

## **Long Live the Legend of Smokey Bear**

Paula Simonson, Wasatch Range Writing Project

### **Summary:**

Can I use the legend of Smokey Bear, along with a vintage Smokey Bear Advertising campaign, to teach students the importance and effectiveness of strong communication in media?

### **Objectives:**

- After viewing and reading several pieces of information, students will be able to identify and summarize the effectiveness and/or ineffectiveness of the Smokey Bear advertising campaign.
- Students will create a modern version of an ad campaign based upon the legend of Smokey Bear.

### **Context:**

This lesson may be used in secondary classrooms but can easily be adapted to any age range. The legend of Smokey Bear makes this an interesting and engaging topic for learners of all ages.

### **Materials:**

- Classroom copies or online links of “The Utah Wildfire Has Grown to Become the Largest Active Fire in the U.S.” (article and video clip)
- Classroom copies or online links of “Story of Smokey: The Orphan Cub” (article)
- Classroom copies or online links of “Tragic and Destructive North American Wildfires – 1950 to Present: Capitan Gap Fire Disaster – Lincoln National Forest, New Mexico – May, 1950” (article)
- Classroom copies or online links of “The History and Career of Smokey the Bear” (article)
- Classroom copies or online links of “Smokey Bear, A Collection of His Best Nature Posters: The Smokey Bear Educational Nature Poster Series” (poster ad collection)
- Link to “Smokey Bear Case Study” (video clip)
- Access to computers and poster making supplies

### **Time Span:**

Allow one to two weeks, depending on completion of desired assessment/project.

### **Procedures:**

1. As a group, read the article and then watch the accompanying video clip, “The Utah Wildfire Has Grown to Become the Largest Active Fire in the U.S.” Lead a discussion on the size and destruction caused by the fire and then have students do a quick-write about what punishment, if any, the fire starter should face.



2. Next, ask, by show of hands, how many students have heard of Smokey Bear and remember seeing advertisements of Public Service Announcements (PSA) about forest fire prevention.
3. Hand out any or all of the Smokey Bear articles listed above. You may choose to have students read these articles as individuals, teams, or as a group. These articles will build background knowledge for those who may be unfamiliar with the legend of Smokey Bear.
4. You may choose to use questions from these articles for comprehension in the form of exit slips. Create questions which are grade specific for your classes.
5. Once students have an understanding of Smokey Bear, show them posters from “Smokey Bear, A Collection of His Best Nature Posters: The Smokey Bear Educational Nature Poster Series.” These can be viewed online and are also available through the National Association of State Foresters. Put students in pairs and assign each pair a poster to analyze. Students will need to consider and answer the following questions. After students view and answer these questions, share with the rest of the class.
  - a. What stands out about the poster?
  - b. What do you feel the poster does well?
  - c. What would you change or add to the poster?
  - d. What is the overall message this poster is sending to the public?
  - e. Is this poster effective or ineffective at sending a message about forest fire prevention?
6. Now show the video clip, “Smokey Bear Case Study.” As a group, discuss the changes that have been made over the years. Is the campaign more or less effective?

**Task:**

1. Students will now apply what they have learned and create a multifaceted ad campaign, using Smokey Bear as the center of the advertisement. The ad campaign can be as simple or as detailed as you choose. These campaigns should demonstrate an ability to communicate a logical and effective strategy to prevent forest fires. For older students, have them design a poster, along with a PSA which can be acted out for the class, or create a video PSA. You may choose to have a written script or dialogue turned in along with the poster and PSA.
2. Students will present the ad campaign to the class. You may create a class competition for the most effective presentation.

**Extensions:**

This topic offers numerous opportunities for differentiation. For more advanced students, offer higher level projects.

- Have students research the number of fires in the United States this summer and determine how many of them were human caused versus natural. Then create a newspaper cover page highlighting the various fires.
- Ask students to debate what the punishment should be, if any, for those who create fires, either intentionally or accidentally. Is it fair that taxpayers are expected to cover the cost of forest fires set intentionally?



