Florida Wildfire Prevention . . .

This Instructor's Guide, along with the CD-ROM *Florida Wild-fire Prevention* is designed to help you explore with your students the importance of fire to Florida's ecosystem. We hope you find these tools useful as you and your students set out to discover how fire is used to properly manage and maintain an infinitely renewable resource... our Florida forests. We are confident that you and your students will enjoy the challenges of this CD-ROM.

Terry L. Rhodes Commissioner of Agriculture

1 Land Feter

L. Earl Peterson, Director Division of Forestry

INTRODUCTION	3
Purpose	
Use in the Classroom	
Required Computer Equipment	
INTRODUCTION VIDEO	
Pretest/Post-test	
Log-In Exercise	
Installation / User Tips	
CONTENT AREAS	
WHAT IS FIRE?	5
Learn what the ingredients of fire are, and just how common fire is to Florida's ecosystems.	
STUDENT ASSESSMENT - WHAT IS FIRE?	6
GOOD FIRES/BAD FIRES	7
This section discusses how fire has shaped the development of Florida's landscape. It also distinguis	shes
between wildfires and prescribed fires.	
Student Assessment - Good Fires/Bad Fires	8
FORESTRY STATION	0
Video clip describes the work of the Florida Division of Forestry	•••••)
STUDENT A SEESSMENT - FORESTRY STATION	10
STUDENT ASSESSMENT - FORESTRY STATION	10
FIRE TOWER	11
This section teaches about wildfires, prescribed burns, fire's effect on plants and animals, and	1
home and campfire safety	•
FIRE SAFETY CHECKLIST (INSIDE)	14
FIRE SAFETY CHECKLIST (AUSDE)	15
STUDENT ASSESSMENT - FIRE TOWER	16
GLOSSARV	17
OLOSSARI	•••• 1 /
Additional Activities	
Pretest/Post-test	21
Fire Word Search	22
Prescribed Burn Crossword Puzzle	23
Wildlife Scramble	24
Reference Materials	
Answers to Assessments	25
Smokey's Coloring Page	26
Smokey's maze	27
Fire Fighter's Crossword	
HOME HAZARDS	
MOBILE HOME FIRE HAZARD NUMBER MATCH	30
CONTACTS	31

INTRODUCTION

PURPOSE

The *Florida Wildfire Prevention CD-ROM*, along with other software developed by Florida's forestry community, *Florida Forests Forever* and *Forest Friends*, is designed with one goal in mind--to educate. Using the CD-ROM to actively engage student learning will increase a student's understanding of the importance of fire in managing our ecosystems. The *Florida Wildfire Prevention* CD ROM is designed to:

- Show students that fire is vital to the health of Florida's ecosystems;
- Teach how prescribed fire benefits Florida's wildlife;
- Show how prescribed fire prevents disastrous wildfires;
- Promote the importance of wildfire prevention;
- Provide an educational tool that can be used in the classroom to enhance critical thinking skills concerning the environment.

The CD-ROM offers a fun, attention grabbing presentation of facts and information about fire and ecosystems. Built on interactive games, exercises and messages, this CD-ROM will help students understand how fire helps shape the natural environment in the State of Florida.

USE IN THE CLASSROOM

This **Instructional Guide** is designed to assist the educator in using the CD-ROM. Presented in an easy-to-use format, the guide provides information to facilitate learning about fire in Florida. To assist in the learning experience, each of the four content areas includes grade level, subjects, concepts, skills and correlations to the Florida Sunshine State Standards. A brief introduction to each topic is provided along with an activity to reinforce the content.

Using this CD-ROM and Instructional Guide, along with the contact list provided and a little imagination, the educator can lead students into an exploration of many subjects. Together, they can go well beyond merely understanding the role that fire has played (and continues to play) in shaping Florida's ecosystems and providing habitat for Florida's abundant wildlife.

The *Florida Wildfire Prevention CD-ROM* is primarily designed for use in 4^{h} - 6^{h} grade classrooms, but can be used with a wide variety of audiences. It is primarily intended for single-user or small group settings.

REQUIRED COMPUTER EQUIPMENT

The minimum and recommended system requirements are listed on the back of the CD-ROM case for both IBM-compatible and Macintosh computers. Your computer must meet these requirements in order to operate the CD-ROM program.



INTRODUCTION (CONTINUED)

INTRODUCTION VIDEO

The CD-ROM begins with a video that describes the benefits of fire and how important fire is to Florida's forests. It explains that forests need to have sunshine, water and fire. The introduction video also describes how some fires are good and some are bad. It gives the students a preview of the information they will learn by using the CD-ROM.

PRETEST/POST-TEST

The students take a pretest that measures their current knowledge of the benefits of fire to Florida's forests. There scores are recorded in a database that teachers can access. After the students complete the four content areas, they take a post-test that evaluates what they have learned using the CD-ROM. While completing these tests is optional, it gives teachers the ability to evaluate the students understanding of the concepts contained in the CD-ROM.

LOG-IN EXERCISE

This exercise, also optional, offers students the opportunity to register as users of the CD-ROM. By completing this simple exercise where students supply their names and other information, a database is built for the teacher's use.

INSTALLING THE FLORIDA WILDFIRE PREVENTION CD-ROM

<u>IBM-COMPATIBLE PC COMPUTERS</u>- Place CD-ROM into the CD-ROM drive. From <u>My Computer</u>, click on CD-ROM DRIVE: WILDFIRE PRE-VENTION. Select INSTALL and follow directions generated by the installation program. Install QUICKTIME as directed. Once installed, a Wildfire Prevention icon will be placed on the desktop for activation by double-clicking.

<u>MACINTOSH COMPUTER</u>S- Place the Florida Wildfire Prevention CD-ROM in the CD-ROM drive. Double-click on the desktop folder that is created. If QUICKTIME is not already installed, install it from the folder.

