

References

- Essentials of Fire Fighting, Chapter 15
 - 5th Edition
- National Wildfire Coordination Group (NWCG)
 - Introduction to Wildland Fire Behavior

Specific Objectives

1. Summarize influences on wildland fire behavior: fuel, weather, and topography.
2. Describe terms of reference of a wildland fire.
3. List wildland protective clothing and equipment.
4. Describe methods used to attack wildland fires

Wildland Fires

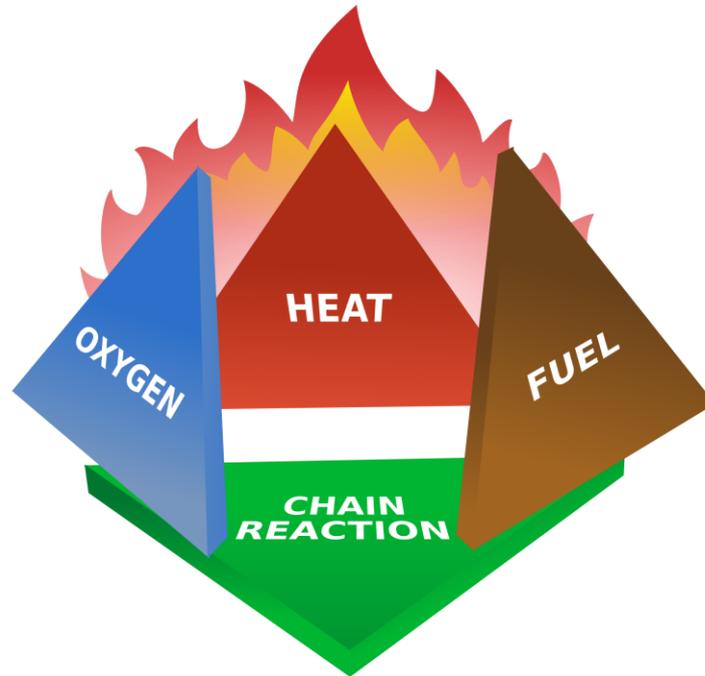
- Include those in weeds, grass, field crops, brush, forests, similar vegetation
 - Mulch fires



Courtesy of National Interagency Fire Center (NIFC).

- Have characteristics ***not*** comparable to fires in buildings
- Weather is the main influence on wildland fire behavior

Fire Tetrahedron



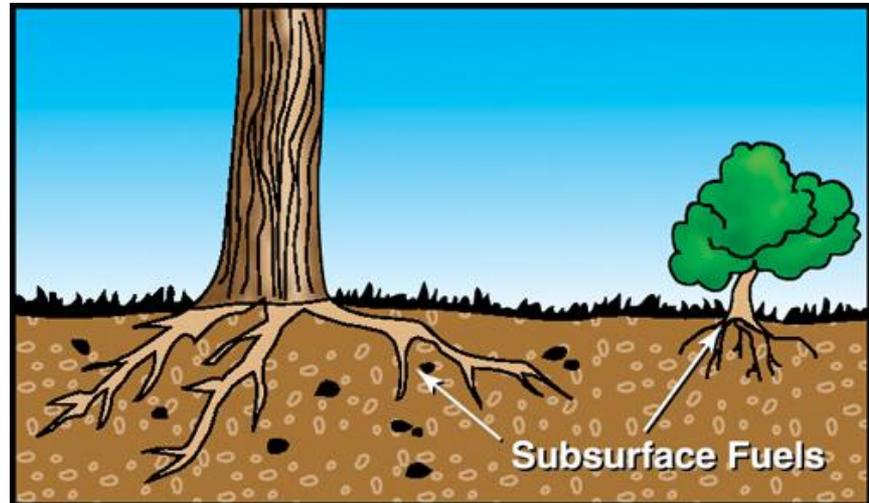
- Take one away and the chemical reaction (combustion) stops

Heat Transfer

- Radiation: heat generated from burning object affecting adjacent object.
- Convection: Hot gases rising from fire. Dries out fuels and also can carry hot embers, also called brands, to start spot fires.
- Conduction: Heat energy transferred within an object; metal rod in a camp fire. Wildland fuels are NOT a good conductor of heat

Wildland Fires — Fuel

- Classified by grouping those with similar burning characteristics together



- Sub-Surface fuels – roots, rotten buried logs, organic materials
- Known as Peat fires – difficult to extinguish
 - Great Dismal Swamp, First Landing State Park

