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Indian Education for All
Montana State Parks Lesson Plan
Lone Pine State Park

January 2010 (revised)

Title
Indigenous Uses of Fire in Western Montana

Content Areas
Social Studies; Science; Listening and Speaking

Grade Level
3rd -5th (Benchmarks listed herein are for 4th grade)

Duration
Total time: about 2.5 hours.
If you are not able to do all of the activities in one 2.5-hour segment of time, this lesson is divided into three parts of 35, 55, and 55 minutes, respectively.

Overview and Objectives

Lone Pine State Park is located near Kalispell, Montana. This region of Montana is a portion of the traditional tribal territory of the Kootenai. Lone Pine State Park, with its abundance of forest, is an ideal place to study the use of fire by Native peoples as a resource management tool. This lesson will introduce students to one important aspect in the relationship between indigenous people and their environment—intentional landscape and resource manipulation through fire. Students will learn that fire was a management tool for tribes in this region (specifically, in this lesson, the Kootenai, Salish and Pend d'Oreille peoples) and that the European and Euro-American impression that this continent was an "untouched wilderness" is false. Rather, tribes purposefully manipulated their environments for sustainability, esthetics and survival. Students will learn that tribal uses of fire were based on indigenous science and observation of their natural surroundings, and that this science is, in turn, grounded in the cultural traditions of these tribes. It is hoped that this lesson will help students appreciate and value the cultures and traditions of native peoples, while at the same time aid them in recognizing the importance of tribal contributions to modern natural resource management.

Education Standards and Benchmarks
Indian Education for All

Indian Education
Montana Office of Public Instruction
Denise Juneau, Superintendent

Essential Understanding 1: There is great diversity among the 12 tribal Nations of Montana in their languages, cultures, histories and governments. Each Nation has a distinct and unique cultural heritage that contributes to modern Montana.

Essential Understanding 3: The ideologies of Native traditional beliefs and spirituality persist into modern day life as tribal cultures, traditions and languages are still practiced by many American Indian people and are incorporated into how tribes govern and manage their affairs. Additionally, each tribe has its own oral history beginning with their origins that are as valid as written histories. These histories pre-date the "discovery" of North America.

Essential Understanding 6: History is a story and most often related through the subjective experience of the teller. Histories are being rediscovered and revised. History told from an Indian perspective conflicts with what most of mainstream history tells us.

Montana Content Standards

Social Studies Content Standard 3: Students apply geographic knowledge and skills (e.g., location, place, human/environment interactions, movement, and regions). *Rationale: Students gain geographical perspectives on Montana and the world by studying the Earth and how people interact with places. Knowledge of geography helps students address cultural, economic, social and civic implications of living in various environments.*
Benchmark 3.3 Students will describe and illustrate ways in which people interact with their physical environment (e.g., land use, location of communities, methods of construction, etc.)

Social Studies Content Standard 4: Students demonstrate an understanding of the effects of time, continuity and change of historical and future perspectives and relationships. *Rationale: Students need to understand their historical roots and how events shape the past, present and future of the world. In developing these insights, students must know what life was like in the past and how things change and develop over time. Students gain historical understanding through inquiry of history by researching and interpreting historical events affecting personal, local, tribal, Montana, U.S. and world history.*
Benchmark 4.7 Students will explain the history, culture and current status of the American Indian tribes in Montana and the United States.

Social Studies Content Standard 5: Students make informed decision based on an understanding of the economic principles of production, distribution, exchange, and consumption.
Benchmark 5.6 Students will identify and describe examples in which science and technology have affected economic conditions. *[In this lesson, students will be identifying and describing how indigenous uses of fire contributed to the functioning of their economies and affected the resources they utilized.]*

Speaking and Listening Content Standard 2: Students distinguish among and use appropriate types of speaking and listening for a variety of purposes. *Rationale: [People] must choose appropriate methods of communicating effectively with different types of audiences… Delivery choice must also fit the presentation… Likewise, different types of listening…are needed [for] different purposes and situations.*
Benchmark 2.3 Students will speak and listen effectively for a range of purposes.
Benchmark 2.4 Students will identify and appropriately use different types of presentation.
Benchmark 2.5 Students will identify and use different types of listening appropriate to the listening situation.

Speaking and Listening Content Standard 3: Students apply a range of skills and strategies to speaking and listening. *Rationale: Speakers carefully select a topic organization, development, language, and delivery techniques appropriate to the audience and the situation. Listeners choose strategies to draw connections as they monitor understanding, evaluate information, enhance aesthetic experiences, and overcome listening barriers. Good listening is active, learned, and developed through practice.*
Benchmark 3.1 Students will communicate in a focused and organized manner.
Benchmark 3.2 Students will select and use appropriate verbal language to convey intended meaning.
Benchmark 3.3 Students will identify and begin to use appropriate verbal and non-verbal skills to enhance presentations and manage communication anxiety.