USER-TIPS-

<u>COMPUTER MONITOR RESOLUTION</u>- The Florida Wildfire Prevention CD-ROM was developed at 640 x 480 monitor resolution. If the picture does not fill the screen, you will have to adjust your monitor resolution to this setting. Please consult your monitor guidelines for instructions. If your screen appears dark, you may want to adjust the brightness/contrast settings.

<u>NAVIGATION</u>- In some cases, students cannot manipulate items in the activities screens until the audio instructions have ended.



In some sections of this guide, enrichment material is indicated by a box around the paragraph. The material may not be included in the audio scripts of the CD-ROM; however, the instructor should teach this material prior to giving the student assessment.

WHAT IS FIRE?

In this section students will learn about:

- Florida's ecosystems
- The fire triangle and components necessary for a fire to exist.

Over 16 million acres of the state is covered with forests. Although the state's abundant rain and sunshine are vital to the survival of Florida's forests, another element is necessary to maintaining them...fire. Over thousands of years, Florida's forests have developed because of the presence of fire. In fact, many of Florida's ecosystems require fire in order to exist.

To have fire, three ingredients are needed; oxygen, fuel and heat. Removing any of these three ingredients, will extinguish a fire. The "fire triangle" shown in the CD-ROM is a visual way of depicting the needs of fire.

For a fire to burn, the air around it must be at least sixteen percent oxygen. Therefore, Earth's atmosphere, at about twenty-one percent oxygen, provides plenty of oxygen to sustain a fire. Removing the oxygen, for example, by putting dirt on a fire, smothers it.

Fuel is supplied by woody debris and other plant matter like limbs, leaves and pine needles in the forest. The build up of debris on the forest floor can lead to excessive, dangerous fires. Fuel can also come from buildings and other structures.

Heat is supplied through a number of mechanisms, including lightning, campfires, and cigarettes.

A wildfire is a fire that burns out of control in forested or wildland areas and destroys everything in its

path. Approximately twenty percent of wildfires in Florida are started by lightning. Sadly, arson, the crime of maliciously setting a fire to damage or destroy property or buildings, is the #1 cause of wildfires in Florida.

Fire is an important part of Florida's ecosystem. In fact, there are an average of 5,000 wildfires in the state every year. Managing fire to protect the citizens of Florida as well as provide many benefits to our natural resources is an important part of the job of the Florida Division of Forestry.

In the *What is Fire*? activity on the CD-ROM, students are asked to help put out a fire by smothering it (removing the oxygen from the fire.) When they successfully extinguish the fire, they are allowed to move into the next content area of the CD-ROM.

Sample Activity

Use a candle and a glass jar to show how the three elements of the fire triangle, oxygen, fuel and heat, are necessary to sustain fire.

1. Place a small candle inside a glass jar. Melt the bottom of the candle and use that to attach it to the bottom of the jar. After lighting the candle, place the lid on the jar. The flame will go out as the oxygen inside the jar is used.

2. Relight the candle and leave the lid off the jar. Allow the candle to burn until the fuel (the wax) is consumed and the flame goes out. This is an example of removing the fuel from the flame.

3. Use water to put out the candle. This removes the heat source which is necessary to have a fire.

4. Relate the burning candle to wildfires. Do this by discussing the fire triangle, the necessary components of a fire and how all these things can be found in forests.

5. *Math* 16 million acres of Florida's 35 million total acres are

Levels Grades 4-6

Subjects

Science, Math, Language Arts

Concepts for Students to Learn:

• Fire requires oxygen, heat and fuel in order to burn

• Fire is an important part of Florida's natural environment.

• Fire has shaped the development of Florida's forests for thousands of years.

Skills

Observing, Relationships, Patterns, Organizing Information and Analyzing

Sunshine State Standards Correlation

<u>Science</u>	Language Arts
SC.B.2	LA B.2
SC.D.1	LA C.1
SC.F.1	LA C.2
SC.G.1	
SC.H.2	
<u>Math</u>	
MA A.1	

forested. What percentage of Florida's land base is covered with forests? (45.7%) Approximately 20% of Florida's 5,000 yearly wildfires in Florida are started by lightning, how many fires are not the result of lightning annually? (4,000)

*Possible FCAT activity.

STUDENT ASSESSMENT - WHAT IS FIRE?

Name:_____

- 1. List three things that a <u>forest</u> needs to survive:
- 2. A fire needs the air to be at least _____ oxygen in order to burn and the earth's atmosphere is approximately _____ oxygen.
 - a) 3%, 42% b) 9%,18% c) 16%, 21% d) 23%,5%

, _____,

- 4. What percent of wildfires in Florida are started by lightning?a) 10%b) 20%c) 45%d) 60%
- 5. The "fire triangle" consists of all of the following, *except* for:a) lightningb) fuelc) heatd) oxygen

Match the word on the left to the definition.

6. Fuel	a) To remove oxygen from a fire.
7. Smother	b) A fire that buns out of control in forested or wildland areas and destroys anything in its path.
8 Ecosystem	c) Material that burns like dead limbs, trees, buildings and even pine needles and leaves.
9. Wildfire	d) An ecological community and its physical environment.

10. Discuss some of the ways that fire affects your life today.

GOOD FIRES AND BAD FIRES

In this section students will learn about:

• Distinguishing between good fires and bad fires.

GOOD FIRES

We don't normally think of fires as being "good," but in some instances, they are very beneficial. Thousands of years ago, man first used fire as a

source of warmth, cooking and light. Today, we still use fire in a fireplace or furnace to keep us warm, fire in a grill or gas stove is used to cook and candles and lanterns are sometimes used as a light source, especially during a power outage. Some fires, called prescribed burns or prescribed fires are even used to control the growth of unwanted vegetation in forests.

BAD FIRES

A fire that burns out of control and destroys anything in its path is an example of a bad fire. Wildfires in the forest fall into this category. Florida has over 5,000 wildfires that burn many thousands of acres annually.

In Florida there are three main causes of wildfires. These are arson, escaped debris/trash burning and lightning. Arson is the #1 cause of wildfires in Florida.

