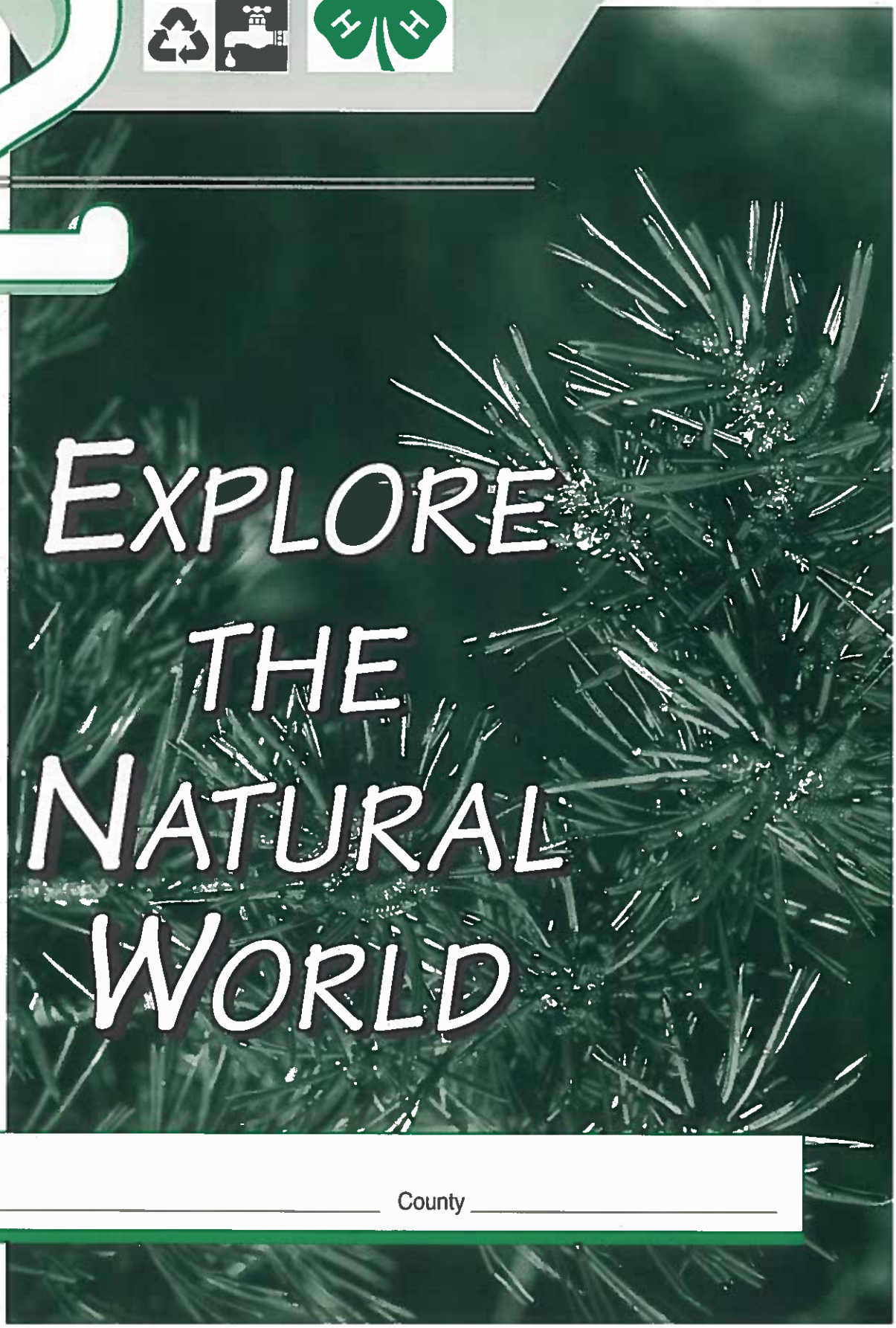
4-H Natural Resources

Level 2

Project Guide



Explore the Natural World

Name _____ County _____

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Explore the Natural World

Table of Contents

Note to the Project Helper

Welcome to the 4-H Natural Resources project. As a project helper, you have an important role in guiding, supporting, and encouraging youth.

