









Elementary [FireWorks Curriculum](#) for the Northern Rocky Mountains and North Cascades.




Most of these activities are best-suited for students in 3-5th grades (4th and 5th are probably best). Lesson E14 is best for K-2nd grade students.

Lessons with  symbol use fire.

Lessons with  symbol use materials in FireWorks trunks. Lessons without  symbol have downloadable materials.

15-minute video with overview of the FireWorks program available [here](#).

Unit	Lesson	Overview	Notes
Unit I. Introduction to Wildland Fire	E01. Visiting Wildland Fire in the Northern Rocky Mountains and North Cascades	Students view a narrated photo presentation that shows wildland fires and some of the local plants and animals they are going to learn about in this curriculum. During the presentation, students record their observations about fire behavior. Afterwards, they discuss their observations and feelings about the presentation.	Photo presentation, discussion, project/sketch handout on board; record student's responses.
Unit II. Physical Science of Wildland Fire	E02. Making Fires Burn or Go Out 1: Introduction to the Fire Triangle	Students describe and organize what they already know about fire, so it fits into the conceptual model of the Fire Triangle (fuel, oxygen, and heat). They examine the geometric stability of a triangle and how that property applies to fire.	Students construct the fire triangle using gum drops/gummies and toothpicks.
Unit III. The Wildland Fire Environment	E03. Making Fires Burn or Go Out 2: Demonstrating the Fire Triangle and Heat Plume	Students observe three demonstrations of real fires (burning individual matches) on a stand to see how the conceptual model of the Fire Triangle applies to combustion. Students can explain what happens if one side of the triangle is removed.	3 demos that burn individual matches on a stand; 1 of them uses vinegar & baking soda or dry ice (OK for most classrooms).  
	E04. How Wildland Fires Spread 1: Experiment with a Matchstick Forest	Students use a physical model to learn how slope and the density of trees (or other kinds of standing fuels) affect fire spread.	Demo using matches on Masonite boards (outside or in lab with hood is best).  
	E05. Fuel Properties: The Campfire Challenge	Students explore how different properties of fuels affect fire behavior - especially how easy or hard it is to ignite different fuels and how long they are likely to burn. Students consider various combinations of fuels ("fuel recipes"), predict how they will burn, then test their hypotheses.	Students burn 4 different fuel recipes in pie pans. Fuels include pine needles, twigs, and sticks. Discussion on fuel arrangement & moisture, fire behavior, etc. (outside or lab with hood is best).  
	E06. Effect of Wind: How Wildland Fires Spread	Students participate in a human model that shows how wind affects fire spread.	Students model/role play wind and how fire spreads. Quick and easy classroom or outdoor activity.

Unit IV. Fire Effects on the Environment	E07. Smoke from Wildland Fire: Just Hanging Around?	Students learn that smoke from wildland fires can either disperse readily or stick around, reducing visibility on the earth's surface and making it difficult to breathe. Then they apply health guidelines regarding smoke to a very important question: Can Physical Education (PE) Class proceed with the scheduled 1-km run, or do we need to change plans?	Slide show with handouts; Students make decisions as to what school activities can safely take place given smoke guidelines.
Unit V. Fire's Relationship with Organisms and Communities	E08-1. What's a Community? All the Living Things in the Ecosystem	Students learn about the nature of biological communities. This concept is important to the science of wildland fire because fire behavior, fire history, fire effects, and even management of fire depend on what plant communities are burned.	3 student teams create different feltboard ecosystems; Teams present their ecosystem to class; Students sketch 3 organisms from each ecosystem 
	E08-2. Who Lives Here? Adopting a Plant, Animal, or Fungus	Introduces a suite of organisms that live in 3 forest communities of the northern Rocky Mountains and North Cascades (forests dominated by ponderosa pine, lodgepole pine, and whitebark pine). Each student "adopts" an organism, learns about its characteristics and its relationship to fire from short essays in the FireWorks Encyclopedia (younger grades , older grades).	3-5 th grades. Students learn about an organism, then create relevant artwork & give 2-3 min presentation about the organism. Alternatively, classes can play charades based on the organisms.
	E09. Tree Parts and Fire: The Class Models a Living Tree	Students learn to name many parts of a tree, describe their functions, and explain how some trees can survive fire or reproduce well after fire.	Students roleplay tree parts then label tree parts on a handout
	E10. Tree Identification: Using a Key to Identify "Mystery Trees"	Students examine botanical specimens of tree species and learn to use a dichotomous key to identify them.	Students work individually or in teams to identify classroom specimens. 
	E11. Recipe for a Lodgepole Pine Forest: Serotinous Cones	Students extract seeds from serotinous cones of Rocky Mountain lodgepole pine, count the seeds, report their results, and analyze their pooled data. Then they calculate the number of seeds from serotinous cones that might germinate in a small forest after a crown fire.	Cones are heated so that seeds can be extracted. (This is done at least 1 day before seeds will be extracted). Students can heat the cones in hot water as part of the activity or teachers can heat cones in oven at home. As a class, students create a histogram of the number of seeds extracted per cone. 

