Arthur Carhart National Wilderness Training Center's

Wilderness Investigations

High School

Wilderness Applications/Lesson 1
Fire and Wilderness

Goal: Students will explore the natural role of fire, how fire fits into wilderness landscapes and the challenges wilderness fire can bring to public land managers and communities.

Investigation Objectives

Audience: 9-12 grades.

- Students will deal with wilderness fire scenarios and test their grasp of what the Wilderness Act says, how fire and wilderness might stress wilderness-adjacent communities, and other wilderness fire challenges. (Behavior)
- Students will be listen to a simple fire ecology presentation and explore fire and wilderness issues. (Condition)
- Students will take part in wilderness fire scenarios and decision-making exercises. (Degree)

Common Core Standard Connections

NOTE: See Common Core Standards sections to see listed objectives for this and other lessons/activities.

Time Requirement: 50 minutes

Location: Lesson—Classroom Extension—Burned areas

Materials/Resources Needed and Pre-Investigation Tasks

- Regional map (hard copy or online; large enough for the class to view
- Current/recent regional wildfire information
- Wilderness Fire Scenario sheets for student groups

Teacher Background

Review the Fire Triangle as well as regional wildfire data for the current year before starting this lesson. Students will review the critical role of natural fire to fire-prone ecosystems and the challenges that fire brings to wilderness managers, fire management teams, and local communities/residents when fires occur in both wilderness and non-wilderness.

Step-by-Step Presentation Instructions

Step 1: Introduction

- Fire (and smoke) is on a lot of people's minds these days in many parts of the country.
    - Indicate on a map of your region the locations of major fires during the past year.
        - A simple Internet search should provide current information.
- Review the *Fire Triangle*
    - What do we need in order to have fire?
        - Heat (Possible sources? Match, cigarette, campfire, lightening, car engine, etc.)
        - Fuel (Possible fuels? Wood, gas, oil, grass, etc.)
        - Oxygen

Step 2: Fire History

- Fire is a major natural process in many parts of the country.
    - Plants and animals that occur here naturally are adapted to living in a place that burns regularly.
        - Some have evolved to the point that without fire they are not able to flourish or reach their maximum potential.
        - Examples:
            - Lodgepole pine: Thin bark, relatively short-lived, need sun exposure; Adaptation to fire: **Serotinous cones**
            - Ponderosa pine: Long-lived, thrive in open stands; Adaptation to fire: **Thick bark on mature trees**
            - Lewis woodpecker: Insect eater; Adaptation to fire: **Long beak that allows probing burnt trees for insects that come in after fire**
            - Fireweed: Perennial, fast-growing, open sunny areas; Adaptation to fire: **Often found the first year (and subsequent years) after a fire due to sunny conditions--creates shade/cooler ground temperatures for other plants.**
            - Aspen: Requires lots of open, sunny exposure; Adaptation to fire: **Root systems can remain dormant for long periods of time once a stand has been overcome by shady conditions and once fire opens up they come out in thick suckers from roots.**

- Many Native People did *manage* certain areas with fire to keep trees from overtaking grassy areas that were used by large animals they hunted, and later, their horses.
- Mostly, fires burned regularly and kept the system that had evolved in balance.
- By the early - mid 1900's public policy and new technology allowed humans to, at least partially, control fire (i.e. Smokey Bear).
    - Less fire = More timber
- Experience has now taught us that humans cannot always control fire (e.g. the 1988 fires in Yellowstone National Park).
- Over time, as fire has not been allowed to play its role in the natural story of this place forests have grown unnaturally thick, unhealthy and prone to catastrophic fire events (i.e. 2010, 1988, 2000, etc.).

<u>Step 3</u>: Wilderness and Fire

- What do you think fire's role in wilderness is?
- What elements of the Wilderness Act address fire? (untrammeled, natural processes, etc.)
- So, is fire always allowed to burn in designated wilderness? (No, fire managers take advice from wilderness mangers but then make decisions to protect property, life, resources, etc.).
- Small group activity: *Wilderness Fire Decision-Making*
    - Pass out Wilderness Fire Scenarios to small working groups.
    - Provide time for them to work through the scenarios.
    - Have groups share scenarios and decisions.

<u>Extension Ideas</u>

- Visit a recently burned and historically burned site and compare/contrast them to areas that have not burned.
- Have a wilderness manager, fire ecologist, fire manager, and others take students on a fire tour or have them visit your class and share their wilderness fire perspectives.

Wilderness Fire Scenario #1

Lightning ignites a fire in designated wilderness. Pine beetles, a naturally occurring insect, have killed large stands of lodgepole and ponderosa pine. Fire has historically burned through the area renewing and restarting forest cycles. Wilderness is to be managed in an "untrammeled" way (allowing naturally occurring processes to take place). Residents west of the fire are concerned about their property (homes, ranches, timber) and want the Forest Service to suppress the fire. As wilderness managers, what is your recommendation and why?

Recommendation

Why?

Wilderness Fire Scenario #2

A wildfire starts when a vehicle, dragging a chain attached to a trailer along a paved forest road, causes sparks and then fire. It spreads quickly through a thick stand of extremely dry forest. Initially the fire is fought but when it burns into adjacent designated wilderness fire managers must decide whether to fight it or let it burn. Fire was not allowed to burn for nearly 100 years in this area before wilderness designation. You, as wilderness managers, must determine if this unnaturally started fire should be allowed to burn.

Recommendation

Why?

Wilderness Fire Scenario #3

A lightning-caused fire has been burning in remote, designated wilderness for over a month during an especially dry/hot summer. Wilderness managers have been monitoring the fire but are pleased with the natural event that is helping the wilderness maintain its wilderness character. After a few weeks of smoke, residents in a populated rural/suburban/urban valley are beginning to complain about the unhealthy smoky conditions. How could wilderness managers respond to these complaints?

Recommendation

Why?

Wilderness Fire Scenario #4

After an especially active fire season, with many fires allowed to burn in designated wilderness, many local residents are calling on management agencies to aggressively fight all fires in the future (naturally occurring and human-caused). Some of these residents are incredibly worked-up and angry. As wilderness managers how do you respond?

Recommendation

Why?