Arson is a crime. It is the crime of maliciously setting a fire to destroy or damage property or buildings. Persons convicted of arson pay heavy fines and are imprisoned if convicted.

The second leading cause of wildfire in Florida is improper debris or trash burning by home owners. Careless burning of leaves that results in escaped fire, or campfires that get out of control are other examples of fires caused by man that destroy our forests.

The most common non-human cause of wildfires is lightning. It causes approximately twenty percent

of wildfires in Florida. While little can be done to protect against wildfires caused by lightning, some steps can be taken to minimize the damage. Prescribed burns and frequent checks of forested areas after lightning storms and during periods of high fire danger are some of the things land managers can do to control the damage caused by lightning strikes.

PRESCRIBED FIRES

The importance of prescribed fires, introduced in this section is discussed in detail in the "Fire Tower" section of the CD-ROM.

Sample Activity

1. Have the students use the internet links in the reference section of the CD-ROM to find information about fire. They can look for information about wildfires (fire history, statistics, prescribed burning and forest fire laws) at the Forest Protection Bureau website. If they do not have internet access, they can use a library, contact resource professionals, fire fighters/EMTs, etc.

2. Use the above information to have the students, in teams or individually, debate the importance of wildfire prevention. You can give them leading questions to begin the debate, or have each team look up topics that they must defend.

3. Students can use the information gathered in their research to write papers or prepare posters documenting the importance of fire in our lives. Have them present these to the class in an oral report.

7. *Writing Activity* Have the students research in newspapers, magazines and other sources (like the internet) about actual fires, good and bad. Have students write about what they learn about the impact of fire on our lives. **Levels** Grades 4-6

Subjects

Science, Language Arts, Math

Concepts for Students to Learn:

• Fire has been used by man to improve the quality of life for thousands of years.

• When fire is uncontrolled and unplanned, it can have disastrous consequences.

• Arson is a crime punishable by imprisonment and fines.

• How prescribed fires/ burns can be used to manipulate an ecosystem.

• The importance of prescribed fire in preventing destructive wildfires.

Skills

Observing, Relationships, Patterns, and Analyzing

Sunshine State Standards Correlation

Science SC.A.1 SC.D.1 SC.H.1 SC.H.2 SC.H.3

<u>Math</u> MA E.2

<u>Language Arts</u> LA B.1 LA B.2

STUDENT ASSESSMENT - GOOD FIRES/BAD FIRES

Name:
. Fires have been used by man for thousands of years as a source of,, and
. List the three main causes of wildfires in Florida:,,,,,
is the #1 cause of wildfires in Florida. a) arson b) lightning c) people burning debris d) campfires
. Unlike with wildfires, land managers can control and closely monitor the effects of fires.
is the most common non-human cause of wildfires.
Vrite "good fire" or "bad fire" in the blank.
6. A prescribed fire
7. A fire used to cook or for warmth
8. A wildfire started by lightning
9. A fire that destroys houses, the forest or people's property
0. Write a paragraph explaining why a land manager would intentionally start a fire in the forest.

FORESTRY STATION

In this section students will learn about:

• Work done by the Florida Division of Forestry.

• The purpose of Forestry Stations.

The video describes the difference between land managers and forest rangers. Land managers are responsible for planning and conducting prescribed burns in forests, based on a landowners desires for his/her forest. Forest rangers in Florida are responsible for protecting the forests from wildfires.

Almost every county in Florida has a Forestry Station where both land managers and forest rangers work. These forestry professionals are there to respond to wildfires and to help landowners make wise decisions regarding the management of their natural resources.

Forestry Stations maintain all of the necessary equipment for forest rangers to use in fighting fires. Equipment shown in the video segment for this content area includes:

- Crawler tractor and fire plow
- Crawler tractor on truck transport
- Brush truck

Forest rangers are dispatched to (sent to) wildfires when fires are reported by:

- Fire tower lookouts
- Division of forestry patrol airplanes
- Citizens who call 911

Forestry stations also issue outdoor burning authorizations to landowners who wish to prescribe burn their forest or burn piled trees from land clearing. Homeowners may burn yard leaves and branches (debris) without requesting authorization if a noncombustible container is used, covered by a metal screen or grill.

At these offices, forestry officials

calculate *Fire Danger* based on the wind, temperature, relative humidity, how dry the forest is and the chances of a fire getting out of control. During periods of high fire danger, no outdoor burning authorizations will be issued. When weather conditions are severe, a Red Flag Warning is issued indicating that conditions are right for extensive, large and potentially dangerous wildfires.

Sample Activity

Use the contact list provided on page 31 of this guide to invite a number of resource professionals to your classroom. In addition to Division of Forestry employees, be sure to include industry foresters and firefighters from city or county fire departments.

Ask them to share information about careers in their field, such as: job qualifications and education, what they do on a day to day basis, field work vs. office work, opportunities for advancement, etc.

Have each student choose a career in natural resources and write about it. If time permits and the ages of the students are appropriate, do some of the following activities with your students:

1. Have students interview a resource professional, either over the phone or in person. Have them prepare a report on the career of the person they interviewed.

2. Have the students seek out a resource professional and invite that individual to the class. Ask each student to prepare and present an introduction for the person they invite, take notes and prepare a brief written report about that career.

3. Have the students go to the library or other source of information (the internet) and find information on Levels Grades 4-6

Subjects

Science, Social Studies, Language Arts

Concepts

 The diversity of careers available in natural resources/forestry.

 The importance of forestry professionals in controlling/ preventing wildfires.

 The importance of studying and preparing for a career.

Skills

Observing, classifying and categorizing, evaluating

Sunshine State Standards Correlation Science

SC.B.2 SC.D.2 SC.H.3

<u>Social Studies</u> SS.A.6 SS.B.2 SS.C.2

<u>Language Arts</u> LA B.2 LA C.3

careers in forestry/natural resources. Have them prepare a report with that information.

