



Shades of Gray Outdoor Activity

Teacher Information:

Time Requirement:	45-minutes to 1 hour to walk trail and review issues Homework to generate solutions and/or classroom time to debate issues.
Trail Used:	Birth of a Lake Trail
Location:	Coldwater Lake recreation Area

The purpose of this activity is to demonstrate that there are not black and white answers to complex questions. Mount St. Helens demonstrates there are shades of gray, and that there are numerous challenges associated in problem-solving. Environmental issues often breed strong opinions that polarize user groups. Sharp criticism and intense opinions by various interest groups can leave federal land managers in difficult situations. When faced with meeting the agency mission and balancing the desires of the public, federal land managers frequently make critical decisions that can alienate some groups, or make compromises that may not fully please everyone. Controversial issues are even more challenging when multiple private landowners and organizations, and state and federal agencies with different missions are involved.

Goal:

- 1) To work in small groups to find solutions to complex problems faced by the manager of Mount St. Helens National Volcanic Monument.

Objectives:

- 1) The student will use the scientific process to deduce a reasonable explanation.
- 2) The student will apply knowledge acquired during the activity.
- 3) The student will compare, contrast and sort observations.
- 4) The student will reach a conclusion and be able to support it with evidence in writing.

Washington Essential Academic Learning Requirements

3.2.4 Environmental and Resource Issues

Analyze how human societies’ use of natural resources affects the quality of life and health of ecosystems

- Explain the effects that the conservation of natural resources has on the quality of life and health of ecosystems.
- Explain the effects various human activities on the health of an ecosystem and/or the ability of organisms to survive in that ecosystem.

1.3.10 Interdependence of Life

Understand how organisms in ecosystems interact and respond to their environment and other organisms.

- Describe how energy flows through a food chain or web.
- Describe how substances such as air, water, and mineral nutrients are continually cycled in ecosystems.
- Explain the role of an organism in an ecosystem.
- Describe how a population of an organism responds to change in its environment.

1.2.1 Structure of Physical Earth/Space and Living Systems

Analyze how the parts of the system interconnect and influence each other

- Explain how the parts of the system interconnect and influence each other
- Describe the interactions and influences between two or more simple systems.

1.3.4 Processes and Interactions in the Earth's system

Understand the processes that continually change the surface of the Earth.

- Describe how constructive forces change landforms.

1.3.8 Life Processes and the Flow of Matter and Energy

Understand how individual organisms, including cells, obtain matter and energy for life processes.

- Describe how organisms acquire materials needed for life processes.

Shades of Gray

Outdoor Activity

Monument Mission:

Mount St. Helens National Volcanic Monument was established to allow natural processes to occur without human intervention. The mission is to provide research, recreation and educational opportunities for the public.

Directions:

Land managers have to make hard decisions that balance their mission with the desires of the public. Use the ‘case facts’ for each stop and evidence at the site to answer the questions.

Stop 1: Start at the ‘Birth of a Lake Trailhead’ and stop at the third boardwalk platform on the right side of the trail.

Fish Facts:

<ul style="list-style-type: none">• Coldwater Lake and Castle Lake formed after the 1980 eruption when creeks were blocked by the landslide. Healthy lake ecosystems, without fish, developed naturally in both lakes.
<ul style="list-style-type: none">• Fishing was very popular at nearby Spirit Lake before the eruption. Spirit Lake is now located within a research area, where fishing is prohibited.
<ul style="list-style-type: none">• In 1989, 30,000 Rainbow Trout were stocked in Coldwater Lake. Castle Lake was not stocked with fish to create research opportunities to study and compare lake ecosystems with and without predatory fish.
<ul style="list-style-type: none">• Some of these rainbow trout stocked in Coldwater Lake swam down its outlet stream, up the North Fork of the Toutle River, up Castle Creek and into Castle Lake.
<ul style="list-style-type: none">• In the 1990’s, scientists discovered that cutthroat trout survived the eruption in Coldwater Creek above the lake. Cutthroat trout colonized Coldwater Lake, inner-bred with rainbow trout, and created a hybrid species called “cut-bows”.

