

Ecosystems and Wildfire

Lesson Title: Ecosystems and Wildfire Grade Level: 2-5

Purpose: Teach age appropriate skills for fire and life safety while teaching to statewide learning standards.

Standards:

~~Next Generation Science Standards~~

Science

[LS2.C: Ecosystem Dynamics, Functioning, and Resilience](#)

When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.

[LS4.D: Biodiversity and Humans](#)

Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

[LS2.C: Ecosystem Dynamics, Functioning, and Resilience](#)

When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (*secondary to 3-LS4-4*)

[LS4.C: Adaptation](#)

—For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

Safety:

☐ Campfire Safety

☐ Preventing Wildfires

Objectives: The students will demonstrate understanding of:

☐ ~~Ecosystems~~

☐ Forests and Fire

☐ Grasslands and Fire

☐ Wildland vs. Structure

☐ Prevention

Vocabulary:

☐

~~Topography~~-the physical features of an area of land.

☐

Ecosystem-an area that is made up of the living and nonliving things that work in relationship with one another.

☐

Biotic-the living things in an area.

☐

Abiotic-the non-living things in an area.

☐

Backfire/Back Burn-the process of using fire to fight fire by eliminating the fuel in the path of a wildfire.

Time: 40-50 minutes for presentation and demonstration.



Instructional Content:

*****Use this bulleted list to guide you and keep you on track and meeting all objectives for lesson. Everyone has their own style for teaching, the most important thing is the make it fun and engaging for the kids.*****

☐ Warm up Activities: (5-7 Minutes)

☐ Mini KWL:

☐ Ask students to individually make a mini KWL chart about ecosystems and wildfires.

☐ K-What do you already know about ecosystems and wildfires?

☐ W-What do I want to know about ecosystems and wildfires?

☐ Bell Ringer:

☐ Wildland Fire Bell Ringer:

☐ Have students complete the Wildland Fire Bell Ringer.

☐ Entrance Ticket:

☐ Ask students to try to define: Topography, Biotic, Abiotic, Ecosystem, and Back Burn

☐ Video:

☐ Follow the link:

☐ http://www.snofire7.org/preparedness_education/home_education_lessons/lesson-details.cfm?record_id=10

☐ Watch Video:

☐ Run time: 30:03

☐ Have students fill out the worksheet as they watch.

☐ Closure Activities: (5-7 Minutes)

☐ Wildland Fire Bell Ringer:

☐ Have students complete the exit ticket activity provided below the bell ringer

☐ Exit Ticket: Look at all three pictures. For each picture, describe at least two abiotic and two biotic elements that make up each type of ecosystem.

Describe how fire can change these elements in at least two of these ecosystems.

☐ Exit Ticket:

☐ Ask students to use what they learned to add more detail to the definitions they wrote at the beginning of class for the following terms: Topography, Abiotic, Biotic, Ecosystem, and Back Burn

☐ Mini KWL:

☐ Ask students to finish the last column for the KWL chart about ecosystems and Wildfire?

☐ L-What did you learn?

Homework and Enrichment Activities:

☐ Wildland Fire Homeschool Lesson Worksheet

☐ Wildfire Prevention Activity

☐ Smoky The Bear Worksheet

☐ Campfire Safety Checklist

Handouts:

☐ Wildland Fire Bell Ringer

☐ KWL Chart



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WILDLAND FIRE BELL RINGER



Look at all three pictures. Write about the qualities that make each place different. How are the animals, plants, weather, and soil different in each place?

WILDLAND EXIT TICKET



Look at all three pictures. For each picture, describe at least two abiotic and two biotic elements that make up each type of ecosystem. Describe how fire can change these elements in at least two of these ecosystems.

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MINI KWL CHART



NAME OF STUDENT:

<https://smokeybear.com/education/activity-book.pdf>

SUBJECT:

LESSON:

**WHAT I
KNOW:**

**WHAT I
WANT TO
KNOW:**

**WHAT I
LEARNED:**



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NAME: _____

WILDLAND FIRE AND ECOSYSTEMS

HOME EDUCATION LESSON

FILL IN THE BLANK

Directions: Fill in the blanks with the following vocabulary words.

Topography Back Burn Biotic Abiotic Ecosystem

_____ describes the physical features of an area of land.

_____ is made up of all of the living (_____) and nonliving
(_____) things in an area.

To fight fire with fire or to set controlled fires to eliminate the fuel in the path
of a wildfire is called _____.