4. Have the students pretend to be a land manager, forest ranger, wildlife biologist, etc. Have the students tell about a "day in the life of a _____."

STUDENT ASSESSMENT - FORESTRY STATION

Name:_____

1. A prescribed burns.	is responsible for planning when and how to conduct
2. A	is an individual who puts out wildfires.
 List two types of equipment kept at forestrand 	ry stations
4. In Florida, landowners are issued burning _ outdoor burning of trees piled from land clean	by the Division of Forestry for conducting ring.
5. Fire danger is influenced by all of the folla) Relative Humidityb) Temperature	lowing except: e c) Wind d) Air quality

6. What type of career in the natural resources field would you enjoy, and why?

FIRE TOWER

In this section students will learn about:

- Wildlife
- Wildfires
- Campfire Safety
- Prescribed Burns
- Home Fire Safety

This virtual fire tower gives students a forest ranger's view of the woods as he works to protect the forest from bad fires. There are four windows from which to watch for fires. Each window has different scenes relating to plants and animals, prescribed fire, wildfire and fire safety. Clicking on these scenes initiates a video clip that explains the topic covered and expands on the lesson provided.

In the fire tower, there is also a radio and a reference list. Clicking on the radio gives instructions on how to explore the scenes in the fire tower windows. The reference list gives students access to a wealth of supplemental information contained on the CD-ROM.

Window I *Wildlife*

Florida's beautiful forests support a great variety of wildlife. These animals have evolved to live with fire. They are usually able to hide or escape during prescribed fires. Animals such as deer, bear and foxes run away from slow moving prescribed fires. Other animals that cannot escape by running, hide in underground burrows, logs or ponds. Rats, mice, shrews, snakes, lizards and turtles are all examples of animals that use this technique to escape fire.

Prescribed Fire

One of the most important reasons to conduct a prescribed burn is to limit the damage caused by wildfire. As discussed earlier, wildfires are unpredictable and dangerous. Fuel, such as dead limbs, leaves and thick vegetation builds up in a forest over time. It is necessary to reduce this fuel by allowing it to burn in a controlled manner.

Also, a prescribed fire can be used to prevent vegetation from growing tall enough to become a "ladder fuel." Ladder fuels carry fire from the ground to the tops of trees and cause crown fires which are devastating. Prescribed fire under controlled circumstances is the best way to reduce fuel loads and prevent damage to the forest and people's homes.

Another reason to conduct a prescribed burn is to manipulate an existing forest. Some species of trees and plants need fire in order to reproduce. For example, fire is needed to melt the resin which holds the seeds of some pine species, like sand pine, inside the cone. These seeds remain dormant in the cone until a fire occurs. After the heat of a fire releases the seeds, new seedlings can begin to grow. This is nature's way of ensuring that the forest floor is ready to support a new forest... the fire removes vegetation that would compete with the seedlings.

Also, some types of pine seedlings (longleaf pine) will not grow until a fire has "released" them. Fire serves to reduce competition--killing the vegetation that shades the forest floor and competes with seedlings for sunlight, nutrients and water. Thus, fire tolerant species like longleaf pine have a competitive edge in these ecosystems, to the extent that a longleaf pine ecosystem cannot even exist without fire.

This is how many of Florida's forests have evolved. Prescribed fires are often used to help a plant species reproduce and allow a particular type Levels Grades 4-6

Subjects

Science, Social Studies Language Arts, Math

Concepts

Plants and animals develop ways to protect themselves from fire.

Fire is a useful tool to help protect our forest resources, homes and property.

Fire helps to shape the ecosystems which have developed in Florida.

Man can use fires to imitate nature.

Fire, despite its many important uses, poses many dangers and we must prepare for them.

Certain steps must be taken to protect our life and property.

Skills

Observing, classifying and categorizing, evaluating

Sunshine State Standards Correlation

Science	Language Ans
SC.B.2	LA B.1
SC.D.2	
SC.G.1	
SC.H.3	
Social Studies	5
SS.B.1	
SS.B.2	
SS.C.1	
<u>Math</u>	
MA B.1	

FIRE TOWER (CONTINUED)

of forest to develop, thus imitating natural fires which occurred before man inhabited Florida.

Prescribed fire may also be used for other reasons. The control of certain insects, and diseases of plants can be accomplished with fire; when a landowner wants a particular species of trees, usually pines on their land, fire is often used to eliminate an undesirable species of tree; fire may also be used to create meadows in a forest where shrubs and herbs may grow to provide needed food and cover for species of wildlife.

Planning a prescribed fire

In this content area, computer demonstrations illustrate the many factors which must be accounted for when land managers plan a prescribed fire. These include the speed and direction of the wind, the temperature and relative humidity, the kinds of fuel present, the moisture content of the fuel and the type and amount of personnel and equipment available to manage a prescribed burn.

The first thing land managers must do is establish a firebreak. This can be either a natural structure like a creek or a man-made structure like a road. They then set a backing fire which is a fire that burns slowly, against the wind. The blackline, a burned area between the backing fire and the firebreak, is created as the backing fire moves away from the firebreak. Land managers then start several small spot-head fires at the other end of the area to be burned. These fires join together and advance toward the backing fire. Land managers are constantly on guard to make sure the fire stays under control and in the planned areas.

Window II

Wildfires

Dry and windy conditions are of-

ten the precursors of wildfires. Dryness makes the fuel in the forest ignite easier and wind helps spread fire. Such conditions are called periods of "high fire danger."

When a wildfire is spotted, generally by a lookout in a fire tower, an airplane patrolling for wildfires or a citizen, forest rangers act quickly to control and extinguish the wildfire. They must determine what equipment they will need to control the wildfire, provide for the safety of those fighting the fire and nearby residences, plow the necessary firebreaks and make sure the fire is completely out.

A computer demonstration of the effects of fire illustrates how different Florida's forests would look if fire was excluded from them. The demonstration compares a pine forest that has been prescribe burned every three years to one that has not received any planned fires. Students see that years of accumulated vegetation (fuel) where fire was excluded led to total destruction of the forest.