This project guide is designed to help youth actively explore the world of natural resources. It includes hands-on activities for both indoor and outdoor fun.

Natural Resources Project Guides

The three 4-H Natural Resources project guides are designed for beginning, intermediate, and advanced learners. In each lesson, you will find a learning activity that emphasizes a project skill and a life skill. This Level 2 project focuses on four life skills: learning to learn, communicating with others, planning and organizing, and making decisions.

Each project guide includes ***Exploring Nature*** activities designed to help youth learn by doing. The ***Talking It Over*** sections help youth process what they have learned as they discuss the experience with you. Keep in mind that most of the questions in this section will not have a right or wrong answer. Your goal is to help youth clarify and expand on their own ideas. ***A Step Further*** sections provide additional learning activities for youth to explore. Encourage youth to enhance their project experience with these challenging activities. Each project guide also includes an achievement program to recognize youth for their accomplishments.

Leader's Guide

The 4-H Natural Resources series also includes a Leader's Guide. This publication provides more specific content information as well as fun learning activities for groups. These group activities are suitable for families, classrooms, 4-H project groups, or other clubs and groups. You will also find information about the experiential learning model and how to use it to promote life skill development.

4-H: Experiential Learning

This learning method — doing an activity, reflecting on the experience, and applying the new knowledge — is called the ***Experiential Learning Model***. This model is what makes 4-H youth development education different from other formal education methods. Each lesson in the 4-H Natural Resources series uses experiential learning to help youth get the most out of their learning experiences.

Experiential Learning Model

As you can see from the diagram above, youth start by completing an activity on their own. Then, you meet together to talk about the experience. With your guidance, youth reflect on what they did and how they can apply the learning to other situations. This method may seem different at first, but with your efforts young people will soon become comfortable with the process, and learning will go well beyond Natural Resources. Good luck!

Fun with the Natural Resources Project

Welcome to 4-H Natural Resources. In this Level 2 project, you will explore fun ways to learn about nature both indoors and outdoors. You'll develop wetland and habitat use plans, write a public service announcement, and record a video interview. You'll even do some fun experiments that will help you become a natural resources expert. All kinds of exciting opportunities await you in the 4-H Natural Resources project. Set high goals for yourself and see just how far you can go.

Natural Resources Activity Guide

The activities in this guide will give you new challenges to explore. Work with your project helper to complete each activity. Remember, this guide is not designed to provide you with answers to all of your questions. Learn to find and use resources such as books, videos, Extension Service educators, and professionals such as foresters, biologists, resource conservation educators and others who work in the field of natural resources.

Record your goals and work in this guide. A written record will be useful as you progress through Level 2. It will also show all that you have learned and accomplished in the project.

Project Guidelines

- Do at least four required activities and three "A Step Further" activities each year.
- Complete Level 2 within three years.
- Participate in at least three of the learning experiences listed on page 5 each year.
- Record project goals and accomplishments.
- Practice the life skills emphasized in this unit: learning to learn, communicating, planning and organizing, and making decisions.

Your Project Helper

Your project helper will be a great resource for you. Choose someone who will support your efforts to complete the natural resources achievement program. Your helper will meet with you to set goals, suggest resources to use, and give feedback as you complete each activity. Write the name and phone number of your helper below.

Project Helper:_____

Phone:_____

My Project Plans & Highlights

Natural Resources Project Goals

Name_____

List goals that you want to achieve in the Level 2 Natural Resources project:

Year_____

Year_____

Year_____

Natural Resources Highlights

Date and list important things you do and learn in this project.

Major Learning Experiences

Date any of these things that you do.