Science Content Standard 3: Students 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**.** *Rationale: Students gain a better understanding of the world around them if they study a variety of organisms, both microscopic and macroscopic… The understanding of diversity helps students understand biological evolution and life's natural processes… The study of living systems provides students [with] important information about how humans critically impact Earth's biomes.*
Benchmark 3.4 Students will explain cause and effect relationships between nonliving and living components within ecosystems.

Science Content Standard 4: Students, through the inquiry process, understand how scientific knowledge and technological development impact communities, cultures and societies. *Rationale: Our world and human activity is shaped in many ways by the advances in science… Many different cultures contribute to science and technology. These advances affect different societies in different ways. It is vital that students understand the interrelationships of science, technology and human activity.*
Benchmark 4.1 Students will describe and discuss examples of how people use science and technology.

Materials and Resources

- **Attachments A-E**
- **Poster board, markers, pencils, etc… for making posters (10 total)**
- **Computers and internet access for research. (Needed for about 15-20 minutes per small group)**
- **The following materials for students' research:**

Books:

- ***The Salish People and the Lewis and Clark Expedition.*** Salish-Pend d'Oreille Culture Committee *and* Elders Cultural Advisory Council Confederated Salish and Kootenai Tribes, 2005. (pages 25-26, 30-32)
- ***Challenge to Survive (History of the Salish Tribes of the Flathead Indian Reservation) series, Unit I: From Time Immemorial: Traditional Life (Pre-1800).*** Salish Kootenai College Tribal History Project, 2008**.**
- ***Ktunaxa Legends*** by the Kootenai Cultural Committee, SKC Press, 1997. Pages 231-253.

DVDs: (These are also available online. See websites below.)

- ***Fire on the Land.*** Available at your school library, courtesy of OPI, and via the OPI's Indian Education website. It is a 7^{th}-8^{th} grade curriculum, but for this lesson students will be using only small parts of it for research. **Interactive DVD plays only on computer.**
- ***Beaver Steals Fire.*** See *Fire on the Land*. These two are a set. You only need this story if you are doing this lesson in the wintertime.

Websites: (Students will need access to these.)

- **http://fwp.mt.gov/education/ecosystem/home.html** This website by Montana's department of Fish, Wildlife and Parks is designed to teach kids about ecosystems and their components. For this lesson, the ecosystem being studied is the "Montane Forest"—which is what will pop up when you click on Kalispell on the map (see the opening page).
- **http://www.bluemountainbb.com/pu-ponderosa.html "History of the Ponderosa Pine."**
- **http://www.cskt.org/fire_history.swf** You can access Fire on the Land materials through this website, in addition to the Salish story, *Beaver Steals Fire*.
- Attachment F: "Culturally Scarred Trees," from previous OPI lesson plans.

Activities and Procedures

Teacher Preparation: For an overview of uses of fire by native people, please read Attachments C and B. (Read C first, as B is the second half of the report.) You may also like to preview the DVD Fire on the Land. There are parts of it which students will be asked to use in their research, and it will be easier if you are familiar with how to navigate this source. Also preview the FWP website on ecosystems, listed above, and the Vegetation and Animal components listed under "Montane Forest."

Part 1: Introduction to Tribal Uses of Fire (total time: about 30-35 minutes)
For Part 1, you will need 1 copy of each of the Attachments A, B and C, and *The Salish People and the Lewis and Clark Expedition, pages* 30-32.

1) Introduce this lesson to your class, using part 1 of the Teacher's Narrative (Attachment A), which incorporates pages 30-32 of *The Salish People and the Lewis and Clark Expedition*. (This will take about 15-20 minutes.)

2) Before sharing the list of indigenous uses of fire (Attachment B), give the students a chance to see what reasons they might think of for tribal uses of fire (beyond cooking and heating). Write their ideas on the board for them to read. (5 minutes)

3) Use Attachment B to compare, add ideas, or take away ideas. As you read the list aloud, write each reason on the board for students to see. (You do not have to write the full descriptions under each item, because students will be using this information for their posters later in the lesson.) Let them compare their list with the list from Attachment B. (10 minutes)

Part 2: Researching uses fire by western MT tribes (total time: One hour: 25-30 minutes for the research, and 25-30 minutes for poster-making. If you must, you can do each part on a different day.)
This segment of the lesson focuses specifically on the Kootenai, Salish and Pend d'Oreille tribes of western Montana. For this part of the lesson, you will need:

- ✓ **Attachment D (1 copy, cut into strips per category)**
- ✓ **10 large poster-board or similar material for making posters,**
- ✓ **Markers, pencils, paper for note-taking, and**
- ✓ **Access to computers for internet research. (See websites on Attachment D)**
- ✓ **Books and other print materials listed on Attachment D**
- ✓ **Poster and presentation guidelines (Attachment E)**

1) Cut the second copy of Attachment B into strips. These topics are some of the indigenous uses of fire that are documented in Montana and for which there are easily accessible resources for grade

appropriate student research. Divide the class into proportionate groups or pairs and assign each group or pair one of these topics.