1) List what you think are the positive and negative outcomes of stocking Coldwater Lake with fish?

Positive Outcomes	Negative Outcomes

a) Based on your list of positive and negative outcomes, do you think the lake should have been stocked with fish?

Recreation Facts:

<ul style="list-style-type: none"> Boating on Spirit Lake with canoes, sailboats, and powerboats was very popular at Spirit Lake before the eruption. Spirit Lake is now in a research area and these activities are prohibited.
<ul style="list-style-type: none"> Non-motorized boating (no gasoline powered motors) is allowed in Coldwater Lake. Fishing is limited to 3 locations along the lakeshore to protect plant life.
<ul style="list-style-type: none"> Forest Service facilities at Spirit Lake included: campgrounds, picnic area, bathrooms, boat launching facilities, trails, and a ranger station.
<ul style="list-style-type: none"> Parking lots, a fish cleaning station, boat launching area, picnic area, trails, and bathrooms were constructed Coldwater Lake to replace facilities that use to be at Spirit Lake. The construction of facilities permanently altered natural processes at this site.

2) List what you think are positive and negative outcomes about building facilities at Coldwater Lake.

Positive Outcomes	Negative Outcomes

b) Do you think the facilities constructed at Coldwater Lake were sufficient to replace those lost at Spirit Lake?

Conclusion:

Circle your answer:

- I think managers made the right decisions. They balanced the Monument Mission with the desires of the public.
- I think the manager’s decisions were wrong. They did not balance the Monument Mission with the desires of the public.

Stop 2: Turn right as you leave this platform. Turn right again when you reach the boardwalk trail that passes over the lake. Answer the questions at the end of the boardwalk

Budget Facts:

<ul style="list-style-type: none">• When federal funding to operate and maintain facilities and programs at Mount St. Helens declined, the Forest Service began to charge visitors a fee to visit sites. The fee of \$8.00/adult does not generate enough money to operate and maintain all facilities.
<ul style="list-style-type: none">• The budget required to operate and maintain facilities, trails and programs throughout the 110,000 acre National Volcanic Monument is 4 million dollars.
<ul style="list-style-type: none">• The 2007 budget was 1.2 million (sources include taxpayer funding, and fee collection). 70% of the Monument's budget is generated from fee dollars. 90% of the visitor center budget comes from fees.
<ul style="list-style-type: none">• Congress established two <u>popular</u> programs for American citizens. Citizens over the age of 62 can purchase a lifetime pass for \$10. Citizens with permanent disabilities can obtain lifetime passes for free. Both passes admit the cardholder and three people free entry. 50% of Monument's 750,000 visitors use these passes.
<ul style="list-style-type: none">• The Coldwater Ridge Visitor Center closed permanently due to a lack of funding to staff, maintain and make 1.2 million dollars of critical repairs to the building. Taxpayer dollars were used to construct the 10 million dollar visitor center, which was the only visitor center with exhibits on the biologic recovery, and the only site in the blast zone with a restaurant.

2) Faced with the financial situation what would you do to staff, repair, and re-open Coldwater Ridge Visitor Center? Rank your top three solutions listed below with a 1, 2, and 3 beside it.