**Rationale:**

In order to build higher level thinking skills, students must be able to analyze and recognize the effective use of language and persuasion in various forms of media. Students must also be able to communicate their own point of view with logical and well-presented group and individual tasks.

**Resources:**

McCombs, B. "The Utah Wildfire Has Grown to Become the Largest Active Fire in the U.S." *Time.com*. 26 June 2017. Web. Accessed 11 August 2017. <https://time.com/4834320/utah-largest-active-wildfire/>.

Nix, S. "The History and Career of Smokey the Bear." *ThoughtCo.com*. 15 April 2017. Web. Accessed 11 August 2017. <https://www.thoughtco.com/smokey-bear-1341823>.

Nix, S. "Tragic and Destructive North American Wildfires – 1950 to Present: Capitan Gap Fire Disaster – Lincoln National Forest, New Mexico – May, 1950." *ThoughtCo.com*. 10 April 2016. Web. Accessed 11 August 2017. <https://www.thoughtco.com/tragic-destructive-north-american-wildfires-1342904>.

Nix, S. "A Collection of Smokey Bear's Best Nature Posters: The Smokey Bear Educational Nature Poster Series." *ThoughtCo.com*. 18 May 2015. Web. Accessed 11 August 2017. <https://www.thoughtco.com/collection-smokey-bears-best-nature-posters-1343062>.

"Smokey Bear Case Study." *AdCouncil.org*. Ad Council. 2017. Web. Accessed 11 August 2017. <http://www.adcouncil.org/Our-Campaigns/The-Classics/Wildfire-Prevention>.

"Story of Smokey: The Orphan Cub." *Smokeybear.com*. The Ad Council. 2017. Web. Accessed 11 August 2017. <https://smokeybear.com/en/smokeys-history/story-of-smokey>.

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## **Poetry: Proof of Learning**

Pat Lowe, Wasatch Range Writing Project

### **Summary:**

This lesson will give students and teachers a literature form to use as an assessment tool. Texts about fire or volcanoes will give examples of science based information which can be tested in poetic form. Students will have a creative format in which to demonstrate acquired knowledge. The general procedure could be used with many texts and curricular topics.

### **Objectives:**

- Incorporate creative writing as a way to evaluate student understanding.
- Offer students an opportunity to explore creative ways by which to show what they have learned.

### **Context:**

This lesson could be used for assessment of topics in physical science or in connection with the study of the environment. It would be appropriate for elementary and secondary students, and other subject areas.

### **Materials:**

- Books from the Resources list
- Copies of selected passages: individual sheets, posters, or pages to be projected on a screen
- Large sheets of poster paper for display in the classroom
- Paper or individual student notebooks/journals

### **Time Span:**

The material can be presented in multiple sessions of 30-45 minutes each, with time in between for student reflection and writing.

### **Procedures:**

1. Ask students to write in their journals words associated with fire and/or volcanoes.
2. Prepare a KWL chart to identify prior knowledge of the subject.
3. Read selections from texts.
4. Have students add ideas and vocabulary to their journals.
5. As a class, list ideas on large pages of chart paper. Identify categories among the words listed, and expand the vocabulary terms.
6. As needed, teach simple poetry forms which students could use: acrostic, haiku, diamante, concrete or free form.
7. As a class or in small groups, discuss the effectiveness of different poetry forms to convey student knowledge of the subject.
8. As the teacher, or with students, establish criteria for what specific understanding needed to be shown.
9. Let students reflect and prepare a rough draft from the ideas they have recorded in their journals.
10. Give time for students to prepare the final draft of their poem.



11. Post student work, and as a class discuss the knowledge demonstrated. Review the KWL chart. The discussion may provide insights which solidify or expand individual student learning.

**Extensions:**

- Ask students to reflect in their journals about why they selected a particular poetry format. Evaluate how well their poem demonstrated their knowledge based on the criteria. Would an essay have given them greater latitude to show what they learned? Why or why not?
- Invite students to do further research into an aspect of the topic which they wonder about.
- Have students share with the class the additional information they discover.

