A Delicate Balance: Geo-History of Wildfire in the American West

Students integrate historical inquiry and geo-spatial thinking to critically examine and analyze the economic, socio-political, and ecological factors and issues involved in wildlands fire policy.

Author: Kenneth F. de Masi
Grade Level: 7-12
Duration: 3-5 periods

National Standards
GEOGRAPHY ESSENTIAL ELEMENT THREE: PHYSICAL SYSTEMS 8: The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface.

HISTORY (NCHS) Historical Thinking Standard 1
The student thinks chronologically: Therefore, the student is able to: Interpret data presented in time lines and create time lines by designating appropriate equidistant intervals of time and recording events according to the temporal order in which they occurred.

Reconstruct patterns of historical succession and duration in which historical developments have

Arizona Geography Strand
STRAND 4 – GEOGRAPHY GRADE 7
Concept 5: Environment and Society
PO 1. Identify the physical processes (e.g., conservation of natural resources, mining, water distribution in Arizona) that influence the formation and location of resources.
PO 2. Describe the consequences of natural hazards.
PO 3. Describe how humans modify environments (e.g., conservation, deforestation, dams) and adapt to the environment.
PO 4. Describe the positive and negative outcomes of human modification on the environment.
PO 5. Explain how modification in one place often leads to changes in other locations.
PO 7. Compare different points of view and research on environmental issues (e.g., land use, natural resources, wildlife, biomes).

GRADE 8
Concept 5: Environment and Society
PO 1. Describe how humans modify ecosystems (e.g., deforestation, desertification).
PO 2. Describe why humans modify ecosystems (e.g., resources, economic livelihood).

Other Arizona Standards
SCIENCE STRAND 6 HIGH SCHOOL
Concept 1 Geochemical Cycles
PO 5. Describe factors that impact current and future water quantity and quality including surface, ground, and local water issues.

STRAND 1 - AMERICAN HISTORY STANDARDS CONCEPT 7: EMERGENCE OF THE MODERN U.S.
GRADE 7
PO 6. Describe the following Progressive Reforms that resulted from the Industrial Revolution (conservation of natural resources.)
GRADE 7 AND 8
CONCEPT 10: CONTEMPORARY UNITED STATES
PO 3 and PO 10. Describe how key political, social, geographic, and economic events of the late 20th century and early 21st century affected, and continue to affect, the United States.

GRADE HIGH SCHOOL
PO 3. Analyze how the following aspects of industrialization transformed the American economy beginning in the late 19th century:
c. Progressive Movement
d. Teddy Roosevelt (e.g., conservationism, national parks).

Concept 10: Contemporary U.S.
Current events and issues continue to shape our nation and our involvement in
unfolded, and apply them to explain historical continuity and change.

**Historical Thinking Standard 3**
The student engages in historical analysis and interpretation: Therefore, the student is able to:
Consider multiple perspectives of various peoples in the past by demonstrating their differing motives, beliefs, interests, hopes, and fears.

Draw comparisons across eras and regions in order to define enduring issues as well as large-scale or long-term developments that transcend regional and temporal boundaries.

**PO 3.** Explain how changes in the natural environment can increase or diminish its capacity to support human activities.

**PO 5.** Analyze changing ideas and viewpoints on the best use of natural resources (e.g., value of oil, water use, forest management).

**PO 6.** Explain how societies and governments plan for and respond to natural disasters.

**GRADE High School Concept 3 Physical Systems**

**PO 2.** Analyze different points of view on the use of renewable and non-renewable resources in Arizona.

**Concept 4 Human Systems - PO 6.** Analyze factors (e.g., social, biotic, abiotic) that affect human populations.

**Concept 5 Environment and Society**

**PO 4.** Analyze the environmental effects of human use of technology (e.g., overgrazing) on the environment.

**PO 6.** Analyze policies and programs for resource use and management.

the global community.

**PO 2.** Identify the connection between current and historical events and issues using information from class discussions and various resources.

**PO 3.** Describe how key political, social, environmental, and economic events of the late 20th century and early 21st century affected, and continue to affect, the United States.