2) Introduce this activity using "Teacher Narrative for Research and Poster Activity" on (Attachment A) (5 minutes)

3) Each group will research, using the suggested resources accompanying the topic or resources in your school library, the use of fire you have assigned. Using this material, students will make a poster and, later, present the poster to the class. Instructions for the poster and the research are given in Attachment D, and you might want to write these on the board or create a handout so students can refer to them as they work.

4) While students are doing their research and making posters, you may like to make a banner with the title "Tribal Uses of Fire in Western Montana" for the display of your students' posters at the end of the next activity. (You will need a long wall to display—maybe the hall.)

Part 3: Presentations and Displaying Students' Work (total time: 50-55 minutes)
This portion of the lesson is for students to present the posters they made. You might consider inviting another class to attend the presentations.

1) Each group or pair should be given about 4-5 minutes to talk about the use of fire they studied and the specific sub-topic they researched. Each student should have a chance to present part of the information.

2) Following the presentations, assist students in displaying their posters in your school hallway under the title "Tribal Uses of Fire in Western Montana."

3) Story: *If* it is winter (after the first snowfall), wrap-up this lesson by reading aloud the story "Coyote and his Family" in Ktunaxa Legends (Kootenai Culture Committee, c.1997) pages 231-253. This story includes a part about Coyote using fire to hunt deer. Like the Salish story, it is only culturally appropriate to tell in the winter time. (15-20 minutes)

An alternative story is "Beaver Steals Fire," included in the DVD set with "Fire on the Land" (Also available as a book). If you are doing this lesson in spring, early fall or summer, kindly respect the traditions of the Salish and omit sharing this story at this time. (5 minutes)

Evaluation

Participation, listening, discussion, research, posters, presentation.

Additional Resources and Extension Activities

- Invite a tribal member from the Confederated Salish & Kootenai Tribes to your classroom to learn about the use of fire by the native people.
- Go online or to your school library and read about logging in NW Montana from *Montana, Stories of the Land*, pages 232-234 and Chapter 12. (Find it at www.mhs.mt.gov)
- Read these great books to learn more about the tribes of the Flathead Reservation:

Coyote stories of the Montana Salish Indians, by Johnny Arlee, Salish Kootenai College Press, 1999.

Stories from our Elders, Salish Culture Committee Publications,

Ktunaxa Legends, by the Kootenai Culture Committee, Salish Kootenai College Press, 1997.

Kootenai Why Stories, by Frank Bird Linderman. Republished by Bison Books, 2005.

- Check out these websites for more information on the Kootenai, Salish and Pend d'Oreille tribes of Montana:

  http://anamp.org/BSP_Website/Flathead_Historical.pdf
  www.cskt.org

Attachments

Attachment A: Teacher's Narratives
Attachment B: Indigenous Uses of Fire (list by G.W. William)
Attachment C: History of Native Uses of Fire (for teacher preparation)
Attachment D: Research Topics on Uses of Fire by Western Montana Tribes
Attachment E: Poster Requirements and Presentation Guidelines
Attachment F: "Culturally Scarred Trees"

Attachment A—Teacher's Narratives

1. Teacher's Narrative for introducing this lesson

Lone Pine State Park is near Kalispell, in the northwestern corner of Montana. This region is part of the traditional tribal territory of the Kootenai tribe and was also used by the Pend d'Oreille (Kalispell). Like the rest of western Montana, this area is characterized by forests of pine, spruce and fir trees. Over many centuries, the indigenous people of our region studied the natural environment in which they lived. They developed techniques for managing the natural resources on which they depended—wildlife, plants, and the landscape itself.

> For a long time it was believed that the Native Americans had little impact on the land they inhabited, taking only what was needed and moving on. However this version of history is not true. Native Americans, and in fact all people, have changed the landscape they live on to meet their needs for survival and growth. Fires were purposely set by Native Americans for many reasons all critical for their survival… *(Source: USDA Forest Service, www.na.fs.fed.us/fire_poster/nativeamer.htm)*

How did tribes of Montana use fire?

How did they know when and how to use fire?