**Rationale:**

In the past, tests at the end of a unit of study typically have been prepared by the teacher, and are of a standard format which is easily graded. By choosing a creative writing format for the assessment, a teacher may see additional insights of student learning, and give students the freedom to choose the way in which they show new knowledge.

**Resources:**

Collard, Sneed B. *Fire Birds: Valuing Natural Wildfires and Burned Forests*. Missoula, MT: Bucking Horse Press, 2015. Print.

Lauber, Patricia. *Volcano: The Eruption and Healing of Mount St. Helens*. New York: Simon and Shuster Books for Young Readers, 1986. Print.

Rusch, Elizabeth. *Volcano Rising*. Watertown, MA: Charlesbridge, 2013. Print.

Silverstein, Alvin and Virginia, and Laura Silverstein Nunn. *Wildfires: The Science Behind Raging Infernos*. Berkeley Heights, NJ: Enslow Publishers, Inc., 2010. Print.

Smith, Kelly. *How Hot is Lava? And Other Questions About Volcanoes*. New York: Sterling Children's Books, 2016. Print.

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## Using Sources: Interview with the Forest Service

Gwen Romero, Wasatch Range Writing Project

### Summary:

Students will conduct an interview with a Forest Service Conservation/Other Educator to develop questioning, listening, speaking, and evaluation skills as part of gathering research.

### Objectives:

- Create research questions.
- Read, discuss, and synthesize information from an interview.
- Evaluate source credibility and insights.
- Learn about a relevant issue.

### Context:

A grade 3-12 English/Language Arts, science, environmental issues, or social studies class.

### Materials:

- Pens/pencils, lined paper.
- Copies of articles. For upper grades, use "Wildfires Spread Across at Least Six States and Canada". For younger grades, use "Grass Fire in Hooper . . ." (grades 3/4) and "Recouping Costs of Fighting . . ." (grades 5, 6, 7 use both). See publication details and links in Resources.
- Computers or paper and crayons for informational text and assignment (see Item 9 under Procedures).
- Schedule guest interviewee through the Forest Service (see below). Sign up for computers for the day after the interview if you have to share.

### Time Span:

Three class periods (approx. 50 minutes each), plus one 30-minute session.

### Procedures:

1. Schedule an educator from the Forest Service to visit your class. Contact:  
Carol Ryan, Intermountain Region (Coordinator)  
324 25th Street, Ogden, Utah 84401  
Tele: 801-625-5271  
E-mail: [carolryan@fs.fed.us](mailto:carolryan@fs.fed.us)

**Note:** If you ask for Kelly Wickens, she has extensive experience as a firefighter for the Forest Service. Also, she'll bring the Smokey Bear costume for younger grades.

\*Be sure to coordinate that you would like a presentation and time for questions and answers with the students; also coordinate how much time you have for each class.



