Prairie Fire Ecology

Field Reference Guide

Evanston Ecology Center

Opening Discussion Prompt

Wildfires raise different questions, thoughts, and emotions in different people. Before beginning, have students think, pair, and share:

> ***"What are your thoughts and feelings about wildfires?"***

Indigenous Uses of Fire

Evanston sits on the homelands of the Council of Three Fires — made up of the Potawatomi, Ojibwe, and Odawa tribes. This land served as a meeting place for the council to have military and political discussions.

Fire was an important tool that did many things:

- Used to herd bison into groups for hunting
- Helped maintain the prairie, keeping trees, shrubs, and invasive plants from taking over the grassland
- Low-intensity fires reduced populations of pests like ticks, rodents, poisonous snakes, and mosquitoes
- Used to clear land for various reasons, such as agriculture, economic exploitation, and war
- Fire is a powerful and meaningful force that all living beings have a connection to

Use of Fire in Ecology

Even today, fire is an important tool used by both nature and biologists. While natural prairie fires still occur, biologists often deliberately set prairie fires referred to as prescribed burns.

Prescribed burns are used to:

- Promote native plant growth — the prairie is a fire-dependent ecosystem
  - Some native plants (e.g., big bluestem) need fire to germinate (start growing)
- Control invasive plants like shrubs, trees, and saplings
  - Example: invasive buckthorn would take over and crowd out wildflowers and grasses
- Remove dead plant material ("thatch") to allow younger plants to get sunlight
  - The ash from thatch returns mineral-rich nutrients to the soil

How Does a Prairie Fire Start?

Prairie fires can start from a variety of sources. Ask students to guess how a fire could start in a grassland before revealing these:

- Prescribed burns — deliberately set by land managers and biologists
- Lightning strikes — a natural, historic cause of prairie fires
- Human activity — sparks, campfires, equipment, or carelessness

How Does a Prairie Fire Spread? — The Fire Triangle

Prairie fires typically occur in the dormant seasons, when plants are not actively growing. Dry, dead plant material (thatch) acts as fuel for the fire to spread.

Every fire needs three things to burn — remove any one and the fire goes out:

- FUEL — dry, dead grass and thatch that accumulates on the prairie
- HEAT — an ignition source, such as lightning or a deliberately set spark
- OXYGEN — supplied by the open, windy prairie landscape; wind also pushes flames forward into new fuel

This is called the fire triangle, and it's the same logic land managers use when planning and controlling a prescribed burn: manage the fuel (mow firebreaks, choose burn timing), control the heat (careful, deliberate ignition), and read the oxygen/wind conditions (only burn on calm, favorable days).

Now that we've learned all about prairie fires, let's go experiment with them!