is important to be able to identify trees by their bark?

Apply

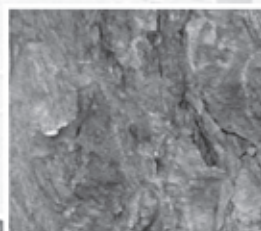
What else can you think of that can be identified by its texture or pattern?

Identifying Bark

Tree bark is a fascinating layer of tree tissue. It protects trees from weather, diseases and pests, and it keeps trees from drying out. Tree bark also provides protection from injury when other trees fall against it or when animals use trees as scratching posts.

Every tree has its own distinct bark characteristics. The bark pattern, color, hardness, fire resistance, thickness, taste and even odor are unique for each species. The identification of trees by their bark is important for anyone who works with trees in the winter, or who works with tree trunks alone, such as at a log yard.

Learning to identify trees by their bark is a challenging process, but with practice and experience it will become easier. Try to learn a few trees at a time by their bark, and take enough time to look closely at each tree's bark characteristics.



Branching Out

1. Search through a pile of firewood and see if you can find a piece of wood that has the same bark as one of the trees you rubbed. Or look in a new location to see if you can find another tree with the same bark.
2. Use other materials to make bark rubbings, such as chalk, pastels or charcoal. Do they produce more accurate or detailed images?

Fruity Finds

Forestry Skill:
Exploring fruits from flowering trees

Life Skill:
Observing

Success Indicator:
Recognizes different tree fruits.

Education Standard:
Matter, energy and organization in living systems

When you hear the word “fruit,” you probably think of tasty bananas or sweet grapes, right? But did you know that acorns, walnuts and many “winged seeds” are also fruits? In this activity, you’ll learn to identify several different types of tree fruits.



Take a Hike!

Go outside with a paper bag to an area that has several types of trees and gather as many different types of tree fruits or “seeds” as you can find in an hour. Try to find at least 10 different tree fruits. Next, spread your fruit on a table or old blanket, and separate them into those fruits that are dry or hard on the outside, like an acorn, and those that have a fleshy covering, like an apple. You may need to break open a fruit to determine this. Use this space to list your fruits and indicate whether each is Fleshy or Dry. You may use a field guide to check and see if you have identified your tree fruit types correctly. Warning: This can be challenging!

Tree Fruits

Name	Fleshy	Dry
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

Little nuts grow and give rise to some fine things.



Tree Talk

Angiosperms
Capsule fruits
Gymnosperms



The tiny fruits of willows and poplars are about the size of a pinhead. They are capsule fruits with a tiny silky or cottony thread attached. This thread acts like a parachute and helps them ride a breeze for many miles!





Share

When you first thought about tree fruits, which fruits came to your mind? Which fruits surprised you?



Process

Why is it important to categorize tree fruits into different groups?

How do you think the fruits you collected get from one place to the other?



Generalize

Which tree fruits do you like to eat?

What animals have you seen eating tree fruits?



Apply

What would happen if trees didn't drop or release their fruits?



What Kind of Fruit?

Tree fruits from flowering broadleaved trees come in many different sizes, shapes and forms. Simply put, fruits arise from the flowers of plants and contain the plant's seeds. Each tree has its own unique fruit. They can be carried by the wind, animals or birds, or they may float on water to new locations.

Fleshy Fruits

Drupe—A fruit that has an outer fleshy cover and an inner hard or bony wall, sometimes called a "pit." Common examples include peach, plum, cherry and prune.

Berry—A fruit with fleshy inner and outer portions and seeds distributed throughout. Blueberries are a good example of a true berry.

Pome—A fruit with an outer fleshy cover and papery inner walls. Apples, pears, Mountain ash and Juneberry are examples of pomes.

Dry Fruits

Splitters (fruits that split open along seams)

Legume—A fruit that splits open along two seams to release the seeds. Beans and peas are two common non-tree examples of legumes; black locust, honey locust and Eastern Redbud are examples of legume fruits on trees.

Follicle—A fruit that only opens up along a single seam. This is an uncommon type of tree fruit.

Capsule—A fruit that may open up one of several ways. Lilac, Horsechestnut and Catalpa all have capsule fruits.

Non-splitters (fruits that do not split open along seams)

Achene—A very small, one-seeded fruit that often has a plume of tiny fibers for wind travel. Sycamore trees have round clusters of achene fruits.

Samara—A fruit with a thin papery wing. The fruits of ash, maple and elm trees are samaras.

Nut—A fruit that has a husk. Examples include chestnuts, hickory, nuts, beechnuts and the acorns of oaks.

Branching Out

1. Gather some "winged seeds" (which you now know are actually fruits), and drop them from a high location. See how far they travel. If possible, do this on a breezy day, and then again when the air is still.
2. Make a "fruit key" (like a leaf key) to identify the types of fruits you collected.