

## Will Your Tree Survive?

By: James Martin and Jessica Anderson

**Grade Level:** 6-8

**Duration:** 1-2 periods

**Subject(s):** Science

**Standards:**

Science:

**Content Standard 1**—Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.

**Content Standard 2**—Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

**Content Standard 3**—Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

**Objectives:**

- The students will be able to describe the characteristics of their conifer species.
- The students will be able to accurately illustrate the observed conifer characteristics on their graphic organizer.
- The students will be able to formulate a hypothesis regarding fire impact on the species based on their observations and the *Conifer Species in Deer Lodge Valley Worksheet*.
- The students will be able to accurately work as a group.
- The students will be able to accurately present their findings regarding fire impact on the species based on their observation, the *Conifer Species in Deer Lodge Valley Worksheet*, and internet resources.

**Prior Knowledge:** Students have an understanding of Northwestern geography in North America (e.g. Rocky Mountains, American West). Students have been introduced to the tree species located in the Deer Lodge Valley.

**Materials:**

- Conifer Species in the Deer Lodge Valley Worksheet
- Colored Pencils/Markers
- Graphic Organizer (drawing of conifer observations)
- Examples of bark, branches, needles, and pine cones for each species (1 per group)
- Handout on each tree species (1 per group)
- Computers with internet access (as an additional resource for students)
- Fire Behavior Group rubric (teacher)
- Fire Behavior Student rubric

**Internet Resources:**

- Ponderosa Pine: Description of species, including fire impacts.  
<http://fwp.mt.gov/mtoutdoors/html/articles/portraits/ponderosapine.htm>

- Montana Field Guide of Conifers: Pictures and maps of each conifer species located in Montana.  
<http://fieldguide.mt.gov/displayFamily.aspx?class=Pinopsida>
- Discover Montana Forests: Descriptions of each tree species.  
<http://fwp.mt.gov/education/ecosystem/montane/plants.html>
- Conservation Trees and Shrubs for Montana: Descriptions of each tree species.  
<http://www.mt.nrcs.usda.gov/technical/ecs/forestry/conservtrees.html>

**Assessment:**

Students will assess themselves using a group rubric. Teacher will assess students using the same rubric during the activity and discussion. Teacher will grade the graphic organizer for completion.

**Lesson Procedures:**

1. Students are broken-up into groups. Each group is assigned a species of conifer.
2. Students will discuss within the group characteristics of the tree species. Teacher should assign students a role within the group (e.g. reader, clarifier, researcher, presenter etc.)
3. Explain and hand-out student rubric.
4. Students list and discuss benefits of each tree characteristic.
  - How can deep roots impact other plant species? (positive or negative)
  - How might the branch and stand habitat impact the surrounding ecosystem?
5. Students examine samples from their conifer species. From their observations, students draw each component of their tree using the graphic organizer.
6. Teacher poses the following question (may want to write on board):
  - How might fire impact your conifer environment?
7. Students formulate a hypothesis about each species fire resistance.
8. Teacher hands out reading on the groups' tree species and internet resources. As a group, students read the information about their tree. Teacher may want to assign roles within the cooperative groups (reader, clarifier, summarizer, etc.)
9. Students compare their hypothesis to the information in the reading and on the internet resources provided.
  - How is your hypothesis different from the actual fire impacts?
10. As a whole group, students discuss their conifer species emphasizing their initial thoughts (hypothesis). Students will compare their hypothesis to the actual fire impacts to their environment. Students may use their drawings, readings, and conifer examples (bark, etc.) during the discussion. Teacher will continue to use the group rubric during the discussion.

Fire Behavior Student Rubric

<b>Criteria</b>	<b>Student Assessment</b> (Exceeding, Meeting, Approaching, Beginning)	<b>Teacher Assessment</b> (Exceeding, Meeting, Approaching, Beginning)
Actively participating (listening, questioning, discussing)		
Respects other members of the group; open to others' ideas, opinions		
Completes task in amount of time given; Completes assigned role		
On-task		
Total Grade		

Fire Behavior Student Rubric

<b>Criteria</b>	<b>Student Assessment</b> (Exceeding, Meeting, Approaching, Beginning)	<b>Teacher Assessment</b> (Exceeding, Meeting, Approaching, Beginning)
Actively participating (listening, questioning, discussing)		
Respects other members of the group; open to others' ideas, opinions		
Completes task in amount of time given; Completes assigned role		
On-task		
Total Grade		

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_

## Fire Behavior Graphic Organizer

---

Tree Name

Pine Cone

Bark

Forest Representation

Needles

Tree

## Fire Behavior Rubric

Group # \_\_\_\_\_

Period # \_\_\_\_\_

Make comments below on responsible contributions to the group.


<b>Criteria</b>				
Actively participating (listening, questioning, discussing)				
Respects other members of the group; open to others' ideas, opinions				
Completes task in amount of time given; Each member completes their assigned role				
100% On-task				
Individual Grade				

**Teacher Comments:**

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Date: \_\_\_\_\_

## ***Fire Behavior Questions***

**Directions:** Read each question carefully as a group. Be sure to answer each question in complete sentences.

1. How can deep roots impact other plant species? (positive or negative)

2. How might the branch and stand habitat impact the surrounding ecosystem?

3. Hypothesis:

4. How is your hypothesis different from the actual fire impacts?