
Burnt Tree Cookie



Purpose:

- In this activity, students will examine tree cookies to learn: the parts of a tree trunk, the tree's age, how trees are adapted to deal with, and even thrive with wildfire, and how fire scars reveal a wealth of information about our forests.
- The Lesson "Story of a Ponderosa Pine" is a great accompanying lesson and can be read as a class or assigned as homework.

Objectives:

Students will:

- Label and define the five parts of a tree trunk.
- Determine the age of the tree when it died by counting the tree's rings.
- Calculate years of drought, wildfire, or physical damage to the tree by examining tree cookies.
- Design a tree cookie that represents pivotal events in their own life while accurately depicting the parts of a tree trunk.

Time Required: 1 hour

Appropriate grades: 3rd – 6th

NGSS and Common Core Standards:

3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.

4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

Materials:

Not provided in this kit:

- Paper plates and crayons.

Activity:

- "Build a Tree" Instructions (in binder)
- 5 Small Fire-scarred tree cookies
- Laminated Fire-scarred tree photo from "Life of a Ponderosa Pine" Lesson Packet
- Reading Tree Cookies Student Page (One for each student)
- Tree Rings Student Page (Optional, one for each student who wants to work independently)
- Optional: "The Story of a Ponderosa Pine" Lesson

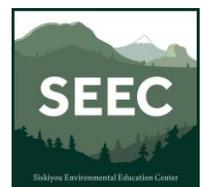


Activity:

Introduction	Go outside and play “Build a Tree” from Joseph Cornell’s <i>Sharing Nature</i> .
Body	<p>Back inside, pass out the “Reading Tree Cookies” Student Page. Review the parts of a tree learned during “Build a Tree”.</p> <p>Have the students group up with those who shared the same part of a tree. Have them discuss what their main function was, and then share that function with the class.</p> <p>Have students label, define, and explain the function of the five parts of a tree cookie on the “Reading Tree Cookies” Student Page.</p> <p>When everyone is done, fill out the sheet as a class together. Ask if there are any questions or confusions on any of the parts.</p> <p>Working in 5 groups, provide each group with one Small Fire-scarred tree cookie.</p> <p>*If any students want to work alone, they can utilize the Student Page “Tree Rings” handout (or a tree cookie if you have extra).</p> <p>Provide background information to the students.</p> <ul style="list-style-type: none"> • By counting a tree’s growth rings, you can tell the age of the tree at the time it was cut. • The shape and width of the annual rings differ from year to year because of varying annual growth conditions. <p>In their small groups, have students brainstorm ways a tree’s growth may be effected by its environment, and how these environmental conditions may physically be observable on the tree. Have each group share 1-2 ideas they came up with and write them on the board.</p> <ul style="list-style-type: none"> • During a typically wet year for the region, growth rings will be wider indicating a lot of growth that year. • During years of drought, flooding, poor air quality, or wildfires, growth rings will be narrower. • Stressors such as insects and disease can also affect a tree’s growth and may alter how growth rings are formed. <p>Have the students estimate how old their tree was when the tree cookie was cut.</p> <p>Have students look for any markings that may be indicative of good growth years, poor growth years, wildfire, insects, diseases, physical injury, etc. Using their observations of the fire-scarred tree cookie, discuss the following questions as a class:</p>



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	<ul style="list-style-type: none"> • If the tree was cut down in 2012, when did the tree sprout? <i>Answer: About 1900 (about 110 years old)</i> • When did the tree experience the fire that left the large scar? <i>Answer: 1973 (Approximate answers within 5 to 10 years are acceptable).</i> • Why didn't the tree burn completely in the fire? <i>Answer: The fire was a moderate-intensity fire, which means it was not hot enough to burn the entire tree. Ponderosa pine trees have thick bark that can protect them from low- and moderate-intensity fires.</i> • Why are the tree rings narrower before the fire? <i>Answer: Years of limited resources (low rainfall, competition with neighboring trees, etc.) meant the tree grew slowly.</i> • Why are the tree rings thicker after the fire? <i>Answer: The fire released nutrients back into the soil, fertilizing the tree. The fire may have cleared some area around the tree, giving it more access to sunlight, water and space. All these things stimulated growth of the tree for several years.</i> • How will cutting down this tree harm or benefit the ecosystem? <i>Answer: Cutting the tree could harm the ecosystem because animals may lose a home and source of food, the tree will no longer produce oxygen, and the impact of the tree-fall could have harmed animals or plants. Cutting the tree down may benefit the ecosystem by freeing-up resources for neighboring plants. Also, thinning out the forests could reduce the risk of high-intensity fires. Cutting this tree down provided jobs for people in the community, and it can now provide learning opportunities for students.</i> <p>Using white paper plates have the students create their own tree cookies that are the same age as themselves. Using crayons, have them draw important events in their lives onto the plate with older events being near the center heartwood, and more recent events being towards the outside of the plate. Have them include difficult times in their life as well, just like a real tree is effected by wildfire, insects, drought, etc. Have the students label the parts of the tree trunk, along with their life events. Optional: Students could then go on to write an autobiography.</p>
Closure	<p>Head outside and play "Build a Tree" again. After the game, circle up as a class and ask students to think-pair-share some new words they learned today and what they mean. Have a few students share until all five tree cookie vocabulary words have been shared.</p> <p>Pass out index cards to students before they leave. As an assignment to turn in the next day, have the students answer the question: What 5 internal and 1</p>



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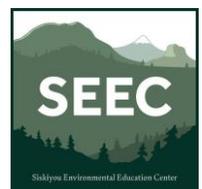
	external characteristics do trees that can survive wildfires have that allow them to survive and grow?
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Additional Activities:

- Take a field trip to a historically burned forest to see fire burned trees.
- Students could “Adopt a Tree” in their own backyard and monitor it once a month or seasonally throughout the school year. Have them record observations of their tree each month such as:
 - What color are the leaves this month?
 - Are there any insects on the leaves, twigs, or bark this month?
 - Are there leaves falling this month? What percentage of the trees leaves are still remaining on the tree?
 - Is the tree flowering or producing any fruits?
 - Did any wind storms or snow storms take down any branches this month?
- Have the students hold on to their observations throughout the year, and as a culminating assignment have them write an autobiography of their tree.



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