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. The slides and narrative are at the end of the lesson and on a PowerPoint. During the presentation, students record observations about fire behavior. Afterwards, they compare and contrast the kinds of fire they observed, and they also describe their feelings about wildland fire. 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.

Lesson Goal: Increase students’ understanding that wildland fire is a complicated process that has complicated effects and may generate complicated feelings.

Objectives:
- Students can draw different kinds of fire behavior.
- Students can compare and contrast different kinds of fire behavior.
- Students can describe their feelings about wildland fire.

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<th>Standards:</th>
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<td>Natural Selection and Adaptation</td>
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**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.

This version of FireWorks focuses on ecological communities in the Sierra Nevada—forests dominated by conifers. These communities are often called lower and upper mixed conifer or lower and upper montane. See the Introduction (pp. ii-iii) for an overview of these Sierra Nevada ecological communities.

If you plan to teach the units on fire ecology (V and VI), consider having your students adopt a plant, animal, or fungus NOW, so students have time to prepare and you can spread their presentations out over several days instead of having them all at once. See Activity 11, “Who Lives Here: Adopting a Plant, Animal, or Fungus” for further details.

**Materials and preparation:**
- Load photo presentation *E01_M01_VisitingWildlandFire.pptx*
- Copy Handout M01-1 for each student
- Write on the board: *species, ecosystem, ecological community*
- Flipchart or other media for recording questions, feelings

**Procedure:**

1. Explain to students: They will view a short presentation that shows fires in wildlands. In particular, they’ll see different kinds of fire and different ecological communities. An ecological community includes all of the living things in an ecosystem – plants, animals, fungi, and microorganisms. An ecosystem includes the living things plus the nonliving parts of the ecosystem, such as soil, water, and air. Ask for examples of community members in your school. (Remember – only living things.) Ask for examples of the nonliving things in your school ecosystem. Ask which is more inclusive or “bigger” – community or ecosystem? (Ecosystem is bigger, because it includes the community and also nonliving things.)

2. Explain that you will stop four times during the presentation and ask them to record something by sketching what they observe. After the presentation, you will ask them to compare and contrast different kinds of fire behavior and also to describe their feelings about wildland fire.
3. Give out copies of Handout M01-1. Explain that you will let students know when you’d like them to use it to record observations.

4. Show the presentation. You can use the narrative in the presentation notes 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 and will come back to their questions in Lesson 21, “Revisiting Wildfire”. Be sure to save the students’ questions if you plan to do Lesson 21.

5. When you come to the four slides that show fire behavior and are cued to “Observe and sketch” – slides 1, 8, 14, and 21 – pause. Ask the students to look carefully at the flames in the photos—how long they are and what parts of the plants they are burning—and then record their observations by sketching the flames on their handout. They can also write a few words in the margin to describe the fire behavior. Give them a minute or more for each sketch.

6. After the presentation, have a brief discussion with the class about variety in fire behavior and also about their experiences with wildland fire and feelings about it. This discussion need not be long; it is a warm-up for the writing assignment.
Assessment:

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

a. a paragraph in which they compare the kinds of fire they observed, giving at least two examples of how the kinds of fire are the same
b. a paragraph in which they contrast the kinds of fire, giving at least two examples of how the kinds of fire are different
c. a list of three words or phrases that describe their feelings about wildland fire. Explain that people’s feelings often differ without being “right” or “wrong,” so all of the feelings are valid. Also, since their feelings could change over time, they will have a chance to record their feelings again after they’ve learned more about fire.

Keep the flipchart or other media with students’ questions and their handouts so they can be used again in Activity 21, at the end of this curriculum on wildland fire.

Evaluation:

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<th>Poor</th>
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<tbody>
<tr>
<td>a. Fire Comparison</td>
<td>Complete paragraph. Contained two examples of similar fire behavior</td>
<td>Incomplete paragraph. Contained one example of similar fire behavior</td>
<td>Incomplete paragraph. Did not contain examples of similar fire behavior</td>
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<td>Paragraph</td>
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<td>b. Fire Contrast</td>
<td>Complete paragraph. Contained two examples of different fire behavior</td>
<td>Incomplete paragraph. Contained one example of different fire behavior</td>
<td>Incomplete paragraph. Did not contain examples of different fire behavior</td>
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<td>Paragraph</td>
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<tr>
<td>c. Fire Feelings List</td>
<td>Three words or phrases about personal feelings about wildland fire</td>
<td>Two words or phrases about personal feelings about wildland fire</td>
<td>One word or no words or phrase about personal feelings about wildland fire</td>
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Here is a fire burning in a forest of the Sierra Nevada. *Observe and sketch it (A)*

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

Here are some plants that live in the forest after fire:
… A ponderosa pine tree that has survived many fires
… Mariposa lily, a wildflower that survives fire and then grows really well.

… A California black oak that sprouts after fire.

Here are some animals that live in the forest after fire:
… Pileated woodpecker, which loves big, old trees that have survived fires long ago.
… Western gray squirrels that eat the seeds of trees that have survived the fire.

Here is another kind of fire in the Sierra Nevada. Observe and sketch it (B).

This is what the land looks like after that kind of fire.
Here are some plants and animals that thrive after that kind of fire:

… A beetle with heat sensors, so it can find fires and lay its eggs in just-burned trees.

… A black-backed woodpecker, which arrives soon after the fire to eat the beetles.
… Deer brush, whose seeds germinate after fire cracks open its hard seedcoats.

Here is another kind of fire in the Sierra Nevada. *Observe and sketch it (C).*

This is a mixture of the two kinds of fire you've already observed. Many of those plants and animals can live here after fire.

Fire behavior and fire effects vary with topography, weather, and vegetation. Here are examples of fire behavior fires in the Sierra Nevada.
Fires in our forests can burn for a long time after the flames have passed. They may burn in tree trunks, roots, or in the soil itself.

Here is what a fire may look like after most of the flames have moved on (left photo). *Observe and sketch it (D).*

Wildland fires cause changes that last a long time, sometimes for hundreds of years. We’ll learn more about all kinds of fire in the activities to come.
Handout M01-1: Fire Drawings.

1. Color each sketch to show what part of the forest is burning (for example, soil, surface plants, or tree tops). Add a few words to describe fire behavior if you wish.

A.

B.

C.

D.

Write:

1. One paragraph comparing the kinds of fire, giving at least two examples of how they are the same
2. One paragraph contrasting the kinds of fire behavior, giving at least two examples of how they are different
3. Three words or phrases that describe your feelings about wildland fire.