Here is some of the history on how tribes in Western Montana used fire:

(Read The Salish People and the Lewis and Clark Expedition, pages 30-32, starting at "Fall was also the most common time for burning…" and ending on page 32 at "clear-cuts."

Now, let's brainstorm what some of the tribes' purposes for fire might have been.
(return to Part 1, # 2)

2. Teacher Narrative for Research and Poster Activity

In 1855, a treaty between the United States and three tribal nations—the Kootenai, the Pend d'Oreille, and the Salish—reserved an area of tribal lands for these tribes. This area is called the Flathead Reservation, and it is located in the Mission Valley in western Montana. (If you have a Montana map in your class, please show the students where the Flathead Reservation is located. For the most part, the reservation area is traditional Pend d'Oreille territory that was also used at times by Kootenai and Salish people.) Although the Kootenai were not culturally or linguistically related to the other two tribes, one band of Kootenai people were settled on this reservation. The Salish were moved north, out of their homelands in southwestern Montana, to the Flathead reservation. It is important to remember, though, that these tribes have a very long history of interaction with the entire environment of all of western Montana, not just the land that is the reservation.

As you know, western Montana is forested, but it has many open valleys. Each of these tribes used fire to manage these forests and valleys. Today we are going to research some of the indigenous uses of fire from this list *(refer to the list on the board)* to see how the Kootenai, Salish and Pend d'Oreille tribes used fire in the past. We will be working in pairs or groups of 3 to make posters of our research. When we have finished, we will display our posters and present them to the class *(or to a visiting class).*

Attachment B—Indigenous Uses of Fire (North America)

The following list of documented uses of fire by indigenous peoples of North American comes from "Introduction to Aboriginal Fire Use in North America," by G.W. William, published in *Fire Management Today, 60(3):8-12 [2000]*. While most of the reasons on the list below were practiced in some form by tribes whose territories include what is now Montana; some only apply to other tribes.

Hunting - Burning of large areas to divert big game (deer, elk, bison) into small unburned areas for easier hunting and provide open prairies/meadows (rather than brush and tall trees) where animals (including ducks and geese) like to dine on fresh, new grass sprouts. Fire was also used to drive game into impoundments, narrow chutes, into rivers or lakes, or over cliffs where the animals could be killed. Some tribes used a surrounding fire to drive rabbits into small areas where they could be easily killed for food…

Crop management - Burning used in certain parts of the country to harvest crops, especially tarweed, yucca, greens, and grass seed collection. In addition, fire was used to prevent abandoned fields from growing over and to clear areas for tobacco. One report of fire being used to bring rain (overcome drought).

Improve growth and yields - Fire used to improve grass for big game grazing (deer, elk, antelope, bison, and later horses), camas reproduction, seed plants, berry plants (especially raspberries, strawberries, and huckleberries), and tobacco.

Fireproof areas - Some indications that fire was used to protect certain medicine plants by clearing an area around the plants, as well as to fireproof areas, especially around settlements, from destructive wildfires. Fire was also used to keep prairies open from encroaching shrubs and trees.

Insect collection - Using a "fire surround" to collect & roast crickets, grasshoppers, and smoke was used to drive bees from their hives to collect honey.

Pest management - Burning used to reduce insects (black flies & mosquitoes) and rodents, as well as kill mistletoe that invaded the fir and pine trees of the forest.

Warfare - Use of fire to deprive the enemy of hiding places in tall grasses and underbrush in the woods for defense, as well as using fire for offensive reasons, signaling, etc.

Economic Extortion - Some tribes also used fire for a "scorched-earth" policy to deprive settlers and fur traders from easy access to big game and thus benefiting from being "middlemen" in supplying pemmican and jerky.

Clearing areas for travel - Fires started to clear trails for travel through areas that were overgrown with grass or brush. Fire helped [provide] better visibility through forests and brush lands.

Felling trees - Felling trees by boring two intersecting holes with hot charcoal dropped in one hole, smoke exiting from the other. Another way was to simply kill the tree at the base by surrounding it with fire. Fire was also used to kill trees for dry kindling (willows) and firewood (aspen).

Clearing Riparian Areas - Fire used to clear brush from riparian areas and marshes for new grasses and tree sprouts (to benefit beaver, muskrats, moose, and waterfowl).