Wildland Fires — Fuel

- Aerial Fuels –
- All green and dead materials located in the upper forest canopy including tree branches and crowns, snags, moss, and high shrubs



Wildland Fires - Fuel

- Surface Fuels –
- All materials lying on or immediately above the ground including needles or leaves, grass, downed logs, stumps, large limbs and low shrubs



Wildland Fires — Weather

- Wind - Increases supply of oxygen
 - Drives convective heat into adjacent fuels
 - Influences spread direction and spotting
 - Carries moist air away replacing it with drier air
 - Dries Fuels
- Temperature
 - Effects fuels and the *firefighter*
- Relative humidity
 - As RH increases, fuel moisture increases
- Precipitation
 - Increases fuel moisture

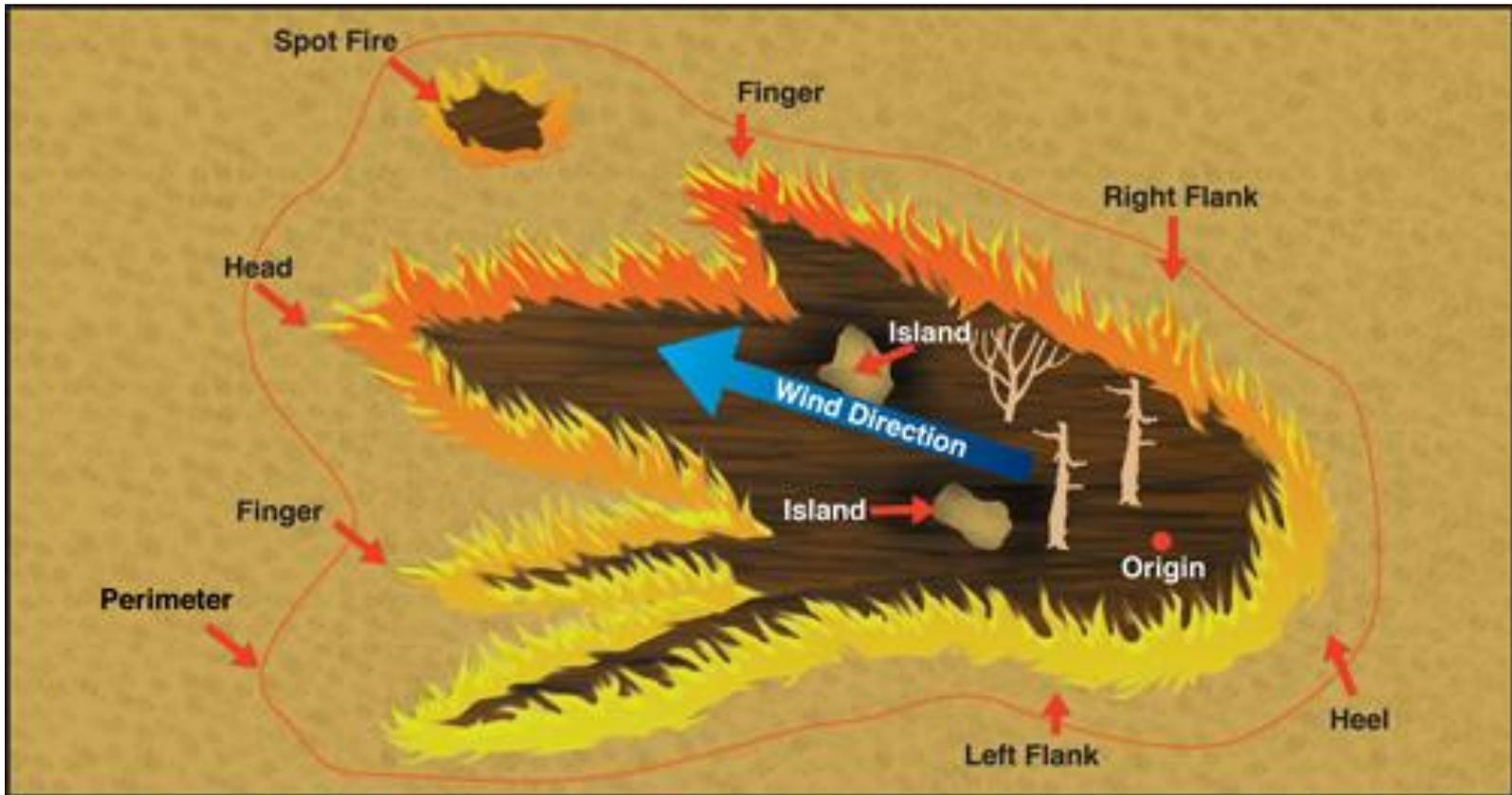
Wildland Fires — Topography

- Steepness of slope affects both rate, direction of wildland fire's spread
- Fires will usually spread faster uphill than down; steeper the slope, faster fire spreads



