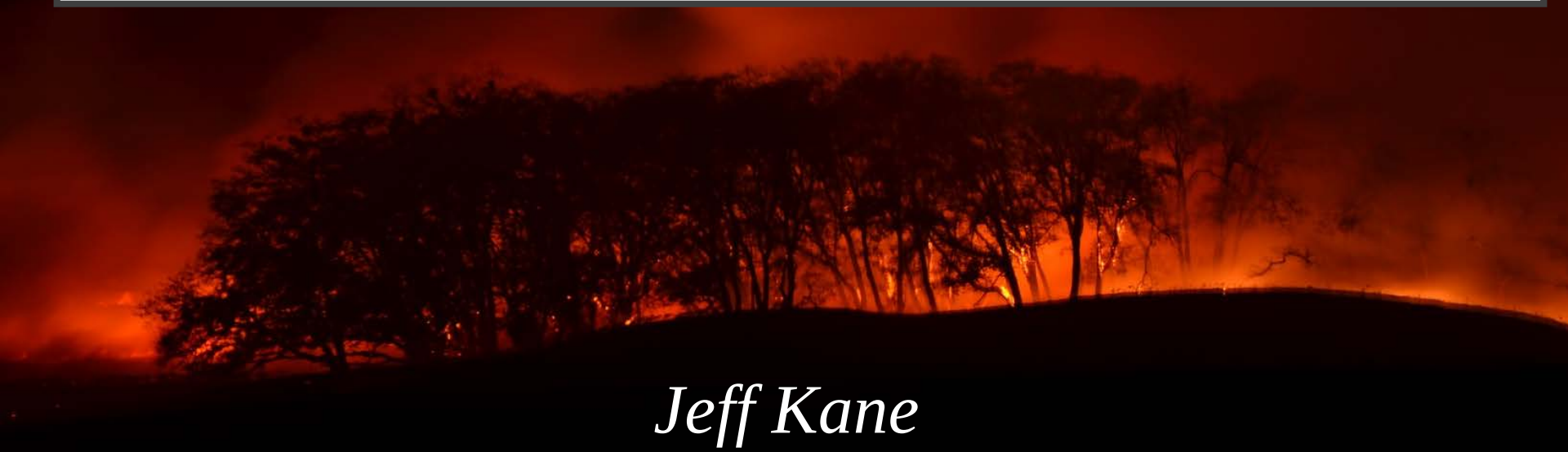
FUEL MANAGEMENT STRATEGIES TO REDUCE WILDFIRE IMPACTS IN CALIFORNIA'S COAST RANGES



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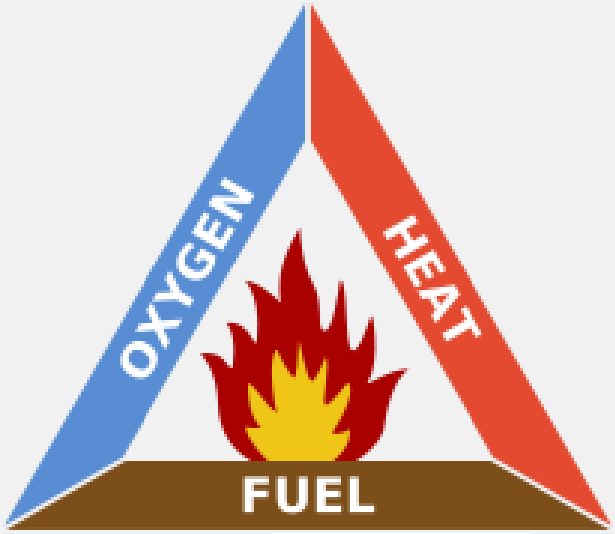
CLEAR NEED TO SHIFT FROM REACTIVE TO PROACTIVE APPROACHES

- >95% of wildfires are kept below 10 acres
- ~1% of California burns in a wildfire annually
- Increased fire frequency, size, and severity
- Increases in damages and costs
- <<1% of area treated annually
- Lack of coexistence with fire

