

The Wildland/Urban Interface



Part C: The Citizen

Wildland Fire Preparedness & Basic Concepts

(Rev. 12/1/04)

Objectives



Students will learn:

- The factors that influence fire behavior
- The relationship between fire, fuels and structure survivability
- Urgent fuel modification methods
- Pre-treatment methods
- The concepts and associated risks of “stay and defend”

Factors Influencing Fire Behavior



Fire Behavior

Three factors influence the behavior of wildfire:

WEATHER

TOPOGRAPHY

FUELS



Weather...



- Temperature
- Relative humidity
- Atmospheric stability
- Wind speed and direction
- Precipitation

Weather...



- **TIME:**

- All aspects of weather change continuously, affecting vegetative curing and fuel moisture

- **ELEVATION:**

- Changes in weather patterns occur with changes in topography

Effects on Fire Behavior:

- These factors can greatly increase the rate of fire spread & rate of fire intensity

Topography



- Elevation
- Position on slope
- Aspect
- Shape of the country
- Steepness of slope

Topography



- **TIME:**

- Generally considered to be constant

- **ELEVATION:**

- Changes can be considerable especially in mountainous terrain.

Effects on Fire Behavior:

- These factors effect the rate and spread of fire.

Fuel Factors



- Fuel loading
 - weight; how much
- Size & shape
 - 12-inch v. 10-feet
- Compactness
- Horizontal continuity
- Vertical continuity
- Chemical content (i.e., oil)

Fuel Factors



- **TIME:**

- Dead and live fuel moistures change.
- Insect infestations/disease, harvesting/manipulation of vegetation, prescribed burns, and weather can alter fuels.

- **ELEVATION:**

- Weather and topography alter fuels.

Effects on Fire Behavior:

- Fire intensity increases as more fuel becomes available to burn.

The Relationship Between Fire, Fuels and Survivability



The Wildfire Environment

Weather

- Heat can modify or produce local winds
- Heat can contribute to atmospheric instability
- Heat can cause cumulus cloud development

Fuels

- Fuel Temperature
- Fuel Moisture Content



The Wildfire Environment

Spot Fires, Brands & Burning Embers are influenced by:

CONVECTION

- Small pieces of burning material lifted in a convection column
- Carried a distance ahead of the fire front



The Wildfire Environment

Spot Fires, Brands & Burning Embers are influenced by:

WIND

- Causes short-range spotting of firebrands.
- When combined with strong convective currents:
 - Carries firebrands considerable distances downwind, causing long-range spotting.



The Wildfire Environment

Spot Fires, Brands & Burning Embers are influenced by:

GRAVITY

- Responsible for spotting of firebrands down slope.
- The steeper the slope, the greater the spotting problem.
- Burning material rolls down slope.