HIDDEN PICTURES

Directions: Find the squirrel, pine cone, and mushrooms, Color the picture.

Then, label 3 living things (biotic) and 1 nonliving thing (abiotic).

Native plants and animals depend upon each other.



Image found online at [this link](#).

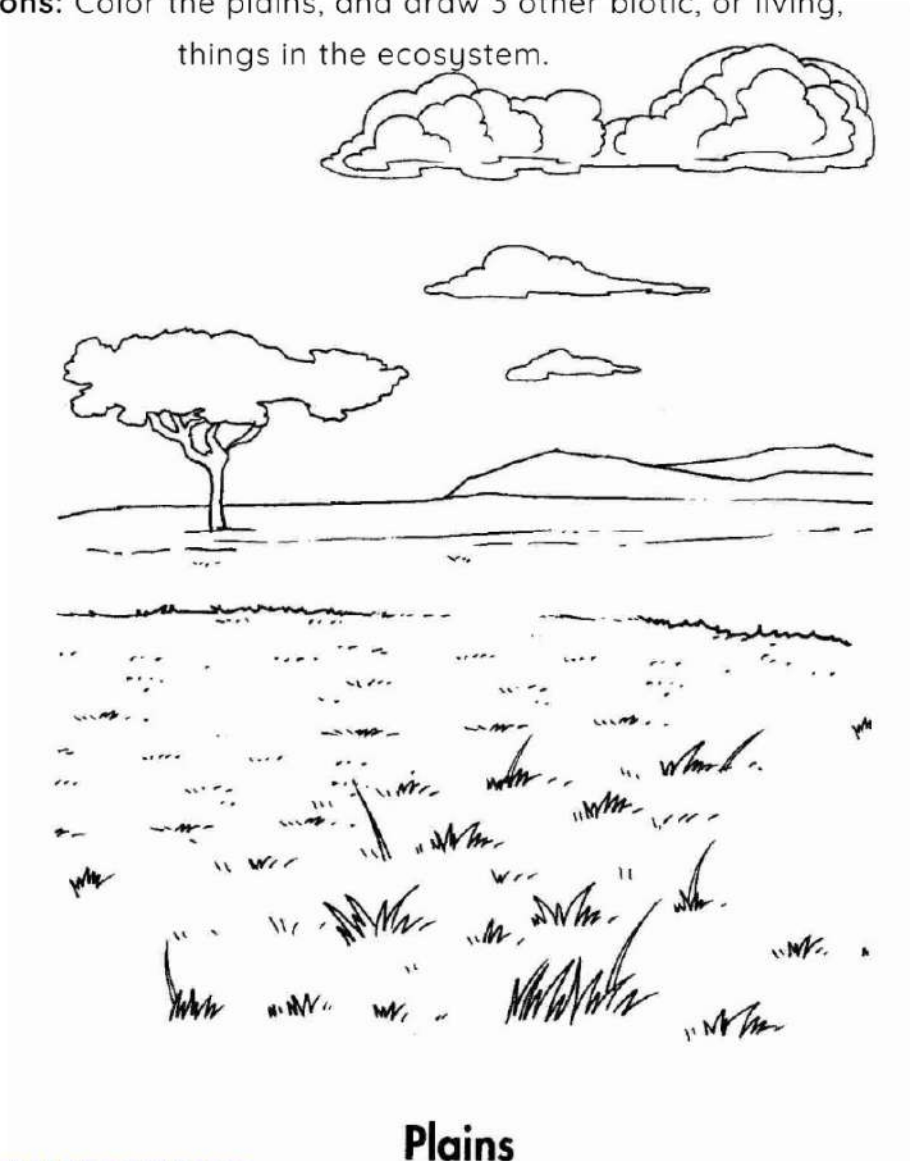


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COLOR

Directions: Color the plains, and draw 3 other biotic, or living, things in the ecosystem.



Plains

COMPARE AND CONTRAST

Directions: Write 5 differences between wildland fire and a structure fire:

1. _____
2. _____
3. _____
4. _____
5. _____

Image found online at [this link](#).



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Smokey's Forest Science

The Story of Smokey Bear

The time? The early 1950's. *The place?* A forest in New Mexico. *The situation?* An American black bear cub surrounded by a raging wildfire climbs to the top of a tree to escape the flames. What happens? He survives—thanks to firefighters who find and rescue him. They name him Smokey and send him to live at the National Zoo in Washington, D.C.