**ELA COMMON CORE STANDARDS**
**READING STANDARDS FOR LITERACY**
**IN HISTORY/SOCIAL STUDIES**
**GRADES 6-8**

**Key Ideas and Details**

**RH.6-8.1.** Cite specific textual evidence to support analysis of primary and secondary sources.

**RH.6-8.2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

**GRADES 9-10**

**Key Ideas and Details**

**RH.9-10.2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

**Grades 11-12**

**Integration of Knowledge and Ideas**

**11-12. RH.7.** Integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem.

**WRITING STANDARDS FOR LITERACY**
**IN HISTORY/SOCIAL STUDIES**
**GRADES 7-8**

**Text Types and Purposes**

**6-8.WHST.1** Write arguments focused on discipline-specific content.

a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.

c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

d. Establish and maintain a formal style.

e. Provide a concluding statement or
Overview

Wildfires have been a part of earth’s history since time immemorial. For the greater part of the 20th century, the U.S. Forest Service practiced a type of fire management called suppression. Other, often contentious, models of ecosystem restoration and forest sustainability now challenge that policy.

Purpose

In this lesson, students use inquiry learning to critically examine and analyze, from multiple perspectives, the geography and history of wildfire in America and a century of U.S. Forest Service policies and practices of suppression and management.

Materials

- Outline and topographic maps of Arizona, western North America and Southwestern United States, and Internet map sites.
- The Greatest Good DVD or access to Internet video programs on 1910 Fires, i.e., YouTube.
- Sessions in Brief
- Key Issue and Vocabulary T-Chart.
- Student reading and writing assignment worksheet and answer key for The 1910 Fires
- Pens, colored pencils, drawing paper for political cartoons.
- Student reading copy of A Clash of Titans.
- Student copy of U.S. Forest Service for both background reading
- Forest Firefighting Policy sequence graphic organizer (timeline).
- Reconciling Frictions in Policy to Sustain Fire-Dependent Ecosystems and the concept graphic organizer.
- Student reading Managing Fire For Multiple Objectives: Blazing the Trail in the Southwest.
- Assessment Teamwork Checklist.
- Newspaper articles (Arizona Republic and/or others on wildfire) and graphic organizer for

GRADE 11-12

Text Types and Purposes

11-12. WHST.1. Write arguments focused on discipline-specific content.

Explanation: This standard requires students to write a persuasive composition that:

- states a claim and counterclaim
- presents detailed evidence, examples and reasoning to support effective arguments and emotional appeals
- structures ideas
- acknowledges and refutes opposing arguments

Student writing will use organization, sentence variety, and vocabulary which enhance the presentation of evidence. An effective conclusion to the work will be required.

Research to Build and Present Knowledge

11-12. WHST.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
position paper. [Note: archived articles on forest service and wildfire from the NYT and other news sources may be available and retrieved online as pdf documents for classroom use – see website resources].

- Teacher resource information on spatial thinking inquiry learning, political cartoons, and history habits of mind.

**Objectives**

The student will be able to:

1. Identify and define or explain key vocabulary terms, concepts, and issues related to wildfires and fire policy and management in the American Southwest.

2. Describe the process of plant succession in a forest ecosystem.

3. Diagram the chronology of each phase of U.S. Forest Service (including other federal agencies such as NPS, BLM, NFWS, BIA, etc.) fire policies from the early 20th century to the present.

4. Evaluate the process by which the policy of fire suppression came to be the standard approach to wildfire by drawing, sharing and discussing a political cartoon on the origins of the policy.

5. Analyze the historical and contemporary impact of the role wildfire suppression and management policies have played in the maintenance, preservation, restoration, and stewardship of America’s forests and grasslands by participating in a group project on the subject of benefits of healthy forest ecosystems on public lands.

6. Evaluate the impact of biogeography, history, and political, social, and economic issues on wildfires, fire suppression and management policies by researching the topic and composing a well-constructed persuasive composition, i.e., position paper.

**Procedures**

**Prerequisite Skills/Prior Knowledge:** Students should have basic understanding of conservationism as one aspect of the Progressive era in American history through the late 19th and early 20th centuries, including the establishment of the nation’s national parks, the preservation of forest land by Presidents Harrison, Cleveland, and Roosevelt, and the establishment of the United States Forest Service with Gifford Pinchot as its first administrator.