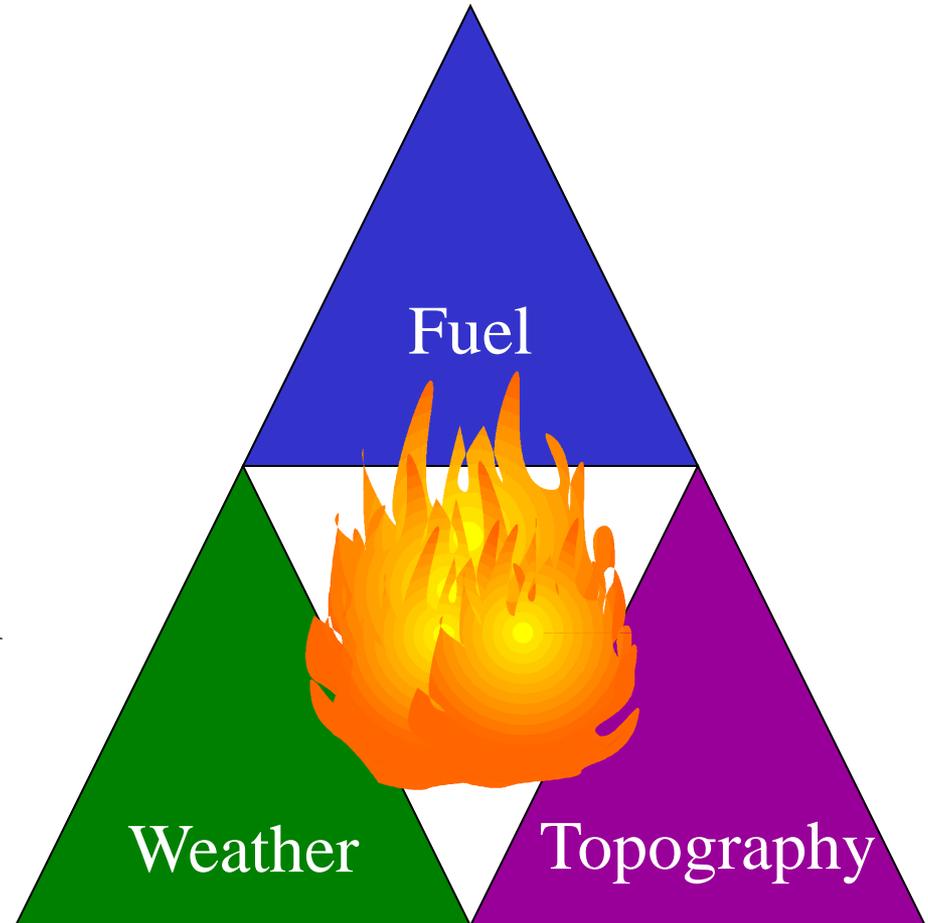


Fire, Fuels and Survivability

The relationship of

- **Fuels,**
- **Topography**
- **Weather**

is similar to our original
fire triangle...



Fire, Fuels and Survivability

While we can't change **topography**,
and we can't change the **weather**,

We CAN...

Remove the fuels



Fire, Fuels and Survivability

Or,
Modify the fuels



Just Waiting For the Wrong Moment...



Urgent Fuel Modification

- Quickly reduce/remove flammable vegetation around structures:
 - 30-foot perimeter
 - 100-feet or MORE, depending on slope
- Separate trees/shrubs by at least 1 ½ times their height
- Keep weeds and grasses trimmed below 18-inches in height
- Tree limbs should be trimmed up at least 6-feet from the ground



Urgent Fuel Modification

- Remove leaf litter/needles from roofs, gutters & porches
- Stack lumber/firewood at least 30-feet from structures.
- Trim any limbs overhanging the house.
- Keep tree limbs and flammable shrubs at least 10-feet away from chimneys, heat vents, roof lines, eaves, and decking
- Work with neighbors.



Fuel Modification Safety

ALWAYS:

- Operate in pairs
- Operate within the scope of your training
- Wear appropriate safety gear and clothing
- Use ladders safely
 - Beware of unsafe roofs (i.e., Spanish tile, slate, etc.)
- Use a spotter when working with and around trees

DO NOT:

- Use steel blades on weed trimmers
- Use mowers



Pre-Treatment

Three ways to protect your home from wildfire:

Water

Foam*

Gel*

*Only use USDA Forest Service Approved foams and gels (elastomers)