This real life Smokey Bear became the living symbol of the Forest Service's Smokey Bear campaign that—to this day—works to educate the public about wildfire prevention. Smokey Bear needs your help now more than ever. If our nation's wildlands (forests, grasslands, and rangelands) are destroyed by fire, Smokey and his animal friends have no home and you can't enjoy the great outdoors. It can take your lifetime or longer for a forest to recover from a disastrous wildfire.

Whenever you are on a trip in our nation's forests, be sure to remember Smokey Bear's important message—

Only you can prevent wildfires.

Part A. How much do you know about the ecology of wildlands and other natural areas? Take Smokey's True/False quiz to find out!

- _____ 1. Heat, oxygen and fire make up the fire triangle, a term that explains the elements of fire.
- _____ 2. Fire is a natural part of most forest ecosystems.
- _____ 3. Prescribed fire, or the setting and controlling of fire in wildland areas by firefighters, is something that is done only to practice firefighting skills.
- _____ 4. A high danger of wildfire exists when the weather is hot, dry, or windy, or when thunderstorms occur.
- _____ 5. An average of 1,000 wildfires occurs each year in the United States.
- _____ 6. Firefighters can only put out wildfires with water.
- _____ 7. Fire is harmful to every kind of tree and vegetation found in the forest.
- _____ 8. From 2001 to 2006, 8 out of 10 wildfires were started by people.
- _____ 9. Forests experience good fires and bad fires.
- _____ 10. Currently, the number of wildfires has decreased in the United States.

Part B. Use Smokey's Field Research Notebook to investigate the natural cycle of fire and its impact on forest vegetation in different areas of the United States.

Smokey's Field Research Notebook

Area of United States _____

Forest type _____

Frequency of natural fires _____

Forest adaptations to natural fires _____

Effects on forest without natural fire _____



Go to www.smokeybear.com to find out more about how you can help.

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Forest Treasures

Part A. Wildlands and other natural areas cover almost one-third of the Earth's land, and they are home to many different kinds of plants and animals. Forests also give us many resources. Can you find some of them in the Word Search below? Do you know what are they used for?

Word Search Words: cinnamon, cocoa beans, coffee beans, cork, fruit, gum, lumber, maple syrup, medicine, turpentine, nutmeg, nuts, rubber, and wood pulp



Choose one product from the search above. Create a chart and follow the product from its forest roots to the final product. Use the back of this paper to record your findings.

Part B. Besides giving us many different products we use every day, forests also have other important jobs. They provide oxygen for us to breathe and they absorb carbon dioxide to help fight global warming. They also offer beautiful settings where people can play and relax.

In what ways do your family and friends enjoy our nation's wildlands? Use the chart below to conduct a survey and find out.



Forest Recreation Survey

My favorite way to enjoy the forest is _____

Name	Friends and Families Favorite Forest Recreation Activity
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Use the information to help your teacher make a graph of everyone's favorite forest activities.



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Smokey's Wildfire Prevention Detectives Skills Test

Like the song* says, Smokey Bear can spot a wildfire "before it starts to flame." Can you? Test your Wildfire Detective skills with these outdoor scenes. Need help? Look for the answers at the bottom of the poster.



1. What wildfire prevention advice would you bring to this party?



2. Patrol this backyard for behaviors that could cause a wildfire. How many can you see?



3. Can you tell these friends the safe way to leave a campsite?

Be smart, don't let
a wildfire start.
Only YOU can
prevent wildfires!



Answers

* Listen to Smokey Bear's song at [www.SmokeyBear.com/vault/#prettyPhoto\[1050a\]/0/](http://www.SmokeyBear.com/vault/#prettyPhoto[1050a]/0/).