2. *The day before your guest interviewee will arrive*, read and take notes on the applicable article(s)—either print copies or have students read and take notes from digital editions.
3. Discuss the details of each article (who, what, when, where, why, and relevance), the credibility of the source (where it comes from, any bias, trustworthiness, etc.—younger grades will need help here), and the importance of the issue/related issues raised by the article.
4. Ask students to brainstorm a list of questions: what they would like to know more about regarding this issue and the people involved. Have them take a few moments to brainstorm individually, then to compare questions with a small group. These questions should be written on lined paper with some space left blank to fill in answers.
5. Explain that tomorrow you will have a guest speaker from the Forest Service who will talk with them about fires. Then, have students brainstorm additional questions for the interviewee. After a few minutes, have several students share their questions. Cue students to ask about experiences, safety/prevention, and benefits as well as harmful effects of forest fires and wildfires if they haven't already. With upper grades, also cue students to ask about credentials/ training/education if they haven't already. **Note:** Also review etiquette for having guest speakers and conducting interviews.
6. *On the day of your guest interview*, briefly review the issue and what you discussed the day prior, then introduce your guest. As you turn to your guest, remind your students to take notes/fill in responses when the time is opened for questions. **Note:** With younger grades, each student should be accountable for writing answers to at least two questions.
7. If there is time remaining, cue students or guest with additional questions. Save the last five minutes to thank guest and allow one-on-one interactions.
8. *The day after the guest interview*, at the beginning of class, have students share observations, insights, and details from the previous day.
9. The rest of the class time is for students to develop an informational text to share what they have learned over the past two days. Begin by introducing the assignment and taking a few minutes to brainstorm a list of aspects. Write this on the board.
  - a. **For younger grades**, each student will create a poster or picture that focuses on a few key points of safety, prevention, and effects on the forest, either with computer software or paper and crayons/markers; you may want the whole class responding to one theme, or you may have different groups addressing different aspects.
  - b. **For grades 5 and older**, each student will create a poster, flyer, brochure, or other infographic using computer software; have different groups of students focus on different aspects that have been addressed.
  - c. **Note:** For grades 7 and older, have students cite sources using either MLA or APA format (see <https://owl.english.purdue.edu/owl> to review formatting guidelines).
10. Depending on your class, students may be assigned to finish this project as homework, or you may need to schedule additional work time. Either way, set the date that students need to be prepared to share their work.
11. *For the 30-minute session*, for younger grades, have each student share, then collect work to display. For upper grades, have students share in small groups first (3 to 5 students, depending on class size), then have one member of each group share with the whole class. Collect work to score and display.





**Extensions:**

- Have students research other stories about fires: natural and man-caused, destructive and beneficial. Then have them share their findings.
- Have students research other current events/interesting issues, including an interview source.

**Rationale:**

Combining practice of research skills with a high-interest topic helps students develop the skills necessary to find and evaluate information for themselves and to become better critical thinkers.

**Resources:**

Hauser, Christine. "Wildfires Spread Across at Least Six States and Canada." *The New York Times*. 10 July 2017. Web. Accessed 28 July 2017.

[https://www.nytimes.com/2017/07/10/us/western-wildfires.html?rref=collection%2Ftimestopic%2FFires%20and%20Firefighters&action=click&contentCollection=timestopics&region=stream&module=stream\\_unit&version=latest&contentPlacement=6&pgtype=collection](https://www.nytimes.com/2017/07/10/us/western-wildfires.html?rref=collection%2Ftimestopic%2FFires%20and%20Firefighters&action=click&contentCollection=timestopics&region=stream&module=stream_unit&version=latest&contentPlacement=6&pgtype=collection)

Koch, Makenzie. "Grass Fire in Hooper Burns Half an Acre After Illegal Fire Left Unattended." *Standard Examiner*. 9 July 2017. Web. Accessed 28 July 2017.

<http://www.standard.net/Police-Fire/2017/07/09/Grass-fire-in-Hooper-burns-half-an-acre-after-illegal-fire-left-unattended-Weber-Fire-District>

"Recouping Costs of Fighting Wildfires in Utah Isn't Easy." *Cache Valley Daily*. 17 July 2017. Web. Accessed 28 July 2017.

[http://www.cachevalleydaily.com/news/article\\_9ec13db8-9d10-5c6b-be57-beeed8cdc74d.html](http://www.cachevalleydaily.com/news/article_9ec13db8-9d10-5c6b-be57-beeed8cdc74d.html)

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**“WHAM! POW! KA-BOOM!”**  
**Vocabulary for VOLCANO/FIRE**  
Judy Chesley, Wasatch Range Writing Project

**Summary:**

Students will have an understanding of terms relating to a volcano.

**Objective:**

Students will be able to show their understanding of the vocabulary by displaying the word and definition, using the word in a complete sentence, and illustrating their sentence.