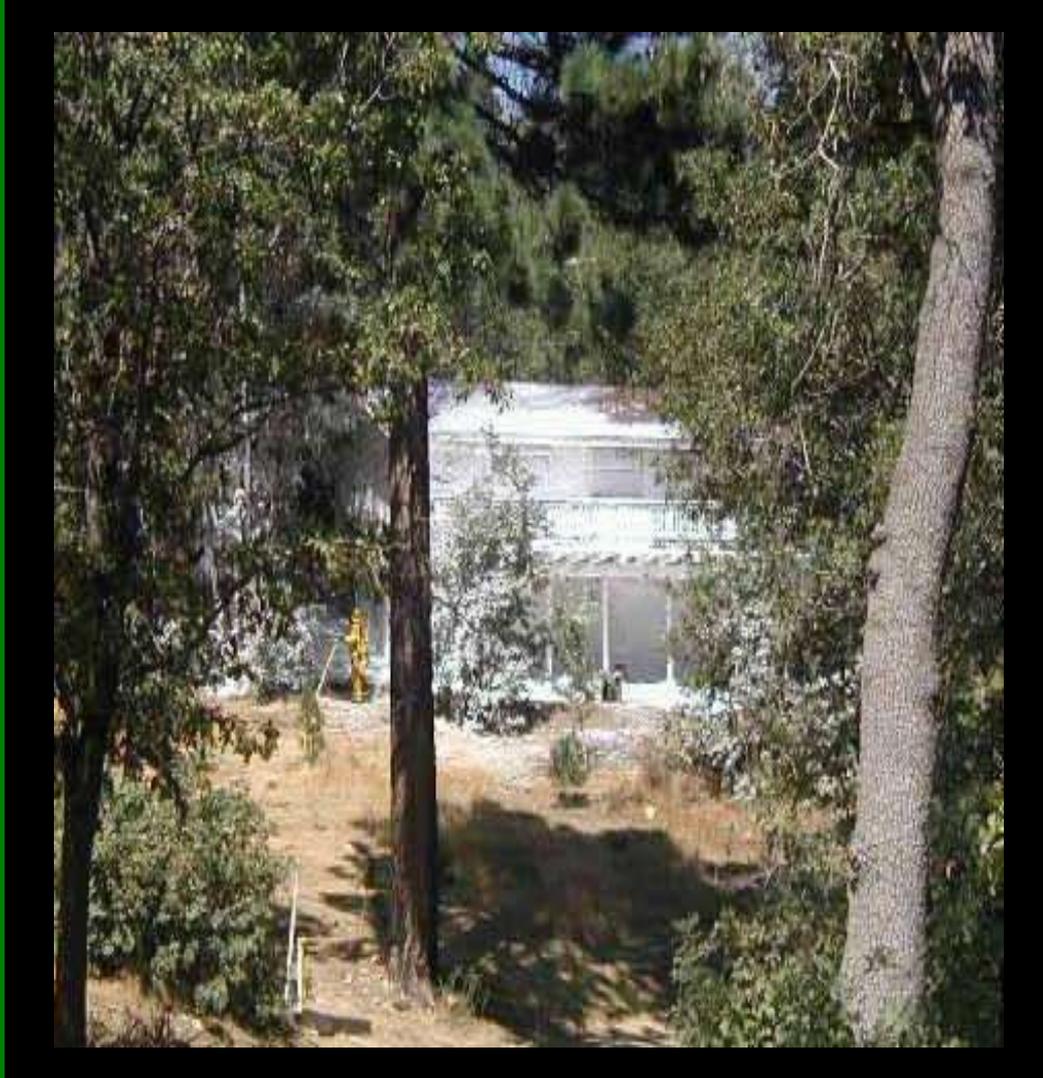
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Water...

- Typically applied by a yard sprinkler system.
- *This is a most unreliable method*
- Other problems:
 - evaporates quickly
 - need a large volume of water
 - requires constant application
 - need a constant water source
 - compete with other water users



Envelope your home with foam



Foam...

- Easy to apply, with minimal training and appropriate equipment.
- Coat the ENTIRE structure:
 - roof
 - exterior walls
 - eaves
 - doors
 - windows
- Foam will eventually dissipate, reducing its ability to protect.



- Foam may also be affected by the wind, but can be reapplied regularly.

Envelope your home with gel



Gel...

- Easy to apply, with minimal training and equipment.
- Coat the ENTIRE structure:
 - roof
 - exterior walls
 - eaves
 - doors
 - windows
- Gel will eventually dry, but will reactivate with small amount of water spray.



Stay & Defend?

“Stay and Defend” = “Risk your Life”

- Various fire equipment vendors will teach you how to treat your home.
- None will recommend you stay behind to fight
- The *best* method is to treat your home, then *evacuate!*



Summary



- Wildland fires are extremely dangerous.
- Wildland fire behavior is *very* difficult to predict.
- Pre-treat a structure three ways:
 - Water (not recommended)
 - Foam (has sustainability)
 - Gel (has sustainability)
- After a structure is pre-treated, evacuate **IMMEDIATELY**. Once prepared and pre-treated, the site should be able to stand on its own.
- The “stay & defend” concept requires additional training, and is not an approved **CERT** module.

The CERT Wildand/Urban Interface Module

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