**SESSION ONE**

1. **Anticipatory Set:** Teacher will review briefly with students maps of the continental United States showing topographic and physical features, boundaries, and federal lands, and ask students what they notice about the location of the national parks, forests, and monuments.

2. **Think-Pair-Share:** Have students pair up and compose on paper a response to the question: “For what purpose do we have or need national forests and grasslands and how do you define a healthy forest?” Give them 5-10 minutes to complete this and then conduct a class discussion on this question having each pair share their ideas and definitions. From this sharing, develop a class-wide definition of what a healthy forest is and compare this definition with others you might find on the Internet (one such definition is included in the Teacher Resources).

3. **Map Review:** Review with students the maps showing the changes over time of the forested woodlands of the U.S. The 1873 map from the Library of Congress is very high definition and can be projected in great detail. Impress upon them the significance of the decrease in wooded forests, and especially the changes in the amount and location of virgin forests from 1620 through the 20th century.

4. **Audio-Visual:** Have students view the program segment “The Big Blowup” from the DVD The Greatest Good (approx. 3 mins). This is an excellent introduction to the early days of the U.S. Forest Service and the catastrophic wildfires that destroyed millions of acres in the Rockies and the Pacific Northwest. You can also find several other online video programs about the 1910 fires.

5. **Vocabulary:** Distribute copies of the Key Issues and Terms T-Chart and instruct students to provide definitions, explanations and/or examples of each as they encounter them in classroom discussions and in their assignments and research.

6. **Map Skills:** Project the high-definition maps (or have students visit the websites being referenced (Esri, NOAA, NASA, GeoMAC, Google®Earth, etc.). Provide an overview of some of these resources and lead students through a review of the fundamentals of biogeography, ecosystems,
and forest ecology. The Woods Hole Research Center and ArcGIS map sites provide an excellent and detailed image of the concepts biomass and carbon stock.

7. Closure for this day: Review with students the impact that this series of fires had on the American psyche and that it took place in the context of large wildfires that summer in other parts of the country as well.

8. Homework Assignment: Distribute and briefly review the reading and worksheet assignment “The 1910 Fires.” Individually, each student will read the brief history and respond in writing to each of the questions. This reading is also available online at the Forest History Society website. [Note: this assignment will provide students with the necessary understanding of why wildfire suppression became the standard policy for the federal government].

SESSION TWO
1. Anticipatory Set: Project on a screen some of the political cartoons on forest fires and climate change from the 21st century. Explain to students that these are contemporary to the students’ time and will someday, perhaps, be viewed much as the cartoons they observed the day before. Briefly discuss the meaning, impact, and controversial political nature of some of the cartoons.

2. Political Cartoon: Review with students the value of political cartoons in studying and understanding historic events. Project on a screen some of the political cartoons from the early 20th century and discuss briefly what issue each cartoon is representing or addressing. Distribute copies of the article “A Clash of Titans.” Instruct students to read it carefully to identify key ideas. These may include important issues, differences of opinion on policy, conflicts or problems, historical events, significant decisions, or interesting points of view. Have them use the drawing paper and pencils or pens to create an original political cartoon from one or more of the key ideas they have identified. Keep in mind the general requirements for a good political cartoon [borrowed from the PBS NewsHour political cartoon lesson plan website]: The cartoon must have a foundation in truth, it’s wit and humor is exaggerated not just to get a laugh, but to make a point about the character or subject of the cartoon, and it should have a moral purpose (giving the viewer something to think about, either supporting or refuting the message).

There will be an endless combination of possibilities with this assignment since the article is rich with information on the early days of the Forest Service.

[Note: you might reference the lesson plan on political cartoons from the National Archives: simply Google “political cartoons lesson plans National Archives”]. Students should use the cartoon analysis worksheet to guide them as they assess their own cartoon drawing as well as cartoons of the other students. Post the cartoons in the classroom and have students discuss their work and ideas.

3. Closure for this day: Remind students again of the importance of recognizing in what ways more than one interpretation of factual materials is valid.