To conclude this section of the CD-ROM, students are asked to take a short true/false quiz regarding prescribed fire. Please evaluate the statements below:

1. Prescribed fires, or prescribed burns imitate the effects of fire in nature. *True*

2. Prescribed fires reduce the amount of fuel available for a wild fire. *True*

3. Prescribed fires are good for Florida's ecosystem. *True*

Window III

Campfire Safety

Campfire safety is an important part of preventing wildfires. Below are some rules discussed which will help prevent a campfire from getting away from you.

• Remember to put the campfire completely out before you leave.

• Build the fire away from over hanging branches, limbs, etc. and stack wood away from the fire.

Don't play with matches.

• Keep plenty of water and a shovel near the fire.

• Scrape away leaves, branches and other flammable material from within a 10 foot diameter circle.

• Never leave a campfire unattended.

• Put the campfire out with water and dirt and stir the remains. Make sure all the burned material has been extinguished and cooled.

Window IV

Home Fire Safety

Due to the risk of wildfire in Florida, it is important for people who live in or near the forests to take precautions to protect their home and property.

A home's proximity to the forest is the most important factor in predicting the danger it faces from wildfire. The CD-ROM illustrates a wildland/urban interface "home" that has many fire hazards. Students are to make the house "firewise" by first watching a demonstration and then clicking on, and removing the hazards they detect. Below are some things homeowners can do to protect their property.

• Trim tree branches that touch the roof and are less than ten feet from the ground.

• Keep leaves, dead limbs etc. from collecting on the roof or around the house.

• Do not stack firewood near the house.

Don't use bark or wood chips as flower bed mulch

FIRE TOWER (CONTINUED)

near the house.

Do not use wood shingles.Equip the house with smoke detectors.

• Observe proper procedures and local laws for burning debris.

• Work with land managers conducting prescribed burns.

• Keep tools, especially a rake, shovel, bucket, hose and ladder, available for help in fighting a fire.

• Make sure their address is visible from the street so emergency vehicles can find the home easily.

Sample Activity

Using the "Safety Check Sheet" on the next two pages, have your students determine how "firewise" their house is. Then use that information to have each student develop fire safety plans for their house and share them with the class.

Writing Activity Assign each student to be a type of animal found in the forest. Have them describe, from the animals point of view, seeing and trying to escape from a fire in their forest home. Ask them these questions, what do you see, hear and

Effe

smell? What will you do to escape? Will your life be different after the fire? Where will you live?

Math Activity Have the students solve the problems below.

1. Before starting a campfire, it is recommended that you clear the debris within a circle with a ten foot diameter. Following that recommendation, what is the distance from the fire in the drawing below, to the edge of the circle (the diameter of the circle is 10 feet)? How much area (in square feet) is cleared around the fire?

2. If the shaded area of Greenwood Forest below represents a wildfire, what is the area (in square feet) of the forest that burned in this fire? What is the area (in square feet) of the forest that did not burn? Convert these calculations to acres. (There are 43,560 square feet in one acre.)

Answers:

1. The fire is approximately 5 feet from the edge of the circle. The area of the circle is 78.5 square feet.

2. Total area	1,884,000 square feet 43.25 acres
Burned area	1,193,000 square feet 27.39 acres
Unburned area	691,000 square feet 15.86 acres

GREENWOOD FOREST



FIRE SAFETY	CHECK]	List (INSIDE)
				_

Inside your house, do you	Yes	No
Know how to give directions to your house to the local fire department?		
Have written directions posted near the phone in your house?		
Keep flammable material at least 24 inches away from the fireplace and other sources of combustion?		
Cover fireplaces with screens or glass to prevent sparks from getting out of the fireplace?		
Have the chimneys cleaned annually?		
Remove wires running under carpets, through doorways, near heaters, etc.	? 🗖	
Replace damaged electrical cords and plugs?		
Allow appliances to cool before leaving or storing?		
Provide sufficient air space around appliances like televisions, radios, etc.	? 🗆	
Caution guests about smoking in bed?		
Store combustible materials in appropriate places, away from heat sources	s? 🗖	
Discard garbage properly to avoid the accumulation of fuels?		
Have fire and smoke alarms in appropriate places throughout the house?		
Replace the batteries in fire and smoke detectors twice a year (when the time changes in the spring and fall)?		
Have an escape plan to insure that each family member could get out of the house in the event of a fire?		
Have fire extinguishers in appropriate places and know how to use them?		
Know the meaning of Stop, Drop and Roll?		
Know proper first aid for burns, shock and other fire related injuries?		



FIRE SAFETY CHECK LIST (OUTSIDE)

Outside your house, do you	Yes	No
Keep a thirty foot zone of defensible space around your house?		
Keep tree limbs and leaves cleaned off of your roof?		
Have spark arrestors on your chimney and prune limbs that are within 15 feet of the chimney?		
Keep branches cleared from around powerlines (make sure the power company handles this one)?		
Store firewood and other burnable material away from your house?	`	
Burn debris under the proper weather conditions (low winds and high humidity)?		
Follow the laws applicable to burning of yard trash like leave and limbs?		
Stay with all debris or barbecue fires at all times until they are properly extinguished?		
Refuel equipment only when the engines have cooled?		
After fueling equipment, move it to another area to start?		
Supervise children playing with fire works?		
Have an outside source of water to put out a fire?		
Have tools like rakes, shovels and ladders in a convenient place to put out a fire?		



Student Assessment - Fire Tower

Name:_____

b) burn houses and buildings

, .

- 2. Prescribed fire is often used to do all of the following except:

_____, _____

- a) reduce the amount of fuel in the forest
- c) control insects, and diseases of plants d) help desirable plants reproduce

3. _____ carry fire from the ground to the tops of trees.

