Prairie Fire Ecology

Description: In this program, students will learn all about prairie fire ecology. This program covers indigenous uses of fire, how fire keeps the prairie healthy, and how scientists today use fire to restore and conserve prairie ecosystems. This program includes a brief lesson on prairie fire ecology, some indigenous folklore, and a hands-on experiment where students get to build and set their own model prairie fires.

Type of Program: School Field Trip
Grade Level(s): 6-8
Duration: 90 minutes (one and a half hours)
Season(s): Fall, Spring, Summer
Location(s): Evanston Ecology Center, Lighthouse Beach, Lovelace Park

Program Objectives

Big Idea: To understand how fire can be used as a tool in prairie habitat conservation and how indigenous peoples have historically used fire.

Learning Goals:
Students will:

- Be able to describe how conservationists use fire as a tool to restore prairie habitat. Students should understand that fire reduces shrubby invaders and invasive species
- Be able to name a few historical uses of fire by indigenous peoples of the Midwest
- Understand how a prairie fire starts and the factors that impact its spread

Educational Standards (format below):
MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Content and standards fit within the District 65 grade and unit (format below):
7th grade unit: 7.4 Matter Cycling & Photosynthesis
Carbon cycling

Materials

- Model wood boards (with 8x8 holes for matches)
- Matches (lots)
- Lighter
- Spray bottle (filled with water)
- Small handheld fan (to act as wind)
- Square aluminum trays (the wood boards will sit in here)
- Bucket o' water (in case fire spreads)
- Stopwatch (to time how long fires take)

Set Up

Location setup: *This program does not require much location setup. If available, set the class up with the given slidedeck. If a screen is not available use the field presentation document to review prairie fire ecology with the class.*

Activity setup: *The activity requires creation of several wood boards with a grid of holes (8x8). Students will be given a certain number of matches for each experimental burn. It is helpful to have the boards created and matches grouped into sets of 32 before your class arrives.*

Supplies setup: *Create several wood boards with a 8x8 grid of holes (total: 64 holes). Fill a bucket with water in case the fire spreads from the board. Fill a small spray bottle with water to act as rain and grab a small handheld fan to act as wind. You will need many matches and a lighter to light said matches.*

Story setup: *You should begin your program with a lesson about prairie fire ecology. After this lesson, you can read the indigenous short story to hammer home some of the ideas covered in the previous lesson. After reading the indigenous short story, you can move into the experiments. Make sure to conclude by asking the class what they learned about prairie fires.*

Field Trip Outline

---

*For more detailed information on the topics you will be presenting, see background information and useful links in the **Background Information** section*

Introduction (10 minutes)

- Have students sit in a circle on the rug. Introduce yourself, the topic for today, and the rules for the field trip.

Lesson: A Brief Introduction to Prairie Fire Ecology (20 minutes)

- Run through the provided slidedeck with your class. If you are in an area where a screen or computer is not available to you, use the field slides document to review the information with them without the slides. Make sure to stop frequently for questions as this can be a difficult concept to grasp.

Short Story: World of Fire (10 minutes)

- Read this indigenous short story to the class. This story describes how fire began on this planet and how it was spread around the globe.

Experiment: Build a Model Prairie Fire (40 minutes)

- This experiment begins with an instructor demonstration. Then, students will split into small groups and create their own model prairies to burn. There are two rounds: one round where students attempt to build a fast-burning prairie and one where students attempt to build a prairie that burns slowly. Detailed experiment instructions are provided titled *PFE_DemoOutline*.

Conclusion (About 10 minutes)

- End the program back in the area you started. Have the students sit on the floor or in their chairs and ask them about what they have learned. - before vs after of fire

Background Information

Fire has long been an essential part of prairie ecosystems, keeping shrubby invaders and invasive species from overtaking the grasslands. For centuries, indigenous peoples harnessed this power deliberately, using fire not just for survival but as a tool for political and economic gain. Today, conservationists carry that legacy forward, using controlled fire to restore what remains of Illinois's prairies. According to the Illinois Department of Natural Resources (IDNR), only 0.01% of the state's original 22 million acres of prairie survives today. Fire is an essential tool for bringing Illinois's landscape back to its former beauty. It is important that students come away understanding fire's restorative power.