Year	Year	Year	Activity
			Give a public presentation
			Attend a natural resources workshop
			Participate in a community environment project
			Participate in a natural resources tour
			Attend a natural resources project meeting
			Exhibit at a fair
			Your own activity

Natural Resources Achievements: Unit 2

Directions:

1. Do at least four required activities and three "a step further" activities each year.
2. Finish at least 20 activities in three years to complete this level.
3. Date each activity when you complete it and have your project helper initial it.

Required: Complete at least three of the following activities:

Helper	Date	Activity
		Traveling Seeds
		Magical Minerals
		How Much Wildlife?
		Nature's Cycle (compost)

Options: Complete any of the "A Step Further" activities listed below, or write your own challenge.

		A Step Further page 9 # 1
		A Step Further page 11 # 1
		A Step Further page 11 # 2
		A Step Further page 13 # 1
		A Step Further page 13 # 2
		A Step Further page 15 # 1
		A Step Further page 15 # 2
		Write your own step further idea here:

Required: Complete at least two of the following activities:

Helper	Date	Activity
		Wonderful Wetlands
		Home for the wild
		Tree Scientist

Options: Complete any of the "A Step Further" activities listed below, or write your own challenge.

		A Step Further page 17 # 1
		A Step Further page 17 # 2
		A Step Further page 19 # 1
		A Step Further page 19 # 2
		A Step Further page 21 # 1
		A Step Further page 21 # 2
		Write your own step further idea here:

Required: Complete at least two of the following activities:

Helper	Date	Activity
		Station Break
		Water Watch
		Food for the Wild

Options: Complete any of the "A Step Further" activities listed below, or write your own challenge.

		A Step Further page 23 # 1
		A Step Further page 23 # 2
		A Step Further page 25 # 1
		A Step Further page 25 # 2
		A Step Further page 27 # 1
		A Step Further page 27 # 2
		Write your own step further idea here:

Required: Complete at least two of the following activities:

Helper	Date	Activity
		Rest and Nest
		Make a Wetland
		Kids Care

Options: Complete any of the "A Step Further" activities listed below, or write your own challenge.

		A Step Further page 29 # 1
		A Step Further page 29 # 2
		A Step Further page 31 # 1
		A Step Further page 31 # 2
		A Step Further page 33 # 1
		A Step Further page 33 # 2
		Write your own step further idea here:

I certify that _____ has completed the Level 2 natural resources project.

Project Helper's Signature _____ Date _____

Did You Notice?

Learning about natural resources can be fun and interesting. We can learn about the world around us by asking questions, talking with others, reading information in books, at libraries or on the Internet. You can also learn by experimenting and teaching others.

In this chapter, you can practice some skills for learning. These skills can also help you learn about things other than natural resources. You can use these skills to learn more about people, places, activities, sports, subjects in school, careers, or even just for fun.

Project Skill:
Plant reproduction

Life Skill:
Learning to learn

Activity:
Illustrate ways seeds travel to reproduce

Traveling Seeds

Seeds are important for the continuation of most plants. Most plants produce hundreds or thousands of seeds. To survive, some of the seeds "travel" from the parent plant, to areas where there is less competition for nutrients, water and sunlight.

Plants have evolved several methods for seeds to travel to increase chances of plant reproduction.

Exploring Nature

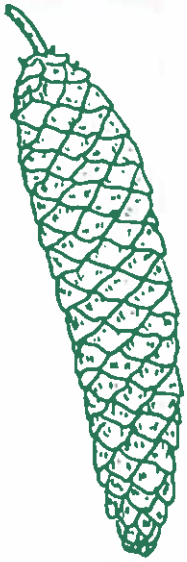
Materials Needed: posterboard or large piece of paper, pencils, markers or poster paint, glue, ruler or straightedge

In the area to the right, design a poster to show how five different tree seeds scatter to reproduce. Then make a full-size poster.

If possible, find a library or school to display your poster and share what you learned with others.