- 5. List the most common ways that wildfires are reported to the Florida Division of Forestry:
- 6. In a prescribed burning, the ______ is the burned area between the backing fire and the firebreak.
- 7. The recommended area to clear around a campfire is a circle with a _____ foot diameter. a) 4 b) 8 c) 10 d) 100
- 8. To make your home *"firewise"* you should:
 - a) Equip the house with smoke detectors and change the batteries twice a year
 - b) Avoid stacking firewood near the house
 - c) Replace wooden shingles with more fire resistant ones
 - d) All of the above
- 9. Imagine that this happened in your neighborhood. Two of your classmates found a box of matches on their way home and took a shortcut through a wooded area. There, the two of them built a fire with notebook paper. Although they meant no harm, the fire quickly became large and spread to the woods and then moved toward nearby homes where the fire destroyed a family's home. Discuss as a group:
 - (1) How the two students would feel;
 - (2) Whether this was arson or not;
 - (3) Who would be responsible;
 - (4) What hardships would this create for the family who lost their home.
- 10. Develop a fire safety plan for your house. Draw the floor plan of your house and show how each person who lives with you could escape if a fire happened.

GLOSSARY

Arson Fire – A wildfire willfully ignited by anyone to burn, or spread to, vegetation or property without consent of the owner or the owner's agent.

Backfire – A fire suppression technique of creating a firebreak by burning all fuel between the existing fire line and the oncoming fire. It can also be used to change the direction and the force of the fire convection column.

Brush Truck - A light, mobile truck with limited water pumping capability for off-road operations.

Burning conditions – The environmental factors that affect fire.

Burning index – A number that describes anticipated fire behavior and how difficult it will be to control the fire.

Canopy – The foliage and branches making up the "roof" of the forest.

Combustible – Any material that, in the form in which it is used and under the conditions anticipated, will ignite and burn.

Contain a fire – An effort to prevent further spread of the fire.

Control a fire – A fire is considered "controlled" when it is completely surrounded by a "control line," which is expected to hold any further fire spread.

Control line – Also often called a "fire line," this includes lines constructed by firefighters as well as natural barriers to fire such as rock outcroppings, roads and streams or other water bodies. Crews construct fire lines by using shovels, pulaskis, rakes and chainsaws to clear the line of vegetation so that the fire will have nothing to burn when it arrives at that point.

Council rake - A long-handled combination rake and cutting tool used in mop-up.

Crawler Tractor - A tracked vehicle (frequently equipped with a front-mounted blade and rear-attached fire plow) used to suppress wildfires.

Crown fire - A wildfire that spreads across the tops of trees or shrubs more or less independently of any fire on the ground.

Defensible Space – An area, typically a width of 30 feet or more, between an improved property and a potential wildfire where the combustibles have been removed or modified.

Drip torch – A small fuel tank with a handle nozzle and igniter used to drip a burning mixture of oil and gasoline to ignite a prescribed fire or a backfire.

GLOSSARY (CONTINUED)

Ecotone - Edge between two vegetation types.

Ecosystem- A spatially explicit, relatively homogeneous unit of the earth whose boundaries include all interacting organisms and non-living components of the environment.

Environment - The sum of all external conditions affecting the life, development and survival of an organism.

Escape route – A route away from dangerous areas of a fire; should be preplanned.

Fire break – A natural or constructed barrier used to stop or check fires.

Fire Exclusion – Total or near total elimination of fire from an ecosystem.

Fire flap - A fire tool consisting of a thick, flat piece of rubber on a long handle used to smother grass fires.

Fire Inclusion – The intentional use of prescribed fire to manipulate an ecosystem.

Fire line – Also often called a "control line," this includes lines constructed by firefighters as well as natural barriers to fire such as rock outcroppings, roads, and streams or other water bodies. Crews construct fire lines by using shovels, pulaskis, rakes and chainsaws to clear the line of vegetation so that the fire will have nothing to burn when it arrives at that point.

Fire Plow - A heavy-duty plowshare or disc plow usually pulled by a crawler tractor to construct firelines.

Fire Prevention - Activities, including education, enforcement and administration that are directed at reducing the number of wildfires, the cost of suppression and the cost of related fire damages.

Fire Triangle – Instructional aid in which the sides of a triangle are used to represent the three factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three factors causes flame production to cease.

Firefighter – A person who is trained and proficient in the components of structural or wildland fire.

Firewise construction – The use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the wildland/urban interface area.

GLOSSARY (CONTINUED)

Firewise landscaping – Vegetative management that removes flammable fuels from around a structure to reduce exposure to radiant heat. The flammable fuels may be replaced with green lawn, gardens, certain individually spaced green, ornamental shrubs, individually spaced and pruned trees, decorative stone or other non-flammable or flame-resistant materials.

Foam – A chemical fire extinguishing mixture. It adheres to fuels, cooling and moistening them. It also excludes oxygen from them; eliminating one of the items fire needs to burn.

Forest - An ecosystem characterized by a more or less dense and extensive tree cover, often consisting of separate stands of trees, and commonly including meadows and streams.

Forestry - The art and science of managing forests and related natural resources to meet the demands of society.

Forest Ranger - An employee of the Florida Division of Forestry whose duties include fire prevention and wildland firefighting.

Fuel hazard reduction - Treatment of living and dead forest or wildland vegetation to reduce the threat of wildfire.

Fuel moisture content – The quantity of moisture in fuel expressed as a percentage of weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel break – A wide strip, or block, of land on which the native vegetation has been permanently modified so that fires burning into it can be more readily extinguished.

Fuels – All combustible material within the wildland/urban interface or intermix, including vegetation and structures.

Hand Crew – A group of from 8 to 25 firefighters organized and trained to clear brush, cut trees and make fire lines with hand tools.

Ladder Fuels – Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.

Land manager - A professional whose responsibilities include the application of scientific principles and wise conservation practices (like prescribed burning) in the productive use and perpetuation of natural resources.

Natural Barrier – Any area where lack of flammable material obstructs the spread of wild-fires.

