



1. Visiting Wildland Fire in the Northern Rocky Mountains and North Cascades

Lesson Overview: Students view a narrated photo presentation that shows wildland fires and some of the plants and animals they are going to learn about in this curriculum. The photos and narrative are in a PowerPoint presentation, also shown at the end of this lesson. During the presentation, students record their observations about fire behavior. Afterwards, they discuss their observations and feelings about the presentation. The presentation’s narrative is brief because this activity is meant to orient the students and let them express their feelings about fire – not to teach science content.

Subjects: Science, Writing, Speaking and Listening, Arts, Environmental Education
Duration: one half-hour session
Group size: Whole class
Setting: Indoors
Vocabulary: *fire behavior, wildland, wildland fire*

Lesson Goal: Increase students’ understanding that wildland fire is a complicated process that can benefit ecosystems. Provide an opportunity for students to express their feelings about wildland fire in a supportive environment.

Objectives:

- Students can draw different kinds of fire behavior.
- Students can write about similarities and differences among kinds of fire behavior.
- Students can express their feelings about wildland fire.

Standards		1st	2nd	3rd	4th	5th
CCSS	Writing	2, 7, 8	2, 7, 8	2, 7, 10	2,7, 9, 10	2,7, 9, 10
	Speaking/Listening	1, 2, 4, 6	1, 2, 4, 6	1, 2, 4, 6	1, 2, 4, 6	1, 2, 4, 6
	Language	1, 2, 4, 6	1, 2, 4, 6	1, 2, 3, 4, 6	1, 2, 3, 4, 6	1, 2, 3, 4, 6
NGSS	From Molecules to Organisms: Structure and Processes	LS1.B		LS1.B	LS1.A	
	Ecosystems: Interactions, Energy, and Dynamics		LS2.A			LS2.A
	Biological Evolution: Unity and Diversity		LS4.D	LS4.C		
	Earth’s Place in the Universe		ESS1.C			
	Engineering Design		ETS1.B			
	Earth’s Systems			ESS2.D		

EEEEGL	Strand 1	A, C, F, G	A, C, F, G
	Strand 2.1	A	A
	Strand 2.2	A, B, C	A, B, C

Teacher Background: If you walk through a recently burned area, you might encounter some places where all the vegetation looks dead and other places that have a lot of green vegetation left. You might see deep holes in the ground where roots have burned away, and you might see patches of leaf litter that is just lightly scorched. Fire behavior and fire effects vary with topography, weather, and vegetation. As a result, some patterns are typical of certain kinds of landscapes and vegetation. For example, steep hillsides are more likely to support fast-moving fires than flatlands or moist ravines, and forests with trees close together are more likely to support crown fires (spreading through the tree canopy) than forests where the trees are far apart. As an introduction to the study of wildland fire, this photo presentation highlights variation in fire behavior and its relationship to specific plants and animals. The **Assessment** provides an opportunity for students to express their feelings about wildland fire. Some students may express anger and grief, especially if they have experienced fire firsthand. Be prepared to honor these feelings and provide support as needed.

This version of FireWorks focuses on 3 kinds of plant communities that occur in the northern Rocky Mountains and the North Cascades: forests at low elevations dominated by ponderosa pine and Douglas-fir, middle-elevation forests dominated by lodgepole pine mixed with subalpine fir and other trees, and high-elevation forests of whitebark pine mixed with subalpine fir. See the **Introduction** (pp. ii-iii) for an overview of these ecological communities.

If you plan to teach the units on fire ecology (Units V and VI), consider having your students adopt a plant, animal, or fungus NOW, so they have time to prepare and you can spread their presentations out over several days instead of having them all at once. See Activity 8, “Who Lives Here: Adopting a Plant, Animal, or Fungus” for further details.

Materials and preparation:

- Load photo presentation ***E01_VisitingWildlandFire.pptx***
- Copy **Handout E01-1** for each student
- Make a sketch of **Handout E01-1** on the board—all three sections—or project it
- Set up flipchart or other media for recording questions and feelings. You’ll want to look at this list at the end of the unit on fire: Lesson E16, “Revisiting Wildland Fire”
- Have students get out crayons or markers, clean paper, and pen or pencil.

Procedure:

1. Explain to students: They will watch a presentation that shows fires in wildlands. You will stop several times during the presentation so they can discuss what they see and make drawings to record their observations. After the presentation, you will ask them to describe what they have observed and also express their feelings about the presentation.

2. Give out copies of **Handout E01-1**. Explain that you'll let students know when you'd like them to draw.
3. Show the presentation. You can use the narrative in the presentation notes below or give your own narrative, but **keep it brief**. Welcome students to discuss and ask questions about what they see. Record the questions on a flipchart or other medium, but don't necessarily try to answer them during the presentation. Instead, explain that the class will seek the answers during this unit on wildland fire.

Slide
1



Here is a look at some of the wildlands that you might see in the northern Rocky Mountains and the North Cascades. We don't see any flames in this picture, but fire has visited here in the past. We're going to spend the next few days/weeks/months learning about fires in this land.