- Transfer the management from the National Forest Service to the better-funded National Park Service.
- Allow private businesses to operate the site for profit.
- Allow non-profit associations to operate the site.
- Write grants to solicit funds from non-profit organizations.
- Raise the price of fees to generate more revenue.
- Solicit volunteers to operate the site.
- Work with congressional representatives to better fund the Forest Service.
- Provide excellent service so visitors will donate money to the Monument.

a) The closest restaurant and gift shop is located 25-miles from the Johnston Ridge Observatory. How would you address the publics need for food and gifts in this remote location?

b) Legislation passed by congress prohibits federal land management agencies from charging fees to children under 16. Many children visit in the summer and 13,000 students visit the Monument each school year. Do you think these groups should be charged a fee?

c) At Mount St. Helens, 50% of visitors use senior passes that admit the cardholder and three other individual's free entry. Senior populations are growing and budgets are declining, and the Forest Service is dependent on fees. Should congress do something to change this pass system?

d) The attempt of government is to balance the needs of society (schools, roads, etc) with the wants of society. Do you think the funding of our public lands is a need or a want? _____

e) How do we preserve our public lands when there are so many needs and wants? As a congressional representative, what would you not fund in order to better fund our public lands?

Stop 3: Walk back to the paved trail and turn right. Walk until you find an odd-shaped conifer trees.

1) Deer and elk usually don't eat conifer trees. They have a pungent taste and lack many nutrients. This odd-shaped conifer tree has been eaten by deer and elk. Circle the answer that explains why deer and elk are eating these foods.

- a. There is not enough food available for deer and elk.
- b. Deer and Elk populations are too large.
- c. Both a. and b.

Elk Herd Facts:

<ul style="list-style-type: none"> • The May 18, 1980 lateral blast created habitats that allowed elk to thrive, but over time the quality and quantity of plants and grasses that elk prefer to eat have declined—especially on private and state lands that were reforested.
<ul style="list-style-type: none"> • The Mount St. Helens elk herd contains 12,500 animals—2,500 more than the land can support.
<ul style="list-style-type: none"> • Between 100 to 200 elk died of starvation during severe winters in 1998, 2004 and 2008.
<ul style="list-style-type: none"> • Starvation deaths angered and saddened the public, but dead elk help complete food chains by creating food for scavengers like coyotes, bald eagles, and wolverines (endangered species).
<ul style="list-style-type: none"> • Washington Fish and Wildlife officials fed elk in areas outside of the Monument during the winters of 2007 and 2008. Feeding elk prevents death, but also maintains the size of the herd at a level the land can not support.

1) List what you think are positive and negative outcomes about feeding elk.

Positive Outcomes	Negative Outcomes

a) Based on your list of positive and negative outcomes, do you think the elk herd should be fed?

Elk Management Facts:

<ul style="list-style-type: none">• The Washington Department of Fish and Wildlife establish the number of elk to be killed each hunting season. Hunting is popular and successful on private and state lands next to the Monument
<ul style="list-style-type: none">• Hunting is prohibited in parts of the Monument. Some elk retreat to restricted areas during hunting season and leave when it ends.
<ul style="list-style-type: none">• The Washington Department of Fish and Wildlife have also trapped and relocated elk to areas with declining populations.
<ul style="list-style-type: none">• A 2,744 acre elk refuge next to the Monument provides critical winter/spring forage when the animals are stressed, but is not large enough to prevent deaths from starvation.

3) What do you think is the best way to manage the elk herd? Should the elk population be managed or should nature take its own course?

a) Mountain lions tend to kill weak, old, or young elk. Human hunters tend to kill large, healthy elk. How do you think these different hunting styles affect the long-term health of the elk herd?

Conclusion:

Circle your answer:

1. I think managers made the good decisions that balanced the needs of elk, different missions, and the desires of the public.
2. I think the manager's made bad decisions that did not balance the needs of elk, different missions, or the desires of the public.