**Context:**

A 6<sup>th</sup> grade elementary classroom, easily adapted for grades 4-8

**Materials:**

- *Volcano Rising* by Elizabeth Rusch (additional vocabulary)
- List of vocabulary words and definitions
- Paper, vocabulary notebook, or journal
- Pencil and colored pencils
- Dictionary or provided vocabulary list with definitions

**Time Span:**

One or two class periods, or more as needed

**Procedures:**

1. Explain to students that, in order to understand the many concepts in this unit, they need to have a working knowledge of these terms.
2. Students may be assigned the entire list of words or each student may be assigned a word they will share with the class when completed. All students will enter the words presented in their own list of vocabulary.
3. Students may work alone, with a partner, or with a small group of three or four in completing this task.
4. Have each student fold the paper in half so they have two columns, then use a ruler to darken the center line.
  - a. Use the left side for writing the word, definition, and sentence.
  - b. Use the right side of the paper for their illustration/thumb nail sketch.
  - c. When finished with each word, have them use a ruler to frame off each word as completed.

(Suggested format)	(Suggested format)
Vent: An opening in a volcano through which lava, ash, and gas can erupt. When visiting a volcano in Hawaii, we were told to not get too close to the vent.	Illustration for the vocabulary word vent might be showing steam escaping from a vent on a volcano. These are thumbnail sketches which are simple, but done neatly and colored.



## Terms and Definitions

ash.....	Tiny bits of blasted volcanic rock.
composite volcano.....	A volcano formed by layers of ash and lava; also called a stratovolcano.
crater.....	A deep bowl formed by either an explosion or a collapse.
dormant.....	A dormant volcano has erupted in historical times but is currently quiet.
eruption.....	An event that occurs when magma formed under a volcano reaches the earth's surface.
extinct.....	An extinct volcano has not erupted in the past ten thousand years and is not expected to erupt again.
hot spot.....	An active volcanic region thought to be fed by hotter-than-normal material coming from the earth's mantle.
lava.....	Magma that has erupted to the surface as either liquid or solid rock, also known as pahoehoe (paah-hoh-eh-hoh-eh): Hawaiian. Lava rock with a smooth, ropy surface formed by fast-moving liquid lava.
lava dome.....	A mound or pile of lava that can grow large and steep.
magma chamber.....	An area that holds melted or partially melted lava and gas beneath the earth's surface.
mantle.....	A layer inside the earth above the core (the very middle) and below the crust (surface layer).
pillow lava.....	Rounded or mushroom shaped lava rock formed when liquid lava erupts under water.
plug.....	Hardened lava that closes a vent.
pumice.....	A light-colored volcanic rock so filled with holes it can sometimes float on water.
shield volcano.....	A wide volcano mound formed when lava flows from multiple vents.
subglacial volcano.....	A volcano submerged under a glacier.
submarine volcano.....	A volcano on the ocean floor that has breached the water's surface.

### Extensions:

- Have students write a poem or newspaper article, design a postcard, etc., using a certain number of the vocabulary words.
- Crossword puzzle
- Word Search



**Rationale:**

Vocabulary is central to learning and language. Without sufficient vocabulary knowledge, students cannot understand what they read or what others say, or express their own ideas.

**Resources:**

Rusch, Elizabeth. *Volcano Rising*. Watertown, MA: Charlesbridge, 2013. Print.

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## **Wind, Fire, and a Horse: Commemorative Stamp of Goliath, a Hero**

Judy Chesley, Wasatch Range Writing Project

### **Summary:**

Students will be able to express their feelings about Goliath and the Great Baltimore Fire of 1904.

### **Objective:**

Students will write a letter to the US Postmaster General nominating Goliath for a commemorative postage stamp.

### **Context:**

A 6th grade elementary classroom, easily adapted for grades 4-8

### **Materials:**

- *Goliath* by Claudia Friddell
- Writing paper
- Art paper (suggested size 8x8/6x6)
- Pencil
- Colored pencils or other medium

### **Time Span:**

One or two class periods, or more as needed

### **Procedures:**

1. Present a brief history of commemorative stamps:

More than 1,800 commemorative stamps have been issued since the first in 1893. In considering subjects for commemorative stamps, the USPS Citizens' Stamp Advisory Committee, guided by twelve basic criteria, reviews and appraises the approximately 50,000 proposals submitted for commemoration each year. The postmaster general (PMG) has the final authority to determine both subject matter and design. A number of recommendations are introduced in Congress every year urging that consideration be given to a particular subject for commemoration, but few are passed. The commemorative stamp program contributed an estimated \$225.9 million in retained revenues for the USPS in 2005. Postage stamps were introduced in 1847, but for a half century the designs were limited to images of Presidents and founding fathers. The first commemorative postage stamp was issued in 1893 to mark the Columbian Exposition of that year. The success of the Columbian stamp series prompted the Post Office Department to continue offering stamps to commemorate historic events and places.