	E12. Buried Treasure: Underground Parts that Help Plants Survive Fire	Students look at specimens of 9 plant species - grasses, wildflowers, and shrubs - and examine their underground parts. They learn how these parts enable the plants to survive and/or reproduce after fire.	Students examine 9 plant specimens, sketch their underground parts, then design a new plant that can survive fire using the adaptations they learned about. 📖
Unit VI. Fire History and Succession	E13-1. My Tree Autobiography: Seeing History through Trees' Annual Rings	Students examine a fire-scarred tree cross section (sometimes called a "tree cookie") and/or a display that shows tree growth rings. Then they record their personal histories using growth rings as a metaphor.	Students examine a fire-scarred tree cross-section or poster & create their own story using growth rings.
	E13-2. Tree Biography, Forest Biography	Students learn that trees can sometimes survive fire. They create a human model that demonstrates how trees survive fire and how fire scars form. Then they will describe the fire history of tree cross-sections ("tree cookies") from fire-scarred trees.	Class creates a human model roleplaying how fire scars form; students view presentation & examine tree x-sections; students answer questions in handout. 📖
	E14. Story Time: Fire and Succession	Students use feltboard materials to tell the story of fire and succession in 3 ecosystems of the northern Rocky Mountains and the North Cascades - forests dominated historically by ponderosa pine, lodgepole pine, and whitebark pine.	Students help teacher tell the stories using felt pieces that they place on feltboards. There are 3 different stories. Can do as many stories as you want. This activity is a good one for K-2 nd grade. 📖
Unit VII. People in Fire's Homeland	E15. Carrying Fire the Pikunni Way	Learn about how and why the Pikunii (Blackfeet) people transported fire from one camp to another as they traveled along historical migration routes. This activity includes a complete lesson plan, examination of a Fire Carrier model, and a 12-minute video interview with Pikunii elder Marvin Weatherwax as he describes the importance, technology, and use of the Fire Carrier.	3 Parts: Build or imagine a campfire; examine reproduction of fire carrier; view video; discussion. Can do all parts of activity, or only watch the video.
	E16. Homes in the Forest: An Introduction to Firewise Practices	Students use their knowledge about vegetation, fuels, and fire behavior to develop some rules that can help people protect their homes from wildland fire. Then they apply their rules by assessing photos of wildland homes, ask how 'firewise' they are, make recommendations to reduce fire risk, and justify their recommendations.	View slides of homes & determine possible ignition zones; recommend actions to reduce likelihood of home ignition

	E17. Revisiting Wildland Fire	<p>Students view the same presentation they saw in Activity E01, which shows wildland fires in a variety of plant communities and ecosystems, and some of the plants and animals that they learned about in the curriculum. When they first saw this presentation, it was accompanied by a short narrative. This time, they narrate the presentation themselves. Afterward, they discuss their feelings about wildland fire and whether they have changed from the feelings recorded in Activity E01. Finally, in the Assessment, they consider whether a fire manager's job is easy or hard.</p>	<p>Students narrate presentation and discuss whether they view the photos differently compared to when they first saw them in lesson 1.</p>
--	---	---	---