GLOSSARY (CONTINUED)

Overstory – The portion of the trees in a forest that form the upper or uppermost layer.

Prescribed burning – Prescribed fires allow us to incorporate fire in the ecosystem under controlled circumstances. Fire managers ignite them when weather conditions enhance our ability to confine them to predetermined areas and after crews have developed fire-breaks or lines. These fires typically burn in a mosaic pattern, leaving unburned areas within their boundaries. Prescribed fires are used to improve forage and habitat for wildlife and livestock, to improve watershed, or to reduce hazardous build up of fire fuels.

Red flag warning - A term used by fire weather forecasters to alert firefighters and citizens to ongoing or imminent fire weather conditions.

Relative Humidity - The amount of moisture in the air as a percentage of the maximum the air will hold at a given temperature.

Smoke - (1) The visible products of combustion rising above fire. (2) Term used when reporting a fire or probable fire in its initial stages.

Smokey Bear - "Smokey", the fire prevention bear has been our nation's symbol for the prevention of wildfires for over 50 years. His main message has always been "Remember...only you can prevent wildfires".

Suppression – The most aggressive fire protection strategy, it leads to the total extinguishing of a fire.

Understory – Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory.

Wildfire - A fire that burns out of control in forested or wildland areas and threatens to destroy life, property or natural resources.

Wildland - Land other than that dedicated to specific uses such as agriculture (grazing, row crops and commercial forestry), urban development, mining and parks or reserves.

Wildland-Urban Interface – The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Wildlife - All non-domesticated animal life.

PRETEST/POST-TEST

1. Florida's forests need which of the following to survive?

- a. Rain
- b. Sunshine
- c. Rain and sunshine
- d. Rain, sunshine and fire
- 2. What ingredients are necessary to start a fire?
 - a. Fuel, water and oxygen
 - b. Heat and fuel
 - c. Oxygen and fuel
 - d. Fuel, heat and oxygen
- 3. Which of the following is an example of a "good" fire?
 - a. A campfire
 - b. The flame on a gas stove
 - c. A prescribed fire
 - d. All of these are good fires

4. Intentionally setting a wildfire, or any fire, is against the law. What do police call this crime?

- a. Arson
- b. Bad judgement
- c. Carelessness
- d. Improper fire setting

5. What is the name for the place where land managers and forest rangers go to work to make plans for managing Florida's forests?

- a. A forestry station
- b. A work center
- c. A forest center
- d. A fire office

6. Land mangers set, control and closely monitor______ fires that imitate the effects of fire in nature.

- a. House
- b. Wild
- c. Prescribed
- d. Hot

7. What is the name for plant life that grows tall enough to carry fire from the ground to the tops of trees?

- a. Burning plants
- b. Good fuels
- c. Ladder fuels
- d. Burning fuels

8. Which of the following is an example of a bad fire?

- a. Arson
- b. A wildfire
- c. A house fire
- d. All of the above are bad fires

9. Which type of fire can animals escape more easily?

- a. A prescribed fire
- b. A wildfire started by lightning
- c. Arson
- d. A wildfire started by a careless person

10. If you live near a wooded area, which of the following can help reduce the risk of wildfire damage?

- a. Clear a 30-foot "defensible space" around your home
- b. Trim tree branches away from your roof and at least 10 feet from the ground
- c. Be sure your address is visible from the street so fire trucks can find your home easily
- d. All of the above can help reduce the risk of wildfire damage to your house

FIRE WORD SEARCH														
R	I	R	D	F	Y	R	Е	к	А	А	L	Е	Z	Y
S	М	0	K	E	Y	В	Е	A	R	A	L	С	S	Y
Е	Ι	В	U	Ζ	0	В	L	0	А	U	U	0	G	Т
R	R	L	Α	М	R	Х	D	0	Ρ	Е	V	S	S	А
Ι	R	U	R	Е	А	Е	Y	D	L	L	С	Y	R	Е
F	S	Е	S	Y	Υ	L	Ι	G	R	А	Х	S	Е	Н
D	Y	Е	0	S	Ρ	V	Ν	С	Е	R	М	Т	Ρ	R
L	Ι	0	Ν	С	Ν	Ι	Е	S	Е	Ν	Ζ	Е	А	Ρ
Ι	0	0	Т	Н	R	А	Y	Т	Е	С	Y	М	Ι	0
W	D	Е	L	Т	Κ	Ι	В	Y	0	D	R	R	D	L
V	Е	L	Е	Ι	L	Ι	G	Н	Т	Ν	Ι	Ν	G	G
Q	S	R	V	В	Ν	Y	F	Е	В	R	S	R	А	Х
Т	Ι	0	Т	L	Ρ	А	Q	Т	F	U	Е	L	F	М
F	R	А	Ν	G	Е	D	R	Ι	Ν	U	R	R	J	۷

See if you can find the following words in the word search puzzle above.

Arson

Ecosystem

Fire

Fuel

Heat

Lightning

Oxygen

Smokey Bear

Wildfire

PRESCRIBED BURN CROSSWORD PUZZLE



Across

1. A ______ is a fire set on purpose to imitate the effects of fire in nature.

6. Dead leaves, limbs and thick vegetation serve as for fires.

8. Several small fires which are purposely started with the wind and spread out and join together moving toward the backing fireare called

10. People who are responsible for planning and conducting prescribed burns are called

Down

1. Things done to reduce the risk of wildfire are know as fire techniques.

2. This is a by-product of fire that is a nuisance, and can, if not properly managed, cause visibility and other problems for people living nearby.

3. These are "bad" fires that are harmful to people, homes, forest resources, wildlife and ecosystems.

4. A natural, or man-made structure, like a creek or road that acts to prevent fire from spreading past a certain point.

is the crime of maliciously setting a fire to damage or destroy property or buildings. 5. 7. Thick vegetation that grows tall enough to carry fire from the ground to the crown of trees is called fuel.

WILDLIFE SCRAMBLE

How do these animals escape a fire in the woods? Unscramble their names and find out by putting the letters in the boxes in the blanks below.