Attachment C—History of Native Uses of Fire *(for teacher preparation)*

Source: "References On The American Indian Use Of Fire In Ecosystems," by Gerald W. Williams, Ph.D., Historical Analyst, USDA Forest Service, Washington, D.C., with contributions by William Reed, Boise NF, Sandra Morris, Region 1, and Henry T. Lewis; May 18, 2001. *(This entire report is available online at: http://www.wildlandfire.com/docs/biblio_indianfire.htm)*

Evidence for the purposeful use of fire by American Indians (also termed Native Americans, Indigenous People, and First Nations/People) in many ecosystems has been easy to document but difficult to substantiate. Commonly, many people, even researchers and ecologists, discount the fact that the American Indians greatly changed the ecosystems for their use and survival. However, as Daniel Botkin pointed out, these impressions of a "benign people treading lightly on the land" is wrong:

> It often seems that the common impression about the American West is that, before the arrival of people of European descent, Native Americans had essentially no effect on the land, the wildlife, or the ecosystems, except that they harvested trivial amounts that did not affect the "natural" abundances of plants and animals. But Native Americans had three powerful technologies: fire, the ability to work wood into useful objects, and the bow and arrow. To claim that people with these technologies did not or could not create major changes in natural ecosystems can be taken as Western civilization's ignorance, chauvinism, and old prejudice against primitivism--the noble but dumb savage. There is ample evidence that Native Americans greatly changed the character of the landscape with fire, and that they had major effects on the abundances of some wildlife species through their hunting (Botkin 1990: 169).

Fire scientists often attribute old fire scars found in tree rings to natural causes, such as lightning rather than anthropogenic caused. However, there is a growing literature…that many of the so-called natural fires were intentionally caused.

Arrival of the Europeans

By the time that European explorers, fur traders, and settlers arrived in many parts of North America, a number of native populations were on the verge of collapse because of new diseases (smallpox) introduced accidentally and wide-spread epidemics (flu) against which the Indians had no immunity, In addition, warfare (with old enemies and new immigrants), new technologies (horse, iron, and firearms), change of economy (to fur trading and sheep grazing), different food sources (farming and federal handouts), and treaties (restricting or removing Indians from traditional lands) all had many consequences (some positive, many negative) on native cultures and populations

By the 1800s, many native languages and tribes were becoming extinct and knowledge of the "old" ways was dying. Only a handful of ethnographers and anthropologists (many employed by the Smithsonian Institution and/or the American Bureau of Ethnology) felt the need to record the Indian languages and lifestyles before the last of many tribes disappeared. Even fewer of these researchers asked questions about the native peoples deliberately changing ecosystems. Yet there is a growing body of literature (ethnobotany) about American Indians using native plants for food, medicine, and ceremonial uses, as well as plants/shrubs/trees for food, clothing, shelter, and tools. In addition, there is extensive documentation of tribes changing water flow (canals), practicing farming, grazing (horses, sheep, and cattle since the 1600s), using vegetation, wood, and bone for decorative arts, minerals for many uses, and building structures of wood, rock, and ice. These and other purposeful uses of and changes to "natural" ecosystems remain, for the most part, to be well documented.

Settlers and the Rich Prairies

Early explorers and fur trappers often observed huge burned over or cleared areas with many dead trees "littering" the landscape, without knowledge of whether the fires were natural or Indian caused. Written accounts by early settlers remain incomplete, although many noted that there was evidence of burned or scorched trees and open prairies or savannas with tall grasses in every river basin. The abundance of rich prairie land ("ready for the plow" without having to clear the land) was one of the primary reasons for settlers to head west to the Oregon Territory and California, and eventually to "back-fill" the Great Plains. There are many other accounts of travelers in forest areas commenting on the ability to see through/around the trees for long distances-obviously lacking in shrubs, brush, and small trees.

Through the turn of the 20th century, settlers often used fire to clear the land of brush and trees in order to make new farmland for crops and new pastures for grazing animals--the North American variation of slash and burn technology?-while others deliberately burned to reduce the threat of major fires--the so-called "light burning" technique. Since the uplands were still in government ownership (public domain), many settlers adjacent to the hills often either deliberately set fires and/or allowed fires to "run free." Also, sheep and cattle owners, as well as shepherds and cowboys, often set the alpine meadows and prairies on fire at the end of the grazing season to burn the dried grasses, reduce brush, and kill young trees, as well as encourage the growth of new grasses for the following summer and fall grazing season.

Role of Fire by Indians

Generally, the American Indians burned parts of the ecosystems in which they lived to promote a diversity of habitats, especially increasing the "edge effect," which gave the Indians greater security and stability to their lives. Their use of fire was different from white settlers who burned to create greater uniformity in ecosystems. In general, during the pre-settlement period, Indian caused fires were often interpreted as either purposeful (including fires set for amusement) or accidental (campfires left or escaped smoke signaling).