2. Show students some commemorative stamps. (The local post office may have some to sell you!)
3. Read the book *Goliath: Hero of the Great Baltimore Fire*.
4. Ask students to consider why Goliath should be on a stamp. Make a list on the board or chart paper.
5. Discuss who might help get Goliath on a stamp (their senator, the present mayor of Baltimore, horse lovers, firefighters, historians).



6. Ask students to pick one person or group to write their letter to.
7. Review the form for writing a letter.
8. Assign students a person to write to or let them choose.
9. Give students time to write their letter, using the reasons from #4.
10. Design a commemorative stamp for submission with each letter.

**Extensions:**

- Display the stamps (with names on the back) in the classroom and have students vote for the stamp of their choice. It may work best to narrow the entries down to the top three or five and then take another vote. Have the student with the winning stamp read his or her letter to the class.
- Have students do research on the specific criteria for a commemorative stamp.

**Rationale:**

Students will have an opportunity to express their understanding of the Baltimore fire. They will also practice persuasive technique and will see the connection between text and illustration.

**Resources:**

Friddell, Claudia. *Goliath: Hero of the Great Baltimore Fire*. Ann Arbor, MI: Sleeping Bear Press, 2010. Print.

Kosar, Kevin R. "Commemorative Postage Stamps: History, Selection Criteria, and Revenue Potential." *Congressionalresearch.com*, n.d. Web. Accessed 31 July 2017.

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## **Yellowstone Burning**

Pat Lowe, Wasatch Range Writing Project

### **Summary:**

This lesson will help students understand the destructive fires in Yellowstone National Park during the summer and fall of 1988. They will also learn new vocabulary, consider varied and opposing points of view, and discuss ways of resolving conflict.

### **Objectives:**

- Teach about the historic attitudes concerning fires held by the US Forest Service and the public at large.
- Study the events and consequences of the 1988 Yellowstone fires.
- Offer students an opportunity to consider alternative approaches to significant explosive situations in personal or public arenas.

### **Context:**

This lesson could be used as a lesson in history or science. It could be used as an example of conflict resolution or public/governmental policy. It would be appropriate for upper elementary and secondary students.

### **Materials:**

- Books from the Resources list
- Copies of selected passages: individual sheets, posters, or pages to be projected on a screen
- Large sheets of poster paper for display in the classroom
- Paper or individual student notebooks/journals
- Handouts included with this lesson: “Lessons from the 1988 Yellowstone Fires” and “Resource Sites for the 1988 Yellowstone Fires”

### **Time Span:**

Multiple sessions of 30–45 minutes each, with time in between for student reflection and writing.

### **Procedures:**

1. Ask students to write in their journals words for various feelings associated with fire.
2. As a class, list ideas on large pages of chart paper. Identify categories among the emotions listed, and expand the vocabulary of terms.
3. Discuss times and situations where fires occur and student attitudes toward how they should be treated.
4. View video stories about the 1988 Yellowstone fires.
5. Make a large chart of consequences of fires.



6. Read selections from texts or handouts. Divide class into small groups to study separate sections of the material, and report back to the class what they learned. Some groups could focus on the differing policies regarding fire suppression over time.
7. Create a chart listing the different attitudes and behaviors regarding large scale fires.
8. Analyze situations in current society which provoke verbal or physical reactions. Depending on the age of the students, select classroom or playground environments, drive-by shootings, racial conflicts or terrorist activity.
9. Let students reflect and write about themselves; ask them to consider situations at school or in their neighborhood which evoke strong opposing points of view.
10. Discuss results or consequences of various ways of handling situations involving conflict.
11. Explore alternative, non-violent ways to respond.
12. Have students write about an experience with one of the situations or feelings identified on the chart. The format might be a poem, rap, essay, diary entry, minutes of a public hearing or letter and response in a newspaper editorial section. Encourage them to identify a positive approach to resolving the incident.