SESSION THREE
1. Anticipatory Set: Review briefly the meaning and importance of thinking spatially in the study of geography and history. As students are working on this timeline assignment, ask them to identify possible (and potentially conflicting) reasons the policy of wildfire suppression came to be the standard response. Ask them to consider the occurrence of wildfire in America throughout the century in the context of other events taking place in the world. Ask them to think about the nature of wildfire and where it has often been situated in the continental U.S. in the past century, and especially in the past few decades? Finally, ask how we should evaluate the fire suppression model in the light of what we have learned from science about fire, the environment and climate?

2. Timeline: Review with students the skills needed to create a graphic timeline. Distribute copies of the article “The U.S. Forest Service” and copies of the “Forest Firefighting Policy Sequence Graphic Organizer” to the students. Have students, working in pairs, read through the history of the forest service and begin to develop a chronological sequence of major firefighting policies the agency has had in the past century, beginning with the policy of fire suppression. They are to identify the policy by its known name and provide a brief description, time frame, origin of purpose, or other significant information for each identified. The organizer chart is merely a guide for the students of how it might look when they are finished with their graphic timeline.

Note: Fire Suppression Policy, Custodial Management, the 10:00 A.M. Policy, Smokey the Bear campaign, the Wilderness Act, the fires in Rocky Mountain National Park and the Yellowstone fire of 1988, Appropriate Response, Controlled Burning, Backcountry wildfires, Wildland-Urban Interface fires and Exurban
Sprawl, and Fully-Managed, Multi-Use Forests are all examples of policies and events of significance.

3. Reading Assignment: Distribute the article from the Southwest Fire Science Consortium “Managing Fire for Multiple Objectives: Blazing the Trail in the Southwest.” This is a take-home reading assignment that will help students clarify post-2009 changes to federal wildfire management policy. Students can read this and take notes on it that will help them formulate thoughts for their written persuasive composition on healthy forests and wildland fire policy.

4. Homework Assignment: Distribute and briefly review the reading assignment “Reconciling Frictions in Policy to Sustain Fire-Dependent Ecosystems.” Each student will read the article and complete the assignment (graphic organizer) on the social and political factors that affect federal wildland fire policies. This reading is also available online on many websites — just Google the full title. [Note: this assignment will provide students with an understanding of the many factors that influence and complicate wildland fire policy for land managers.]

5. Closure for this day: Remind students that even with changes in federal wildfire policy, both wildfires and prescribed fires play a role in forest ecosystems, but restoration and protection of forested lands are also important. Forest ecosystems are dynamic and complex and a disturbance to any part of the network can upset the delicate balance of relationship, and affect the entire ecosystem. Fire is unique in that it can be either a beneficial natural process or a devastating catastrophe.

SESSION FOUR
1. Anticipatory Set: Review briefly with students how biogeography, climate change, drought and development sprawl has influenced the nature of wildfire in the last quarter century.

2. Group Project: Assign students to groups of 3 or 4 and distribute the graphic organizer “Benefits of Forest Ecosystems.” Students are to work together using various resources and information from the preceding lessons and those referenced in their resource list. They are to consider as many benefits to humans from ecosystems as they can, from the general categories to very specific examples of each. The example graph provides some major categories and some specifics, as well as questions that can be asked and answered for each general benefit. The actual chart they will develop will be drawn on poster board and displayed in class. You may choose to utilize the “Assessing Teamwork” tool.

3. In-Class Reading and Homework Assignment: Distribute the collection of newspaper articles and have students read through these as they formulate their thoughts for the written persuasive composition on healthy forests and wildland fire policy. [Note: These articles may also be substituted with others from local sources and they may be accessed electronically rather than as printed hard copies.]

4. Closure for this day: Review with students the idea that many of the wildfires of the past quarter-century have been what are termed “mega-fires” and it has been complicated by human encroachment in the wildland-urban interface. Accepting fire on the landscape, both lightning and human-caused, is one of the greatest challenges facing the American population in the 21st century.

SESSION FIVE
1. Anticipatory Set: Review briefly with students the definition of healthy forests that the class developed at the start of this lesson. Ask them to think about it again as they have now gained a better understanding of the relationship between fire, ecosystems and humans, and see if the definition still suits them.

