



Prescribed fire: A versatile land management tool

Background:

Many of the ecosystems in Florida evolved with fire present as a frequent natural disturbance caused by primarily by lightning. Over many thousands of years, frequent fires swept across the landscape and many plants, animals and entire ecosystems developed adaptations for surviving in fire-prone environments. Many of the plant species in fire-dependent ecosystems are able to withstand low intensity fires or grow back very quickly after a fire burns through an area. Competition for sunlight can be a limiting factor for plant growth in areas where vegetation is dense. Plants that have evolved in fire-prone areas often require more sunlight than plants that thrive in dense forests where fires would not occur. Fire maintains an open overstory, allowing sunlight to reach the ground layer of the forest. Frequent fires, those occurring every 3–5 years will have a lower intensity of fire because there is not a large amount of plant matter to burn.

Fire is a disturbance that requires the three components that make up the fire triangle (fuel, heat and oxygen). If any one of these components is removed, then fire is not able to burn. Prescribed fire reduces hazardous fuel loads so that wildfire is not as intense and easier to control. Prescribed fires are planned fires in accordance with a written plan, that burn managers use to accomplish a specific set of resource management or fuels management objectives, using specific weather parameters, also taking into consideration safety of the public and crew. On St. Johns River Water Management District lands, prescribed fire is one way to reduce the potential impacts of wildfire to neighboring property especially in the wildland urban interface, or the areas where development is next to natural systems. All district burn managers are certified, meaning that they have completed courses on wildland fire management offered through the Florida Forest Service.



Find out more about the District and prescribed fire used in land management at www.sjrwmd.com/lands/management/prescribedfire.

VIDEO LESSON PLAN • Prescribed fire: A versatile land management tool

Vocabulary words:

endangered species	fire dependent
fire prevention	fire season
fire triangle	fuel
prescribed fire	wildland fire
wildfire	wildland/urban interface

Pre-assessment: (5 minutes)

Have students fill in the boxes on the student page for “what you already know about this word” for each vocabulary word.

Engage: (3–5 minutes)

Tell the students they are going to learn more about the importance of prescribed fire (a fire used to deliberately burn wildland fuels under specific conditions to achieve specific management goals such as fuel management, disease and pest control, habitat management). Have them answer the following questions:

- Describe what comes to mind when you hear the words “prescribed fire” (what colors, what objects, what motions?)
- How can fire be as essential as rain and sunshine to some plants?
- Why would some of the ecosystems of Florida need fire?
- Over decades habitat loss resulted from putting out (suppressing) fires started by lightning strikes soon after they ignited (caught fire). Why would the fire be put out rather than allowing it to burn?

Explore/Explain: (20 minutes)

Review the list of vocabulary words in this teacher packet and watch the video. Instruct students to write down what they hear in the video and learn about the vocabulary words as well as answer the questions in the student sheet.

Next Generation Sunshine State Standards

SC.3.L.17.1: Describe how animals and plants respond to changing seasons.

SC.4.L.17.1: Compare the seasonal changes in Florida plants and animals to those in other regions of the country.

SC.4.L.17.4: Recognize ways plants and animals, including humans, can impact the environment.

SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycles variations, animal behaviors and physical characteristics.

SC.6. E.7.8: Describe ways human beings protect themselves from hazardous weather and sun exposure.

SC.7.E.6.6: Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

SC.7.L.17.3: Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation and nesting sites.

SS.8.G.5.2: Describe the impact of human modification on the physical environment and ecosystems of the United States throughout history.

SC.912.L17.4: Describe changes in ecosystems resulting from seasonal variations, climate change and succession.

SC.912.L17.12: Discuss the political, social and environmental consequences of sustainable use of land.

SC912. L.17.16: Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.

SC.912.L17.17: Assess the effectiveness of innovative methods of protecting the environment.

VIDEO LESSON PLAN • Prescribed fire: A versatile land management tool

Extend:

Compare and contrast the photos of Florida fire-dependent ecosystems with those of ecosystems that are not. How would you describe how close the trees are to each other (density)? Describe the forest layers that you see (canopy, understory and forest floor) in each ecosystem.



Fire-dependent ecosystem — Pine Flatwoods



Ecosystem that is not fire adapted — Mesic hammock

Extensions:

Have students select a fire-dependent plant or animal found in Florida and research what specific adaptations it has in order to live with fire or that make it need fire to survive. Use the list below to get you started.