Answers to Assessments

Student Assessment, What is Fire, Page 6

- 1. Sunshine, rain, fire; 2. c; 3. c: 4. b:
- 3. c;
- 5. a; 7. a:
- 7. a;
 8. d;

 9. b;
 10. Answers will vary

6. c;

Student Assessment, Good Fires/Bad Fires, Page 8

- 1. Warmth, Cooking and Light
- 2. Arson, burning debris/trash, lightning
- 3. a
- 4. Prescribed
- 5. Lightning
- 6. Good
- 7. Good
- 8. Bad
- 9. Bad
- 10. Answers will vary

Student Assessment, Forestry Station, Page 10

- 1. Land manager
- 2. Forest Ranger
- 3. Brush trucks, fire plows, truck transport, crawler tractor.
- 4. Burning authorizations
- 5. d
- 6. Answers will vary.

Student Assessment, Fire Tower, Page 16

- 1. High fire danger
- 2. b
- 3. Ladder fuels
- 4. Running away, hiding
- 5. Fire towers, airplanes, citizen reports
- 6. Blackline
- 7. c
- 8. d
- 9. Answers will vary.
- 10. Answers will vary.

R	I	R	D	F	Υ	R	Е	Κ	Α	А	L	E	Ζ	Y
S	М	0	Κ	Е	Y	В	Е	А	R	А	L	С	S	Y
Е	Ι	В	U	Ζ	0	В	L	0	А	U	U	0	G	Т
R	R	L	А	М	R	Х	D	0	Ρ	Е	V	S	S	А
L	R	U	R	Е	А	Е	Υ	D	L	L	С	Υ	R	Е
F	S	Е	S	Y	Y	L	I	G	R	А	Х	S	Е	Н
D	Y	Е	0	S	Ρ	V	Ν	С	Е	R	М	Т	Ρ	R
L	Ι	0	Ν	С	Ν	Т	Е	S	Е	Ν	Ζ	Е	А	Ρ
L	0	0	Т	Н	R	А	Y	Т	Е	С	Y	М	I	0
W	D	Е	L	Т	Κ	Т	В	Y	0	D	R	R	D	L
۷	Е	L	Е	I	L	Т	G	Н	Т	Ν	Т	Ν	G	G
Q	S	R	V	В	Ν	Y	F	Е	В	R	S	R	Α	Х
т	I	0	Т	L	Р	Α	Q	Т	F	U	Е	L	F	М

R

Crossword, Page 23

R

ANGED



Pretest/Post-test, Page 21

1. d	2. d
3. d	4. a
5. a	6. c
7. c	8. d
9. a	10. d

Fire Hazard Number Match, Page 30

First column: 22,9,4,24,2,13,25,18,19,11,5 Second Column: 6,17,1,7,14,16 Third Column: 23,21,12,15,3,8,20,10

Wildlife Scramble, Page 24

- 1. Rabbit
- 3. Raccoon
- 5. Eagle
 7. Deer
- 9. Squirrel
 - 1 Turtla
- 11. Turtle
- 2. Turkey
 - 4. Fox

R

R

ΝU

Т

۷

J

- 6. Mouse
- 8. Chipmunk
- 10. Woodpecker
- 12. Run, fly or hide

Page 25

Word Search, Page 22

Page 26

Smokey's Coloring Page

8N-4469 KEEPFIRE SMOKEY UJ ND1512 D MOKEY RASH Help PREVENT FOREST FIRES ! **CFFP Coloring Sheet No. 20 U.S. Department of Agriculture—Forest Service** State Forestry Department

SMOKEY'S MAZE



FIRE FIGHTER'S CROSSWORD



HOME HAZARDS



Can you find the fire hazards in this picture?



CONTACTS

Florida Division of Forestry Contacts

A directory of Florida Division of Forestry offices (Forestry Stations) throughout the state can be found on the Wildfire Prevention CD as an Internet link under "Resources". Click on the Florida Division of Forestry

website link < WWW.fl-dof.com> Once on the

Division of Forestry homepage, click on "About Us", then click on "Map of Districts"

Forest Protection Bureau (State Office) 3125 Conner Boulevard, C-15 Tallahassee, FL 32399-1650 Telephone: 850-921-3733 FAX: 850-448-4445

Blackwater Forestry Center 11650 Munson Highway Milton, FL 32570 Telephone: 850-957-6140

Tallahassee District 865 Geddie Road Tallahassee, FL 32304 Telephone: 850-488-1871

Suwannee District Route 7, Box 369 Lake City, FL 32055 Telephone: 904-758-5700

Waccasassa Forestry Center 1600 NE 23rd Avenue Gainesville, FL 32609 Telephone: 352-955-2005

Withlacoochee Forestry Center 15019 Broad Street Brooksville, FL 34601 Telephone: 352-754-6777

Lakeland District 5745 S. Florida Avenue Lakeland, FL 33813 Telephone: 863-648-3163

Okeechobee District 5200 Hwy 441 North Okeechobee, FL 34972-8697 Telephone: 863-462-5160 Chipola River District 715 West 15th Street Panama City, FL 32401 Telephone: 850-872-4175

Perry District 618 Plantation Road Perry, FL 32347 Telephone: 850-838-2299

Jacksonville District Route 2, Box 65 Bryceville, FL 32009 Telephone: 904-266-5003

Bunnell District Route 1, Box 20 F Bunnell, FL 32110 Telephone: 904-446-6787

Orlando District 8431 S. Orange Blossom Trail Orlando, FL 32809 Telephone: 407-856-6512

Myakka River District 4723 53rd Avenue E Bradenton, FL 34203 Telephone: 941-751-7629

Caloosahatchee District 10941 Palm Beach Blvd. Ft. Myers, FL 33905 Telephone: 941-694-2181

Everglades District 3315 SW College Avenue Ft. Lauderdale, FL 33314 Telephone: 954-475-4120