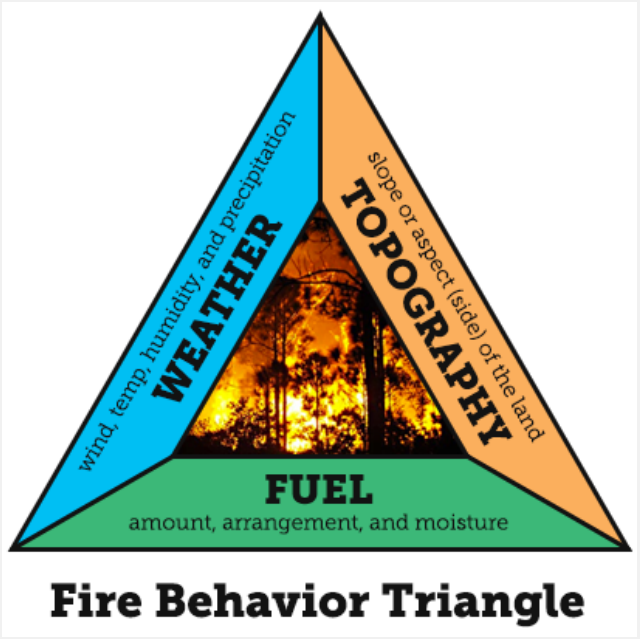
COEXISTENCE WITH FIRE IS POSSIBLE

- Willingness to accept that fire is inevitable
- Employ appropriate and effective wildland fuel treatments where possible
- Promote fire-adapted human communities
- Accept workable trade-offs between ecological and community protection goals when necessary
- Work collaboratively in the planning and implementation process
- Heed the science on fire and fuels management
- Promote conditions that allow use of managed wildfire
- Recognize that risk can be reduced but not eliminated