1. This campfire is too large for safety; position the campfire away from low-hanging branches and in the middle of a 10-foot diameter area cleared to bare ground; NEVER use gasoline to start any fire; ALWAYS have a bucket of water and a shovel nearby to put out your campfire; extinguish the fire burning on the grill; don't park in tall grass as it can catch fire from the exhaust system.
2. Where legal, burn yard debris in a covered container; NEVER burn yard debris on a windy day; position the fire away from low-hanging branches in a 10-foot diameter area cleared to bare ground; have a garden hose ready to extinguish the fire; adjust the grill controls to avoid flame ups; NEVER allow children near a fire without adult supervision; ALWAYS keep your eyes on any outdoor fire. Be sure to check with local agencies that regulate outdoor residential burning to ensure that your fire meets all rules and laws. Even better: use a chipper to compost small branches, leaves, and other yard debris.
3. Position the campfire in the middle of a 10-foot diameter area cleared to bare ground; circle the fire with rocks to create a barrier; pile kindling and firewood at the edge of the cleared area; stow matches away after you've lit your fire; use plenty of water to extinguish a campfire — with a shovel, stir the water and ashes together into a muddy, then drown the ashes again, and check to be sure they are cold before you leave. If it's too hot to touch, it's too hot to leave.



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Smokey Bear's Campfire Safety Guide



Keep your campfire from becoming a wildfire!

BEFORE ...

- Choose a spot that's protected from wind gusts and at least 15 feet from your tent, gear, and anything flammable.
- Clear a 10-foot diameter area around your campfire spot by removing leaves, grass, and anything burnable down to the dirt.
- Don't build your campfire near plants or under tree limbs or other flammable material hanging overhead.
- If allowed, dig a pit for your campfire, about 1-foot deep, in the center of the cleared area.
- Build a fire ring around the pit with rocks to create a barrier.
- Don't use any type of flammable liquid to start your fire.
- Gather three types of wood to build your campfire and add them in this order:

1



Tinder – small twigs, dry leaves or grass, dry needles.

2



Kindling – dry sticks smaller than 1" around.

3



Firewood – larger, dry pieces of wood up to about 10" around.

DURING ...

- Keep your fire small.
- Always keep water and a shovel nearby and know how to use them to put out your campfire.
- Be sure an adult is always watching the fire.
- Keep an eye on the weather! Sudden wind gusts can blow sparks into vegetation outside your cleared area, causing unexpected fires.

AFTER ...

- If possible, allow your campfire to burn out completely – to ashes.
- Drown the campfire ashes with lots of water.
- Use a shovel to stir the ashes and water into a "mud pie." Be sure to scrape around the edges of the fire to get all the ashes mixed in.
- Drown the ashes with water again.
- Check that your campfire is cold before leaving. Hold your bare hand just above the wet ashes, especially around the edges of the fire. **DO NOT** touch the ashes or you might burn yourself.
- If you feel heat, stir more water into the ashes.
- When the ashes are cold, disassemble your fire ring and scatter the rocks.
- If you built your campfire in a fire pit, be sure it's filled in with wet dirt.

REMEMBER:
If it's too hot to
touch, it's too
hot to leave.



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Cool Campfires!

Here's how to safely build three kinds of campfires:



- **TEEPER:** Make a pile of tinder and arrange your kindling over it like the poles of a teepee. Keep the teepee shape as you add more wood to the fire, and be careful that the teepee doesn't tip over.



- **CROSS FIRE:** Place a pile of tinder between two parallel pieces of kindling. Once the fire is burning, lay more pieces of kindling across the fire perpendicular to the first pair. As you add larger sticks to the fire, make each new layer perpendicular to the last, building a pyramid shape.



- **LOG CABIN:** Surround your tinder pile with a square of kindling built by laying two sticks parallel on either side of the tinder, then two sticks on top of and perpendicular to the first pair. Build up several levels and end with a "roof" of small kindling across the top. Add larger sticks in pairs to keep the fire's log cabin shape.

Use This Checklist to Make Sure Your Campfire is Safe.

DO

- ☐ Light a fire only when an adult is present and in charge.
- ☐ Keep young children and pets away from the fire.
- ☐ Make sure your campfire is a safe distance from your tent or anything that can burn.
- ☐ Use rocks to create a fire ring in the center of a large cleared area.
- ☐ Use the Drown-Stir-Drown-Feel method to put out your campfire safely.

DON'T

- X Don't start a campfire when it is windy.
- X Don't leave a fire unattended.
- X Don't leave your fire without first putting it completely out.
- X Don't use flammable liquids to start a campfire.
- X Don't extinguish a campfire with just dirt or sand — add H₂O!
- X Don't bury warm/hot coals or ashes in a campfire pit.
- X Don't burn glass, cans, plastics, or garbage in your campfire.
- X Don't play or goof around near a campfire.



Find out more about
preventing wildfires at
www.SmokeyBear.com



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