Most primary or secondary accounts relate to the purposeful burning to establish or keep "mosaics, resource diversity, environmental stability, predictability, and the maintenance of eco-zones (Lewis 1985: 77)." These purposeful fires by almost every American Indian tribe differ from natural fires by the seasonality of burning, frequency of burning certain areas, and the intensity of the fire. For those Indian tribes that used fire in ecosystems tended to burn in the late spring just before new growth appears, while in areas that are drier fires tended to be set during the late summer or early fall since the main growth of plants and grasses occurs in the winter. Indians burned selected areas yearly, every other year, or intervals as long as five years. Steve Pyne put much of the Indian use of fire into perspective as he reported that:

> The modification of the American continent by fire at the hands of Asian immigrants [now called American Indians, Native Americans, or First Nations/People] was the result of repeated, controlled, surface burns on a cycle of one to three years, broken by occasional holocausts from escape fires and periodic conflagrations during times of drought. Even under ideal circumstances, accidents occurred: signal fires escaped and campfires spread, with the result that valuable range was untimely scorched, buffalo driven away, and villages threatened. Burned corpses on the prairie were far from rare. So extensive were the cumulative effects of these modifications that it may be said that the general consequence of the Indian occupation of the New World was to replace forested land with grassland or savannah, or, where the forest persisted, to open it up and free it from underbrush. Most of the impenetrable woods encountered by explorers were in bogs or swamps from which fire was excluded; naturally drained landscape was nearly everywhere burned. Conversely, almost wherever the European went, forests followed. The Great American Forest may be more a product of settlement than a victim of it (Pyne 1982: 79-80).

Documented Reasons or Purposes for Indian Burning

Keeping large areas of forest and mountains free of undergrowth and small trees was just one of many reasons for using fire in ecosystems. What follows is a summary of documented reasons or purposes for changing

ecosystems through intentional burning by American Indians. This activity has greatly modified landscapes across the continent in many subtle ways that have often been interpreted as "natural" by the early explorers, trappers, and settlers. Even many research scientists who study pre-settlement forest and savannah fire evidence tend to attribute most prehistoric fires as being caused by lightning (natural) rather than by humans. This problem arises because there was no systematic record keeping of these fire events. Thus the interaction of people and ecosystems is down played or ignored, which often leads to the conclusion that people are a problem in "natural" ecosystems rather than the primary force in their development.

Henry T. Lewis, who has authored more books and articles on this subject than anyone else, concluded that there were at least 70 different reasons for the Indians firing the vegetation (Lewis 1973). Other writers have listed fewer numbers of reasons, using different categories (Kay 1994; Russell 1983). In summary, there are eleven major reasons for American Indian ecosystem burning, which are derived from well over 300 studies.*

This attachment is an excerpt from the full report listed above. Retrieved on July 27, 2009, from: http://www.wildlandfire.com/docs/biblio_indianfire.htm

** To see these 11 major reasons, go to Attachment B. It is the same list by the same author, but from a different publication.*

Attachment D—Research Topics on Uses of Fire by Western Montana Tribes

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Hunting - Burning of large areas to divert big game (deer, elk, bison) into small unburned areas for easier hunting. Fire was also used to drive game into impoundments, narrow chutes, into rivers or lakes, or over cliffs where the animals could be killed.

Research subject: Fire and hunting elk.

Research sources: ***Fire On the Land*** (DVD or website). Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the blue stripe, and then "Hunting." You will have to use the scrolling tool at the right of the page to read all of the material on using fire to hunt elk.) Your teacher has the web address.

Crop and Forest Management – Fire was used by tribes of Montana to take out competing vegetation from forested areas and also to slow or prevent the spread of trees into meadows. Tribes had observed that some trees, like the ponderosa pine could withstand controlled fires and fire would enhance their ability to grow by removing competing plant species. Tribes used trees in a variety of ways, including for food, construction and a variety of wood-based products.

Research subjects: Controlled fire and trees, and culturally scarred trees.

Research sources:

- **http://www.bluemountainbb.com/pu-ponderosa.html "History of the Ponderosa Pine."**
- **Attachment F: "Culturally Scarred Trees," from previous OPI lesson plans.**
- **A print source is:** ***Montana Native Plants and Early Peoples***. See pages 50-51, stopping when you get to "Flatheads and other people variously used ponderosa pine as medicine."

Improve plant habitat -- Some plants depend on fire for germination or benefit from fire's destruction of competing plants. Fire is used for camas reproduction, seed plants, and berry plants (especially raspberries, strawberries, and huckleberries). Camas has been found to grow and spread in moist meadows and in areas where quick fires have burned away competing vegetation.

Research subjects: Camas for the Tribes, fire for camas habitat.

Research sources: ***The Salish People and the Lewis and Clark Expedition,*** pages 24-25, start with the right column of page 24, where it says "By the end of May or beginning of June…"

Improve plant yields -- Some plants depend on fire for germination or benefit from fire's destruction of competing plants. Fire is used for camas reproduction, seed plants, berry plants (especially raspberries, strawberries, and huckleberries), and tobacco. The Kootenai grew a unique kind of tobacco. All three tribes picked huckleberries in addition to service berries, chokecherries and others.