2. Persuasive Composition: Students are to compose a persuasive composition that addresses the question: “How do you define a healthy forest and what should the federal policy on wildland fires be in order to ensure the future of healthy forest ecosystems?”

3. Closure for this day: Stephen Pyne reminds us that “Fire matters because nothing else can so alter the land at a stroke, which is why fire remains today, as at the founding of forestry in the United States, the great instrument of any land stewardship that seeks to preserve or enhance the ecological integrity of a place, and why, a century from now, scholars will look back and say that we too got it wrong in our particulars. What we can hope is that we will get the basics right: that fire is something many lands need, and that we as a species must do our part to get it right with dedication, humility, and tolerance.”

Assessment

The worksheet for the reading “A Clash of Titans” can be checked for accuracy and completeness.
The Graphic Organizer for the essay on “Reconciling Frictions in Policy to Sustain Fire-Dependent Ecosystems” can be checked for completeness.

Use the “Assessing Teamwork” sheet for the group project.

Students will submit their accumulated notes/T-Chart from each of the individual and group activities assigned. The teacher may choose to have students assemble their notes in a portfolio to include maps, timelines and other information.

Mastery on all of the above assignments will be considered 80% or higher.

The composition can be graded with the 6 Traits Writing in the areas of Ideas and Content. A four or higher on the 6 Traits will be considered mastery.

Extensions

Trace the history of federal (and/or local) laws and efforts to ensure or restore forest ecosystem health and the probable impact of the law or effort on wildfire.

Research one of the major catastrophic wildfires of the past 100 years and prepare a brief report on its cause, impact, results and possible lessons learned that influenced fire policy.

Examine the impact of the global climate change in the late 20th century and early 21st century on forest ecosystems in the American Southwest by creating a PowerPoint© presentation to share with the class.

Sources

Highly recommended reading:

Additional selected reading:
- Forest Sustainability: The History, the Challenge, the Promise by Donald W. Floyd; Forest History Society, 2002.
- The Tinder Box: How Politically Correct Ideology Destroyed the U.S. Forest Service by Christopher Burchfield; Stairway Press, 2012.

• Selected Films on Wildfire

The Greatest Good
The choices about how we use our rich natural heritage are filled with controversy. Whether it is the protection of endangered species or meeting the needs of a growing public, the fate of public lands is constantly challenged by the constraints of democracy. Visionary foresters Gifford Pinchot and Aldo Leopold shaped the debate over land stewardship for a hundred years. Their journey from the “wise use” of resources to the idea of a “land ethic” has defined the evolution of the Forest Service and the management of National Forests and Grasslands. (2005, 3-DVD set, 300+ min)

Nova: Fire Wars
In the program, NOVA accompanies the men and women of a wildland firefighting crew known as the Arrowhead Hotshots as they battle one of the most destructive wildfire seasons ever, the summer of 2000. (2002, DVD, 120 min.)

Yellowstone Aflame
An exciting film showing Yellowstone before, during, and after the Great Yellowstone Fires of 1988. Learn the complete story where the fires and their gale force winds destroyed millions of trees, burned nearly a million acres and yet, gave birth to a new cycle of growth that will insure a healthy forest for years to come. (2008, DVD, 65 min.)

Classroom Lesson Sources

The 1910 Fires Reading
http://www.foresthistory.org/ASPNET/Policy/Fire/FamousFires/1910Fires.aspx

http://www.idahoforests.org/fires.htm

http://www.idahoforests.org/fires4.htm

Managing Fire for Multiple Objectives Reading

YouTube Videos – Recommended!

Mann Gulch: The Wrath of Nature (9:56)
http://www.youtube.com/watch?v=wbs1Uqc-y4c

Smoke Jumpers – USDA (54:30)
http://www.youtube.com/watch?v=iFYDiwK1wrQ

The Great Fire of 1910 – Documentary (30:47)
http://www.youtube.com/watch?v=X3lsUEO0kjk

Forest Fires and Forest Management (17:04)
http://www.youtube.com/watch?v=U1Kh297dOZE

Forests Under Fire – Documentary (28:56)
http://www.youtube.com/watch?v=5WcT5cdu5Q