- Bartram's Ixia
- Florida scrub jay
- Gopher tortoise
- Indigo snake
- longleaf pine
- Red-cockaded woodpecker
- Southern fox squirrel
- White top pitcher plant
- Wire grass



Bartram's Ixia



Red-cockaded woodpecker

VIDEO LESSON PLAN • Prescribed fire: A versatile land management tool

Evaluate: (5–10 minutes)

After viewing the video, discuss with the students what they have learned about the vocabulary words on the student page. Have them choose 3–5 words to fill in the box on “what new things / ideas you found out about this word.”

Vocabulary words with definitions:

endangered species	Species that are very few in number and in danger of becoming extinct (no longer living). Often occurs because of habitat loss and loss of variation in genetics.
fire dependent	Organism that requires fire in order to grow, survive. Fire reduces competition for sunlight, nutrients and water. In some plants heat from fire is required to make seeds germinate.
fire prevention	Efforts to keep fire from starting, ensuring fuel loads are low and all precautions are taken to reduce chance of fire.
fire season	In Florida this is spring and summer, it is the time that fires are most likely to occur.
fire triangle	Three required components for fire to burn: Fuel, oxygen, heat. Remove any one and the fire will not burn.
fuel	One of the three sides of the fire triangle. It is the material that will be consumed in a fire.
prescribed fire	A planned fire, often called a controlled burn. Conducted when environmental conditions (humidity and wind direction) are favorable for desired fire behavior. Used by land managers to reduce hazardous fuel buildup, control disease in young pines, improve wildlife habitat, preserve endangered plant and animal species, and maintain fire-dependent ecosystems.
wildland fire	Fire that occurs in natural areas. They can be started intentionally as a prescribed burn or a naturally started fire.
wildfire	Fire that burns uncontrollably in natural areas.
wildland/urban interface	Transition zone between wildlands and human development. These areas are very susceptible to wildfire.

VIDEO LESSON PLAN • Prescribed fire: A versatile land management tool

Answers to questions:

Directions: Answer the following questions using information you learned watching the video.

1. What does it mean to say that ecosystems are not only adapted to fire but depend on it?

The plants and animals that live in many of the ecosystems that fire would occur have adaptations such as thicker bark, seeds that require fire to germinate or are not able to out compete other species that are more shade-tolerant than they are. These ecosystems need fire or the disturbance that is provided to survive.

2. Prior to development, what time of year would fires occur? What would ignite them?

During spring and summer wildfires would be ignited by lightning. Because that is the time of year thunderstorms are most numerous in Florida and in the spring, conditions would be dry as there is not typically much rain in the winter.

3. Why did development of homes, roads and businesses decrease the prevalence of fires?

Fire would be too destructive to homes, roads and businesses so when wildfires began they were quickly put out. Over time there has been a shift in perception that not all fires are bad and that prescribed fire helps to reduce potential negative impacts from wildfires.

4. Prescribed fires are used by land managers of the St. Johns River Water Management District for what purposes? (list 4 out of 6)

Reduce hazardous fuel buildup, disease control in young pines, wildlife habitat improvement, range management, preservation of endangered plant and animal species, as well as maintenance of fire-dependent ecosystems, mimicking mother nature.

5. What are some of the plant and animal species that are fire dependent?

Gopher tortoise, fox squirrels, scrub jays, red-cockaded woodpecker, wiregrass, longleaf pines, pitcher plants and many more.

PRESCRIBED FIRE: A versatile land management tool

Name: _____

Date: _____

Directions: Answer the following questions using information you learned watching the video.

1. What does it mean to say that ecosystems are not only adapted to fire but depend on it?

2. Prior to development, what time of year would fires occur? What would ignite them?

3. Why did development of homes, roads and businesses decrease the prevalence of fires?

4. Prescribed fires are used by land managers of the St. Johns River Water Management District for what purposes? (list 4 out of 6)

5. What are some of the plant and animal species that are fire dependent?

PRESCRIBED FIRE: A versatile land management tool

Name: _____

Date: _____

Vocabulary word	What you already know about this word	What new things/ideas you found out
endangered species		
fire dependent		
fire prevention		
fire season		
fire triangle		
fuel		
prescribed fire		
wildland fire		
wildfire		
wildland/urban interface		