WILDLAND FIRE FUNDAMENTALS



Fire Triangle



Fire Behavior Triangle

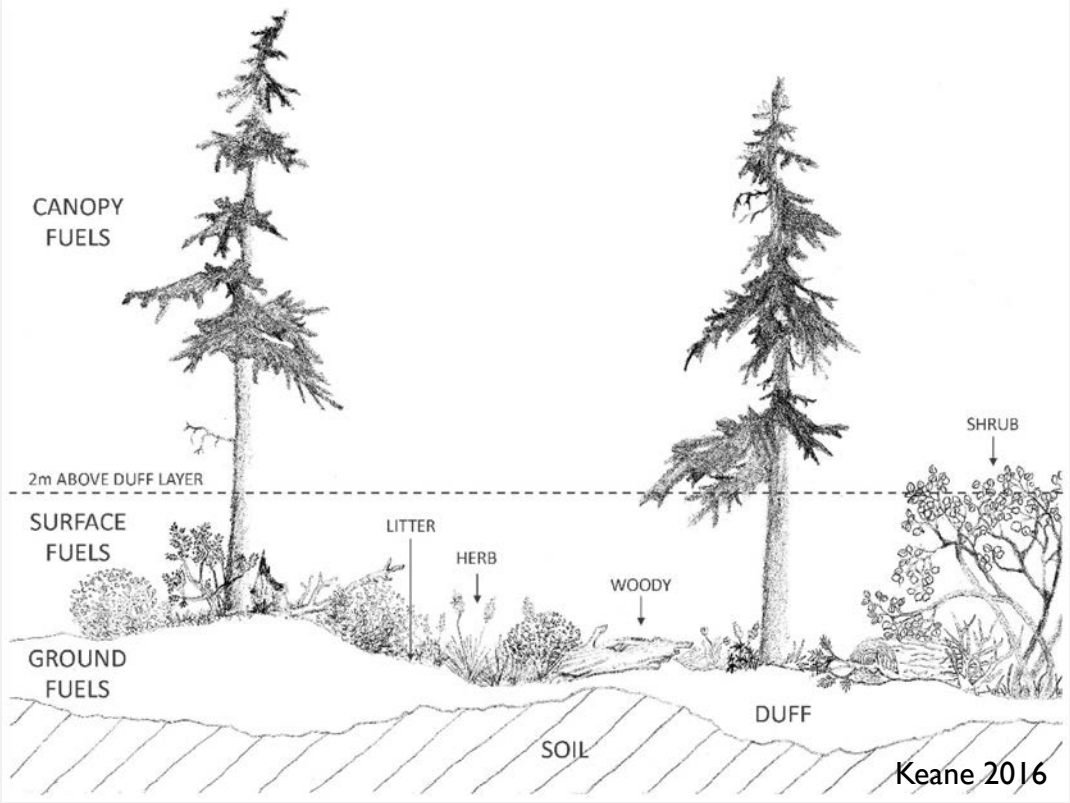
WILDLAND FUEL COMPLEXES

Canopy Bulk Density

Canopy Base Height

Fuel Bed Height

Fuel Loading



Keane 2016

PURPOSE OF FUEL TREATMENTS

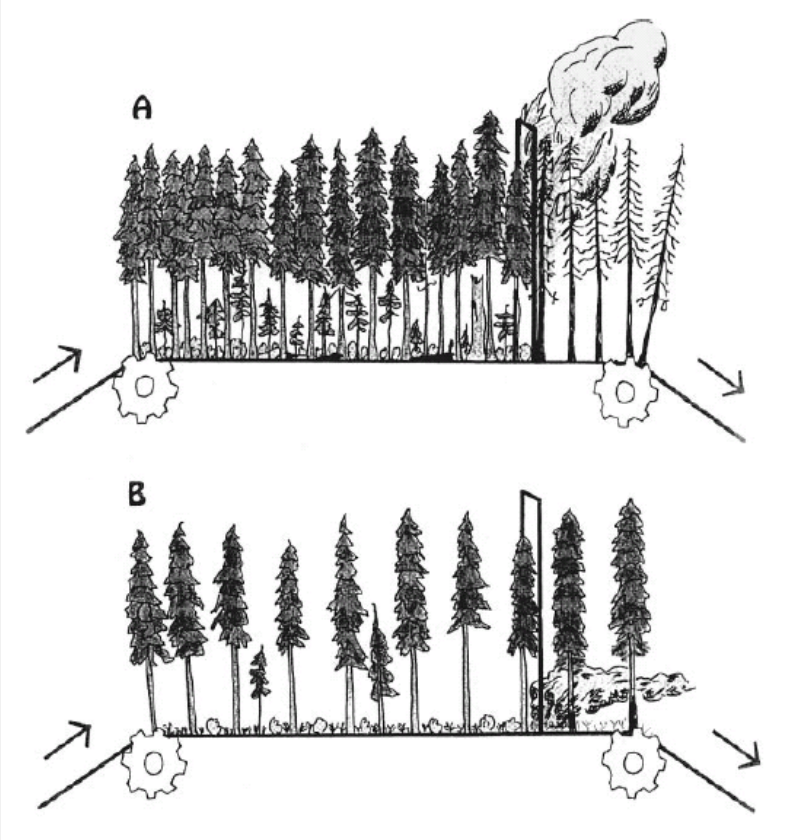
- intentional alteration of a fuel complex to modify fire behavior and reduce the potential negative impacts of future wildfires

CONSIDERATIONS

- Vegetation Type and Structure
- Historical Fire Regime
- Weather/Climate
- Topography
- Proximity to communities
- Ownership objectives

STAND-LEVEL PRINCIPLES

- Reduce surface fuel loading
- Increase canopy base height
- Decrease crown bulk density
- Promote large, thick-barked trees



Agee and Skinner 2005

LANDSCAPE-LEVEL PRINCIPLES

- Sufficient extent of area treated (~15-30%)
- Promote heterogeneity of fuel conditions
- Strategic prioritization of treated areas

NEED TO ACCEPT TRADE-OFFS

- Importance of considering ecological and ecosystem services
- Some acceptance of trade-offs, especially within the wildland-urban interface

FUEL TREATMENT TYPES: *PRESCRIBED FIRE (CONTROLLED BURNING)*

Prescribed burning: intentional ignition and application of fire under desired conditions to reduce fuels and meet resource objectives

Benefits

- Reduces surface fuel loading
- Increases canopy base height
- Reduces small tree density