Research subjects: Tribal use of huckleberries, fire and huckleberry habitat.

Research sources: ***Fire On the Land*** (DVD or website): Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the blue stripe, and then "Berries." You will have to use the scrolling tool at the right of the page to read all of the material huckleberries and chokecherries.

Animal habitat diversity – Fire used to improve grass for big game grazing (deer, elk, antelope, bison, and later horses), clear forested areas of brush and undergrowth and to make meadows and open places better for deer, elk and other big game.

Research subjects: Fire use for creating or improving elk, deer, and/or horse habitat.

Research sources: *Fire On the Land* (DVD or website): Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the blue stripe, and then "Horses." You will have to use the scrolling tool at the right of the page to read all of the material horses.

Also, go to: http://fwp.mt.gov/education/ecosystem/home.html At this website, click on the yellow part of the map of Montana. This will take you to the "Intermountain Grassland" ecosystem type. Read about the importance of these meadows and grasslands for animal habitats and plant diversity. You can click on the links to wildlife and vegetation types in this habitat type to learn about some of the animals and plants who live in this habitat type.

Fireproof areas – Montana tribes used fire to clean areas around campsites to protect them from wildfire and afterwards when moving camp to clean up the site.

Research: Keeping a Clean Camp

Research sources: *Fire On the Land* *(DVD or website)*—Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the blue stripe, then "Cleaning." You will have to use the scrolling tool at the right of the page to read all of the material on using fire for a clean campsite.

Diversity of habitat types - Fire was used to keep prairies open from encroaching shrubs and trees. Meadows and prairies within the forested region were especially important, as they provided animal habitat for deer and elk and also plant habitat for important foods like bitterroot and camas.

Research topic: Meadow habitats and fire, bitterroot.

Research sources: (1) Pages in 2-5 ***Challenges to Survive, Unit I: Form Time Immemorial: Traditional Life, Pre-1800.*** This will tell you about the importance of bitterroot for the Salish and Pend d'Oreille.

(2) Check out the website at **http://fwp.mt.gov/education/ecosystem/home.html** At this website, click on the yellow part of the map of Montana. This will take you to the "Intermountain Grassland" ecosystem type. Read about the importance of these meadows and grasslands for animal habitats and plant diversity. You can click on the links to wildlife and vegetation types in this habitat type to learn about some of the animals and plants who live in this habitat type.

(3) If you have time, use the inter-active DVD, ***Fire On the Land*** (or the website). Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the blue stripe, and then "Brush" and also "Beauty." You may have to use the scrolling tool at the right of the page to read all of the material.)

Warfare and Communication - Use of fire to deprive the enemy of hiding places in tall grasses and underbrush in the woods for defense, as well as using fire for offensive reasons, signaling, etc. Signaling with fire (smoke, really) was used to notify tribes or bands nearby of something important, such as the time had come to travel west for bison hunting.

Research subject: Fire for communication.

Research sources: *Fire On the Land* (DVD or website): Click the tab marked "History" near the bottom of the page. Then click on "Traditional Culture" on the orange stripe, then "Reasons for Burning" on the

blue stripe, and then “Signaling.” You may have to use the scrolling tool at the right of the page to read all of the material.)

Clearing areas for travel - Fires started to clear trails for travel through areas that were overgrown with grass or brush. Fire helped [provide] better visibility through forests and brush lands.

Research subject: Who made those broad, open forests observed by Lewis and Clark?

Research sources: ***Fire On the Land*** (DVD or website): Click the tab marked “History” near the bottom of the page. Then click on “Traditional Culture” on the orange stripe, then “Reasons for Burning” on the blue stripe, and then “Trails.” After that, check out “Brush” and also “Beauty.” You may have to use the scrolling tool at the right of the page to read all of the material.)

Clearing Riparian Areas - Fire used to clear brush from riparian areas and marshes for new grasses and tree sprouts (also to benefit beaver, muskrats, moose, and waterfowl).

Research Subject: Riparian ecosystems.

Research Source: **http://fwp.mt.gov/education/ecosystem/home.html** At this website, click on the **yellow** part of the map of Montana. This will take you to the “Intermountain Grassland” ecosystem type. Read about the importance of these meadows and grasslands for animal habitats and plant diversity. You can click on the links to wildlife and vegetation types in this habitat type. Within this section, you will find the word “riparian.” Hold the mouse over it and the definition will pop up. You can use this definition in your presentation.

You might also look in a science book for more information on riparian habitats!