Some of the tree seeds you may wish to use include:

maple	oak
pine	apple
poplar	ash
cedar	spruce
catalpa	or use your own ideas



Talking It Over

Share What You Learn

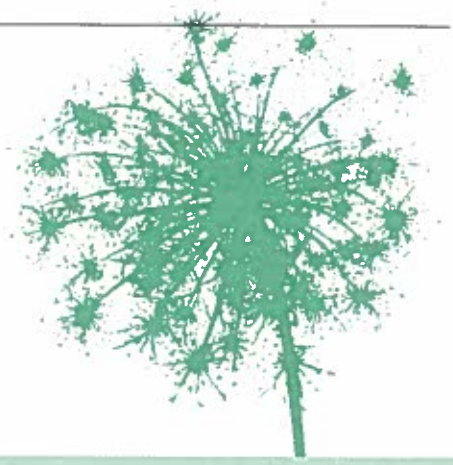
What methods of seed dispersal are represented on your poster? Which ones?

Some tree seeds can scatter using more than one method. Why is that important?

Use What You Learn

How does making a drawing or a poster help you learn and remember?

What are some other situations when you might use a drawing to help you learn something new?



Field Notes

Primary ways of seed dispersal:

Carried by the wind — very light seeds with sail — like or hairy outgrowths. For example, seeds with papery wings such as pine, maple,or ash trees; or balloon seeds on willows, dandelions, milkweeds, or cattails.

Carried by water — seeds or fruits with air sacs or buoyant tissue, like cranberries. This includes some seeds carried by the wind, which, if they land on water, will be carried like a raft.

Hitchhikers — seeds with spines, hooks or sticky coatings which catch on animal fur or people's clothing such as burdock, cocklebur, beard grass, or Queen Anne's lace.

Eaten or carried — seeds contained in fruit which is eaten by birds or animals and then excreted (ex. berries, grapes, apples). Some fruits or nuts are eaten by animals that discard the seeds. Also some nuts are carried and stored by birds or small animals to be eaten later, like acorns or hickory nuts.

Thrown — seeds that are shot out and away from the parent plant. Seeds are produced in pods that create pressure within as they dry such as violets, lupine, and beach pea.

A Step Further

1. Take a walk in an area with tall grass and shrubs. Wear flannel leggings or masking tape (sticky side out) to gather seeds on your legs. This will probably work best in the late summer or fall. Describe the kinds of seeds you collected.

Project Skill:
Use of fertilizer

Life Skill:
Learning to learn

Activity:
Compare effects of fertilizer on plants

Magical Minerals

Plants use certain types of minerals to help them survive. Nitrogen, phosphorus, and potassium (potash) are three minerals that are very important to plants. If these minerals are not easily available, plants will not grow well.

Fertilizers are used to make sure plants can get these minerals when they need them. Using the right amount of fertilizer is important. Too much fertilizer will hurt plants as badly as not having enough.

Exploring Nature

Materials needed:

- 12 corn seeds
- 3 planting containers with drainage holes in the bottom (flower pots, bottom halves of 1 gal. milk cartons) sand (or a mixture of vermiculite and peat moss) for planting mixture
- fertilizer: a basic container plant type fertilizer (this may come as liquid or dry fertilizer that can be mixed with water). This may be found in most retail stores that sell garden or plant supplies

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Design an experiment to determine the effects of minerals (fertilizer) on the growth of plants. The three samples for the experiment will be as follows:

- **Sample #1** — no fertilizer
- **Sample #2** — mix according to label directions
- **Sample #3** — mix at 5 times the recommended rate

Directions:

1. Presoak seeds 4-6 hours
2. Place at least 2 inches of sand (or vermiculite mixture) in each planting container.
3. Label each container (see list in the previous column)
4. Mix the fertilizer with water according to label directions and use for sample 2. Note the types of minerals (nitrogen, phosphorus, and potassium) present in the fertilizer.
5. Mix the fertilizer at 5 times the recommended rate for sample 3.
6. Plant 4 seeds in each container. Place them in a warm location that gets sunlight.
7. Water and care for the seeds/plants. Keep the soil moist but do not overwater.

Record your observations every three days for four weeks and note the following:

- height measurements
- visual observations
- comparisons between samples