### **Extensions:**

- Ask students to reflect in their journals about why they selected a particular format.
- Invite students to research Smokey Bear and consider how that campaign fostered public attitudes toward fires. How did it solidify the fire suppression policies of subsequent decades?
- Invite a speaker from the US Forest Service to talk about their work, and possible career choices.
- Discuss the Brian Head Fire in southern Utah during the summer of 2017. Talk about the causes and consequences of the fire.
- Talk about financial consequences for individuals who start fires.
- Have students take a position about cities allowing/banning the use of fireworks.
- Allow students to role play an incident from the texts or contemporary life.
- In their journals, have students identify emotions felt by various individuals in the texts. Ask students to write a series of letters between two individuals or characters.
- Have students write a response to one of the following prompts:
  - Fire is...
  - Forest and wildfires should... because...
- Let students debate the differing responses to fire or other “explosive” situations identified by class members.

### **Rationale:**

In the past, the official response to all fires on public land was total suppression. More recent philosophy and strategies suppress manmade fires, but allow natural caused fires to be monitored and fought in different ways. The topic offers possibilities for examining differing points of view on many topics, and individual decisions about how to respond to conflicts of opinion.



**Resources:**

Reinhart, Karen Wildung. *Yellowstone's Rebirth by Fire: Rising From the Ashes of the 1988 Wildfires*. Helena, MT: Farcountry Press, 2008. Print.

Silverstein, Alvin and Virginia, and Laura Silverstein Nunn. *Wildfires: The Science Behind Raging Infernos*. Berkeley Heights, NJ: Enslow Publishers, Inc., 2010. Print.

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## Lessons from the 1988 Yellowstone Fires

The most important lesson learned is that a number of ecosystems, including the one that contains Yellowstone, are specially adapted to large and intense wildfires. This was widely thought to be the case well before 1988, and the wildfires of that year drove the conclusion home. While large destructive fires are unacceptable in regions with extensive encroachment by communities, they are mandatory in a region such as the Greater Yellowstone Ecosystem, if it is to be maintained in a natural manner.

Franke, Mary Ann (2000). [“The Role of Fire in Yellowstone” \(pdf\)](#). *Yellowstone in the Afterglow*. National Park Service. Retrieved 2007-07-28. (*Wikipedia*). Web. Accessed 14 July 2017.

As a result of research conducted after the fires, a new fire management plan for Yellowstone was implemented in 1992. The plan observed stricter guidelines for managing natural fires, increased the staffing levels of fire monitors and related occupations, and allocated greater funding for fire management. By 2004, further amendments to the wildland fire management plan were added. According to the 2004 plan, natural wildfires are allowed to burn, so long as parameters regarding fire size, weather, and potential danger are not exceeded. Those fires that do exceed the standards, as well as all human-caused fires, are to be suppressed.

[“Fire Management Plan”](#). *2004 Update of the 1992 Wildland Fire Management Plan*. National Park Service. June 11, 2007. Retrieved 2007-08-08. (*Wikipedia*). Web. Accessed 14 July 2017.

The fires in Yellowstone left a mosaic of areas greatly affected and others less so. Inside fire perimeters, large expanses of forest were completely untouched.

Knight, Dennis H.; Linda L. Wallace (November 1989). “The Yellowstone Fires: Issues in Landscape Ecology.” *BioScience*. American Institute of Biological Sciences. **39** (10): 700–706. [JSTOR 1311001](#). doi:10.2307/1311001. Web. Accessed 14 July 2017.

There were three major types of burning. From an aesthetic viewpoint, the most destructive fires were the canopy crown fires that in many places obliterated entire forests. Crown fires accounted for about 41 percent of all the area that burned. Mixed fires burned both the canopy and vegetation on the ground, or burned one or the other as they spread through the forest. Ground fires spread slowly along the ground, consuming smaller plants and dead plant material; some ground fires burned for longer duration and intensity, contributing to the loss of many trees whose canopies were never directly burned.

