



What is?

FIRE BEHAVIOR

Fire behavior is the way a fire acts - how and when fuels ignite, flames develop, and fire spreads as influenced by its interaction with fuel, weather, and topography.

The Fire Behavior Triangle is used to describe how a fire burns or how it 'behaves' and includes three components: fuels, weather, and topography. Fuel is the only component that land owners and managers can influence.



Credit: NWCG

The Fire Behavior Fire Fact is part of a series of Fire Facts that addresses Fire Behavior. For more in-depth information on Fuels, Weather, Topography, Types of Fire, Parts of a Fire, Measures of Fire Behavior and Fire Regime visit the [Northwest Fire Science Consortium's website](#).

What do we mean by fire behavior and what does that include?

Fuels, weather, and topography

Fuels consist of dead woody and plant-based materials and live trees and vegetation. Structures like homes are also considered fuel. Fuel characteristics like type, amount (loading), availability, and arrangement influence fire behavior.

Weather can influence how hot a fire burns (intensity), how much and what is killed (severity), and how large it grows (size) through wind, temperature, precipitation, and relative humidity.



Photo credit: USFWS

Topography can influence fire behavior through changes in slope, aspect, and elevation across different features of a landscape.

Types of fire

A wildland fire can be described as ground, surface, or crown fire. The photograph (USFWS) shows an example of a surface fire. A wildfire will generally exhibit all three fire types throughout the duration of the fire. The proportion of each type can vary greatly day to day depending on fuel, weather conditions, and topography.

FIRE FACTS

Parts of a fire

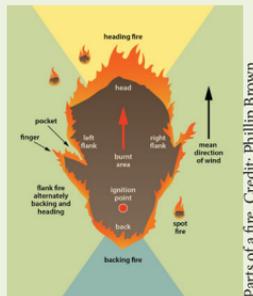
Different areas of the fire are usually determined based on the predominant direction of fire spread and are delineated from the fastest moving area (head) to the slowest moving area (back, base or tail). Parts of a fire include the origin, perimeter, head fire, backfire, flank, fingers, pockets, islands, and spots.

Measures of fire behavior

The rate of spread measures how quickly a wildfire moves across the landscape, typically in feet/hour. Other measures include: fire line intensity, flame length, flame height, torching, crowning, fire whirls, and spotting.

Fire regime

Fire regimes describe the role of fire in the landscape and measure how often (frequency) the dominant vegetation is affected (severity) and how large an area burns (size). An example of a fire regime is the eastside dry mixed conifer forests in the Pacific Northwest. Historically fires in these forest communities have burned with low severity every ~25 years.



Parts of a fire. Credit: Phillip Brown

For more information:

[Fire Science Core Curriculum](#), 2017. OSU Extension Service, EM 9172: 197p.

Visit us at:

twitter / @nwfirescience | facebook / Northwest Fire Science Consortium

email / nw.fireconsortium@oregonstate.edu | online / www.nwfirescience.org



Oregon State
University



Sustainable
Northwest



UNIVERSITY
OF OREGON



Ecosystem
Workforce Program



JOINT FIRE SCIENCE PROGRAM



Oregon State University
Extension Service



The Nature
Conservancy

Protecting nature. Preserving life.™



Center for Natural
Lands Management



FOREST SERVICE
U.S.
DEPARTMENT OF AGRICULTURE