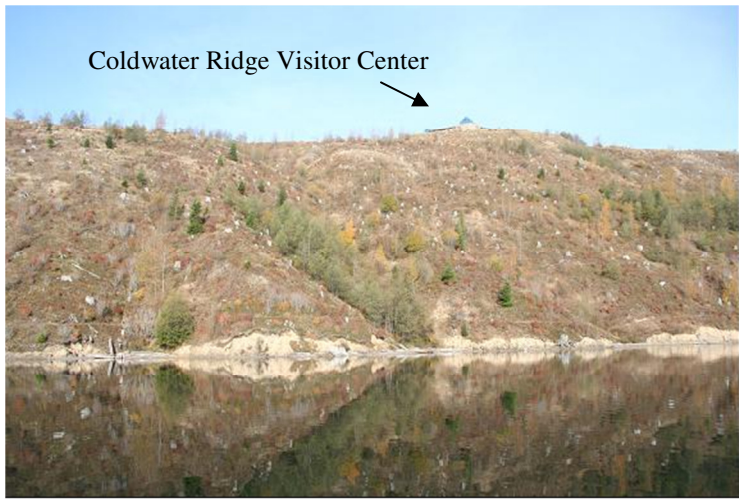
Shades of Gray

Outdoor Activity

View at Stop 1:



View at Stop 2:



View at Stop 3:



Small elk-browsed conifers



Elk can reach this high

Instructional Sequence for 'Shades of Gray'

Before Exiting the Bus:

- 1) This activity can be conducted in several ways depending on your time constraints, size of your group, or educational focus.

If your group is larger than 30:

- Divide your groups in half. Have ½ the group start at the “Birth of a Lake” trailhead and the other half walk the trail in reverse (follow the sidewalk on the left side of the bathroom to the trail) and answer the questions in reverse order.

If your group is larger than 60:

- Divide your groups into four groups. Have two groups start at the “Birth of a Lake” trailhead and the other two walk the trail in reverse (follow the sidewalk on the left side of the bathroom to the trail), and assign an issue to each group.

If time is limited:

- Select an issue or the issues relevant to your educational focus. Cut and paste portions of the document that meets your needs. OR
- Divide your class into four groups and assign one issue to each group and have the students provide you with detailed response at a later date. OR
- Divide your class into four groups and stop at all four sites to *review* (not debate) the issues, and the students provide you with detailed response at a later date.

If time is not limited:

- Stop at all four stations and have the groups review and debate each of the issues. Limit debate to 5 to 10 minutes for each issue/stop.

- 2) Make sure that students are dressed appropriately for the weather conditions before they exit the bus. Explain that each student will need a pencil, a clipboard or notebook to write on, and a copy of the ‘Shades of Gray’ worksheet. **Inform the students that they will be hiking within a research area. Hiking in this area is a privilege and that student behavior will determine if future groups will be able to use this site. Off trail travel, the collection of rocks, plants, and wood, and disturbing research sites (removing tags, pipes or flagging marking boundaries) is strictly prohibited (\$100 fine).**
- 3) Explain that the students will be examining three controversial issues faced by land managers, and that the ‘case facts’ for each issue are critical to understanding the issue. At first glance some of these issues may appear to have black and white solutions, but finding and building consensus often requires seeing the world in shades of gray. Emphasize that these are complex issues that may produce strong reactions, so they will need to examine each issue from different perspectives in order to formulate a balanced opinion,

On the Trail:

- 1) Start at the ‘Birth of a Lake Trailhead’ and walk to the third boardwalk platform on the right side of the trail. Stop on the board walk and review out loud the case facts and questions. Debate the issue as a group and find solutions to the ‘Fish Facts’. Review out loud the case facts and questions. Debate the issue as a group and find solutions to the ‘Recreation Facts’.

- 2) Turn right as you leave this platform. Turn right when you reach the boardwalk that passes over the lake. Walk to the end of the boardwalk. Review out loud the case facts and question. Debate the issue as a group and find solutions to the 'Budget Facts'.
- 3) Walk back to the paved trail and turn right. Walk until you find an odd-shaped conifer tree like the ones in the pictures on page 9. Review out loud the case facts and questions. Debate the issue as a group and find solutions to the 'Elk Facts'.
- 4) Use great caution once you reach the parking lot—students may try to dash across the parking lot to the bus without looking out for on-coming traffic. Consider stationing several adults in key locations to ensure student safety. Review the issues and answers when you return to school.