Slide
2



Here is a fire burning in a forest of the northern Rockies/North Cascades. **Explain:** We're going to make some observations so we can learn how wildland fires vary. We'll do the first one together. Look carefully at the flames in this photo and describe them: How long are the flames? What parts of the plants are they burning? What "layer" of vegetation is burning – just material on the ground? ... only needles in the tree tops? Ask the students to make their own sketches of the fire behavior in Part A on their handouts. They should draw flames only in the parts

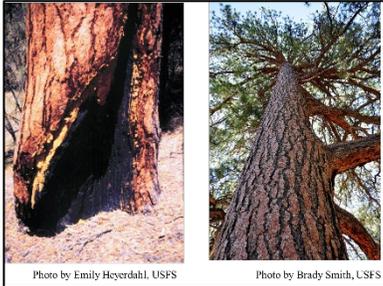
of the vegetation that they see on fire in the photo.

Slide
3



This is what the land looks like after that kind of fire.

Slide
4



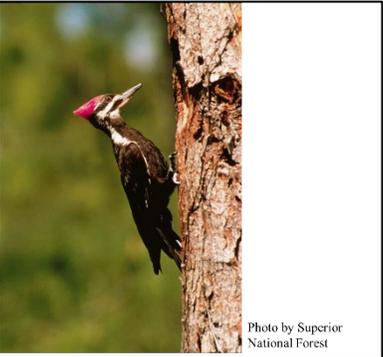
Here are some plants and animals that live in the forest after fire: A ponderosa pine tree that has survived many fires

Slide
5



Arrowleaf balsamroot, a wildflower that survives fire and then grows really well

Slide
6



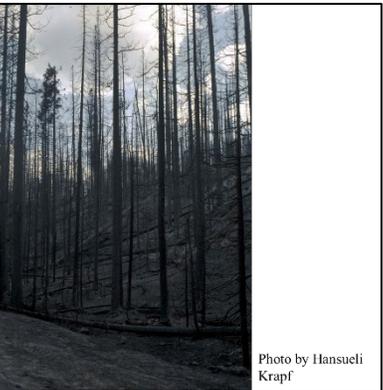
Pileated woodpecker, which loves big, old trees that have survived fires long ago

Slide
7



Here is another kind of fire in the northern Rockies/North Cascades. Observe the flames – how tall they are and what layers of the vegetation they are burning. Sketch the fire behavior on your handout (part B).

Slide
8



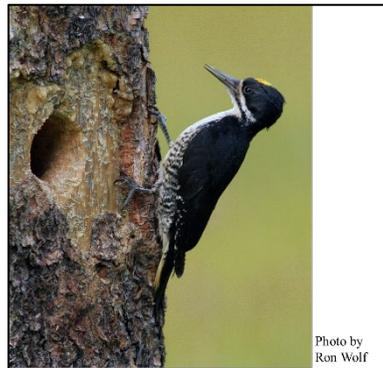
This is what the land looks like after that kind of fire.

Slide
9



Here are some plants and animals that live in that forest after fire: A beetle with heat sensors, so it can find fires and lay its eggs in trees that are still hot from burning

Slide
10



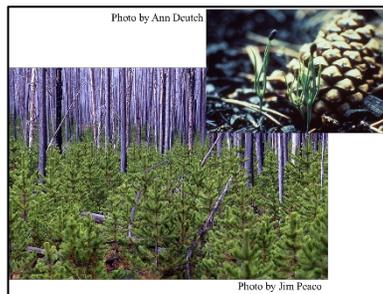
A black-backed woodpecker, which arrives soon after to eat the beetles

Slide
11



A patch of fireweed that sprouted after fire and then produced millions of seedlings

Slide
12



Lodgepole pines that grew from seed after fire

Slide
13



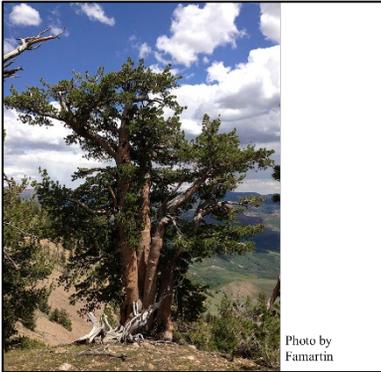
Here is a third kind of fire in the northern Rockies/North Cascades. Observe the flames – how tall they are and what layers of the vegetation they are burning. Sketch the fire behavior on your handout (part C).

Slide
14



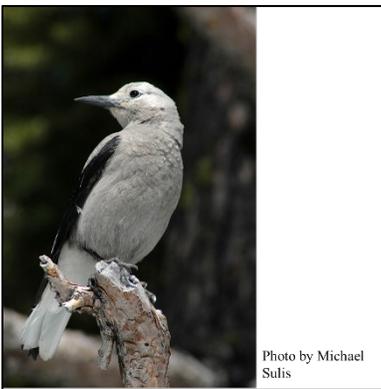
This is what the land looks like after that kind of fire.