Attachment E

Poster Requirements and Presentation Guidelines

1. Use the sources provided with your topic to find out as much as you can about your topic and the specific subjects listed with it. (Your librarian or teacher or Indian Ed coach might also have additional resources to suggest for research.) Make sure everyone in your group gets to participate in doing the research, making the poster, and presenting to your class.

2. Create your poster. Each poster must have the following information:

Title (The use of fire that you chose—such as "Hunting" or "Felling Trees")

A short definition of this use.

Specific subjects you researched related to this topic (such as "riparian ecosystem" or "camas" or "elk habitat").

Information you gathered on these subjects from the suggested research materials. You can do this as a list, if you like. For example, you could have a picture of a habitat type and list the animals that live there next to it. Be sure your information is accurate to western Montana.

Pictures and illustrations of these subjects. If drawing, try to be as accurate as you can (for instance, make a Ponderosa tree look like a real Ponderosa tree, not just like a green Christmas tree.) Pictures are important!

Tribal names—when talking about a resource or use of fire, please be sure to tell which of these three tribes (Kootenai, Salish, Pend d'Oreille) you are talking about (can be more than one). Remember, too, some sources might mention other tribes that used western Montana, like the Shoshone, Bannock, etc…

A list of sources where you got the information (You can list on the back, with your names.)

3. Be prepared to present your poster. When speaking to the class, use a loud, clear voice, so everyone can hear you. Remember to refer to the information on your poster.

4. Remember to be a good listener when others are presenting and when your teacher is speaking.

5. Have fun!

Attachment F—"Culturally Scarred Trees" research source for students

The Salish, Pend d'Oreille and Kootenai tribes generally have occupied Wild Horse Island State Park—Kwelkani Mi in the Kootenai language—and the Flathead Lake region for at least 5,000 years (Travel Montana). The Salish- Pend d'Oreille Culture Committee says the time span is 9,000 to 15,000 years ago (S-PCC 2005, p. 8). Horses were probably kept on the island from the time of their introduction to the Northern Rockies in the early 1700s until the early 1880s, when the tribes were forced onto the reservation, now called the Flathead Indian Reservation. In the early 1900s the Allotment Act, or the Dawes Act, for the most part, took the island out of Salish-Pend d'Oreille and Kootenai tribal hands for the settlement of whites.

The Salish, Pend d'Oreille and Kootenai tribes also used Wild Horse Island and the Flathead Lake area generally for the harvesting of cambium, a nutritious food product found just under the bark of the Ponderosa pine and other conifer trees (S-PCC 2005, p. 26-27). The cambium is obtained by peeling away the outer bark to obtain the tree's sweet cambium layer. Strips of cambium were rolled into balls and stored in green leaves to prevent drying, or were tied into knots to be eaten more easily.

Sometimes mistaken for scars resulting from forest fires, these peeled-cambium scars generally are found on mature Ponderosa pine trees, beginning about 3 feet from the base of the tree. Even though some scars are very large--up to 8 feet long and 2 feet wide, they do not harm the tree. Presently, there are 12 "culturally scarred" or peeled trees at or near the Skeeko Bay Landing site at Wild Horse Island State Park. These trees range in age from 90-200 years old.

Culturally scarred, or peeled, trees are found throughout the Flathead Lake area, generally. Fifty have been located within Glacier National Park (Whitacre). Today these trees are living guardians of an ancient story. They provide valuable information about travel routes and food resources during the time period when native tribes occupied this area. Culturally scarred, or peeled, trees are protected under the National Historic Preservation Act (Bitterroot National Forest).

The Journals of the Lewis and Clark Expedition include several references to peeled trees:

> ...saw where the natives had pealed the bark off the pine trees about this same season. This the indian woman with us informs that they do to obtain the sap and soft part of the wood and bark for food.
>
> July 19, 1805, near the "gates of the Rocky Mountains" on the Missouri River, near Helena, Montana

> I mad camp at 8 on this roade & particularly on this Creek the Indians have pealed a number of Pine for the under bark which they eate at certain Season of the year, I am told in the Spring they make use of his bark.
>
> September 12, 1805, on Lolo Creek, in western Montana
>
> Christine Whitacre

Photo: NPS & RMCESU

Ponderosa Pine (*Pinus ponderosa*). Scars are often visible on the trunks of large, centuries old Ponderosa pine trees. In the Bitterroot Valley and its surrounding mountains, such trees stand as living testimony to the presence of Salish, Pend d'Oreille and Kootenai tribes, and other American Indians in the Flathead Lake area of northwest Montana more than a hundred years ago.

US Forest Service, Bitterroot National Forest,
"Plants of Historic Significance"

(Copied from the 2006 OPI Wild Horse Island State Park Indian Education For All Lesson Plan.)