The recovery from the fires began almost immediately, with plants such as [fireweed](#) appearing in a matter of days after a fire had passed. While surrounding national forests did some replanting and even dispersed grass seed by airplane, the regeneration in Yellowstone was generally so complete that no replanting was even attempted.



Seeds had little distance to travel, even in severely burned areas. Much of the most badly burned forest was within 160 to 650 feet (49 to 198 m) of less affected areas. Still, most regeneration of the plants and trees came from immediate sources, either above or below ground. Lodgepole pines generally do not disperse their seeds more than 200 feet (61 m), so seed dispersal from less burned parts apparently had little effect on more severely burned areas.

The resurgence of aspen after the fires was a contrast to pre-fire events, as aspen had been increasingly scarce in the park. This might be a temporary event as conifers continue to grow and eventually crowd out other tree species.

Franke, May Ann (2000). "Changes in the Landscape" (pdf). *Yellowstone in the Afterglow*. National Park Service. Retrieved 2007-08-03. (*Wikipedia*). Web. Accessed 14 July 2017.

Though some small plants did not immediately reassume their pre-fire habitats, most did, and the vast majority of plants regrew from existing sprouts which survived the heat from the fires. There was a profusion of wildflowers in burned areas, especially between two and five years after the fires.

Romme, William H.; Laura Bohland; Cynthia Persichetty; Tanya Caruso (November 1995). "Germination Ecology of Some Common Forest Herbs in Yellowstone National Park, Wyoming, U.S.A." *Arctic and Alpine Research*. INSTAAR, University of Colorado. **27** (4): 407–412. Retrieved 2017-07-14.

In regions that did experience complete burnouts, the average depth of charred soil was only about half an inch (14 mm), so few roots, even of grasses, were killed by the fire. This allowed rapid regeneration throughout the ecosystem.

The predominant tree in Yellowstone, the lodgepole pine, fared poorly from the fires, except in areas where the heat and flames were very mild. The lodgepole pine is serotinous and often produces pine cones that remain closed and will not disperse seeds unless subjected to fire. Research of test plots established after the fires indicated that the best seed dispersal occurred in areas which had experienced severe ground fires, and that seed dispersal was lowest in areas which had only minor surface burns.

Aspen became more widespread after the fires, occupying areas that had been dominated by conifers. It had long been believed that aspen regenerated by sprouting from existing roots rather than by seed dispersal. However, aspen sprouts appeared two years after the fires as far as 9 miles (14 km) from the nearest known aspen trees. Aspen is a preferred grazing food for elk and many of the newer aspen are consequently small, except in areas that are harder for elk to get to.

Turner, Monica; Romme, William H.; Tinker, Daniel B. (2003). "Surprises and lessons from the 1988 Yellowstone fires" (pdf). *Frontiers in Ecology and the Environment*. **1** (7): 351-358. Web. Accessed 17 July 2017.



## Resource Sites for 1988 Yellowstone Fires

[https://www.fs.fed.us/fire/prev\\_ed/index.html](https://www.fs.fed.us/fire/prev_ed/index.html)

Website for the U.S. Forest Service. Has numerous links for multiple topics.

<http://www.npr.org/templates/story/story.php?storyId=94126845> “Remembering the 1988 Yellowstone Fires.”

Print and audio (9:38 min) of an NPR series. “Twenty years ago, in the summer of 1988, Yellowstone caught fire...”

<https://www.nps.gov/yell/learn/nature/1988fires.htm>

“The Yellowstone fires of 1988 have been described as being instrumental in the public’s understanding of the role of fire in ecosystems, history-making, and career-building...”

<http://www.nytimes.com/2013/09/02/booming/lessons-from-the-yellowstone-fires-of-1988.html>

“The lessons learned from the summer of 1988 when fires burned nearly one third of Yellowstone National Park continue to shape the way we fight wildfires raging across the West today.” Retro Report video (11:20 min) available.