Slide
15



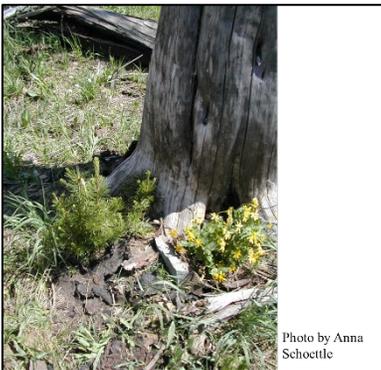
Here are some plants and animals that live in that forest after fire: A whitebark pine that has survived several fires

Slide
16



A Clark's Nutcracker, which harvests the seeds of whitebark pines and buries many of them underground so it can eat them later

Slide
17



A clump of whitebark pine seedlings that sprouted from seeds that nutcrackers buried

Slide
18



Fires in our forests can burn for a long time after the flames have passed. They may burn in tree trunks, in roots, or in the soil itself. The changes they cause last a long time, sometimes for hundreds of years. We'll learn more about all kinds of wildland fire in the activities to come.

4. Prepare for writing assignment: Ask the students to look at the first two kinds of fire behavior (A and B). Write "Same" and "Different" next to them, and ask students to describe to the class some ways in which the two kinds of fire are similar and different. Note some of their comparison/contrast phrases on the board.
5. Ask the students how they feel about the fires that they saw in the presentation. Record their "feeling words" on a flipchart or other medium so you can discuss them again at the end of the curriculum. Explain that people's feelings often differ without being "right" or "wrong," so all of the feelings from class members are valid and deserve respect. If students express deep grief and anger about fire, offer sympathy and support.
6. Keep the flipcharts that list students' questions and feelings. You will use them for Activity 16, "Revisiting Wildland Fire."

Assessment: Ask the students to write on the handout or a clean sheet of paper:

1. At least one sentence about how fires B and C are the same.
2. At least one sentence about how fires B and C are different.
3. At least two words that describe their feelings in response to the photo presentation.

Evaluation:

	Present	Not-Present
1. Fire Similarity Sentence(s)		
2. Fire Contrasting Sentence(s)		
3. Fire Feelings		

Handout E01-1.

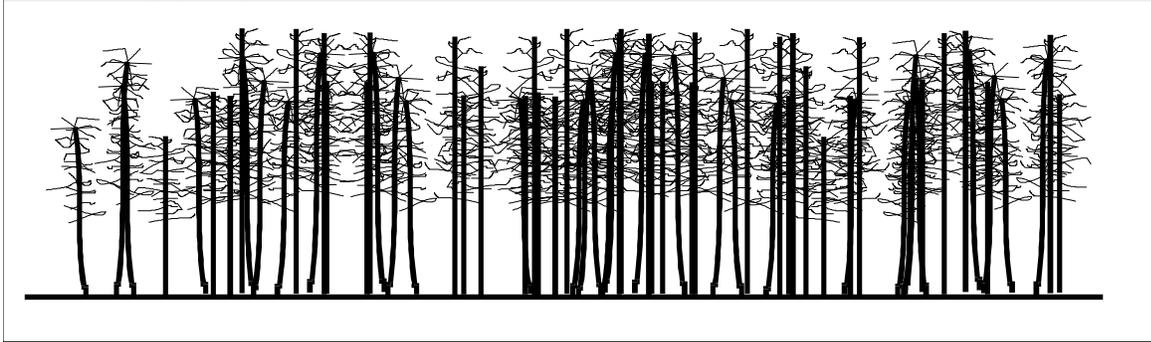
Name _____

1. Color each sketch to show a typical fire.

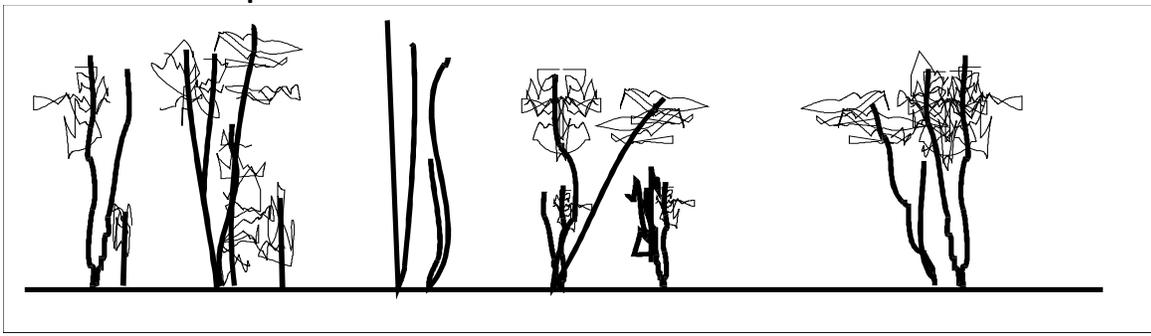
A. Ponderosa pine:



B. Lodgepole pine:



C. Whitebark pine:



2. Write:

Write a sentence about how fires B and C are the same.

Write a sentence about how fires B and C are different.

Write at least two words that describe your feelings about the pictures.