Challenges/Drawbacks

- Air quality considerations
- Narrow burn windows
- Insufficient intensity

FUEL TREATMENT TYPES: *THINNING*

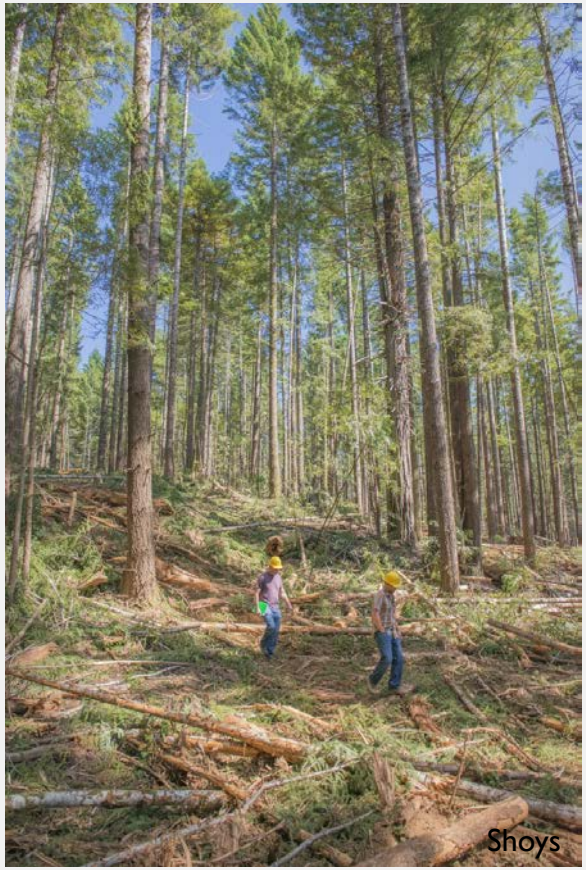
Mechanical thinning: use of silvicultural principles to alter stand and fuel conditions to meet resource objectives

Benefits

- May increase canopy base height
- May decrease crown bulk density
- Reduces stand density

Challenges/Drawbacks

- Often increases surface fuel loading
- Need for subsequent treatment
- Insufficient reduction of stand density
- Need for greater social license



FUEL TREATMENT TYPES: *MASTICATION*

Mechanical mastication: mechanical shredding of shrubs and small trees to alter fuel structure

Benefits

- Decreases fuel bed height/Increased fuel bed bulk density
- Promotes greater access to fire fighters and prescribed burning
- Reduces small tree/shrub density

Challenges/Drawbacks

- Increases dead surface fuel loading
- Prolonged residence time
- Increased smoldering and smoke production
- Vegetation changes

FUEL TREATMENT TYPES: *MANAGED WILDFIRE*

Managed Wildfire: allowing a wildfire to burn under well-defined conditions and perimeters to reduce fuels and meet resource objectives

Benefits

- Increase pace and scale of treated area
- Effectively reduces fuel loading
- Promotes heterogeneity

Challenges

- More decision support tools needed
- Limited application
- Need clearer distinction

FUEL TREATMENT TYPES: *FIRE SUPPRESSION*

Fire Suppression: directly and indirectly extinguishing wildfires to limit the spread and negative impacts of wildfire

Benefits

- Community and resource protection
- Effective at limiting fire spread
- Stop-gap measure

Challenges/Drawbacks

- Doesn't reduce fuel loading/alter fuel structure
- Declining effectiveness
- Increasing costs

LONGEVITY AND MAINTENANCE

- Loss of treatment effectiveness over time
- Keep in mind there is no one-time treatment
- Too frequent can result in type conversions
- Areas around the wildland urban interface will likely require more frequent treatment to maintain effectiveness
- Capitalize on prior wildfire footprints to maintain fuel reductions and as anchor points for further treatments

LINGERING CHALLENGES

- Limited effectiveness of existing treatments during high speed, dry east wind events
- Ember wash and long-distance spotting
- Requires prolonged effort and funding to affect substantive change

CONCLUDING REMARKS

- Fire is an inevitable part of living in the California Coast Ranges
- Leverage recent wildfires to affect change in the region
- Coexistence with fire is possible but will require a collaborative, multi-pronged, and strategic approach
- Need for more managed wildfire

THANK YOU FOR YOUR ATTENTION

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