Courtesy of Tony Bacon.

Terms of Reference of Brush Fire



Firefighter I
15-11

Parts of Wildland Fire



**Firefighter I
15-12**

Wildland PPE

- PPE should meet NFPA® 1977 standard
- NFPA® 1500 specifies minimum PPE
 - Helmet, gloves, goggles, boots, shirt, pants

Wildland PPE

- Firefighters need to wear wildland fire protective clothing because standard structural turnout clothing inappropriate; can be dangerous
- Enhanced Support Techs will be provided NFPA 1977 compliant brush gear and gloves, goggles are required and are built into your city issued helmet



(Continued)

Wildland hand tools

- Shovels
- Rakes
- Brush axe
- Chain saw
- Pulaski tool
- Indian Can
- Water Can

Attacking Wildland Fires

- Methods revolve around perimeter control
- Control line may be at burning edge, next to it, or a distance away
- Objective is to establish control line that completely encircles fire



Wildland Fire Approaches

- **Direct attack** is action taken directly against flames at edge or closely parallel – most common method of attack
- **Indirect attack** used at varying distances from advancing fire
 - Cutting a fire break
 - Setting back fires
 - Laying a foam line
- Because wildland fire constantly changing, attack methods may change

Cutting a fire break



Successful fire break



**Firefighter I
15-19**

Backfires



- A fire that is set deliberately in the path of an oncoming fire. As it burns, it consumes fuel, thereby depriving the primary fire of fuel when it reaches the site.

Brush 8

- 200 Gallon water tank
- Onboard diesel Pump
- 200ft 1" booster reel
- 150ft 1½" pre-connect w/fog nozzle
- 200ft 1½" forestry hose
- 600ft 1" forestry hose
- 600ft 2½" supply line
- POK nozzles – Class A&B foam sticks
- Indian cans
- Hand tools
- Chain Saw
- Floating pump

UTV-8

- 65 gallon water tank
- Onboard electric start pump
- POK nozzles
- 100ft Booster reel
- Hand Tools
- Water can
- 200ft Forestry hose

Standard Fire Fighting Orders When Fighting Wildland Fires

- Post **lookouts** when possible danger
 - Unpredictable winds
 - Rapidly changing weather conditions
- Keep informed on fire weather conditions, forecasts
- **Communications** - Know what the fire is doing at all times
- Identify **escape routes** and safety zones, make them known
- Base all actions on current, expected behavior of fire
- Be alert, keep calm, think clearly, act decisively
- **Safety** consciousness at ALL times

Standard Fire Fighting Orders When Fighting Wildland Fires

- Fight fire aggressively, providing for **safety first**
- Maintain prompt communications with your forces, your supervisor (IC), adjoining forces
- Give clear instructions, ensure they are understood
- Maintain control of forces at all times (know where your crew is)

Summary

- Attacking fires early in their development is an important aspect of a successful fire fighting operation. Likewise, selecting and applying the most effective fire attack strategy and tactics are also important.
- Failing to do any of these things can result in a fire growing out of control, an increase in fire damage and loss, and possibly in firefighter injuries.

Summary

- Firefighters need to know how to use the fire fighting tools and techniques adopted by their departments. They need to know how to safely and effectively attack and extinguish structure fires, vehicle fires, refuse fires, and wildland fires.

Review Questions

1. What are the different types of wildland fuels?
2. How does weather effect a wildland fire?
Wind, RH, precipitation?

(Continued)

Review Questions

3. When are terms of reference for a wildland fire?
4. What is a direct attack, an indirect attack?
5. Name 5 common brush fire hand tools?

Follow on Training

- Trailer training course (8 hours)
- Brush 8 hands on
- UTV-8 hands on