FOREST MANAGEMENT PLAN

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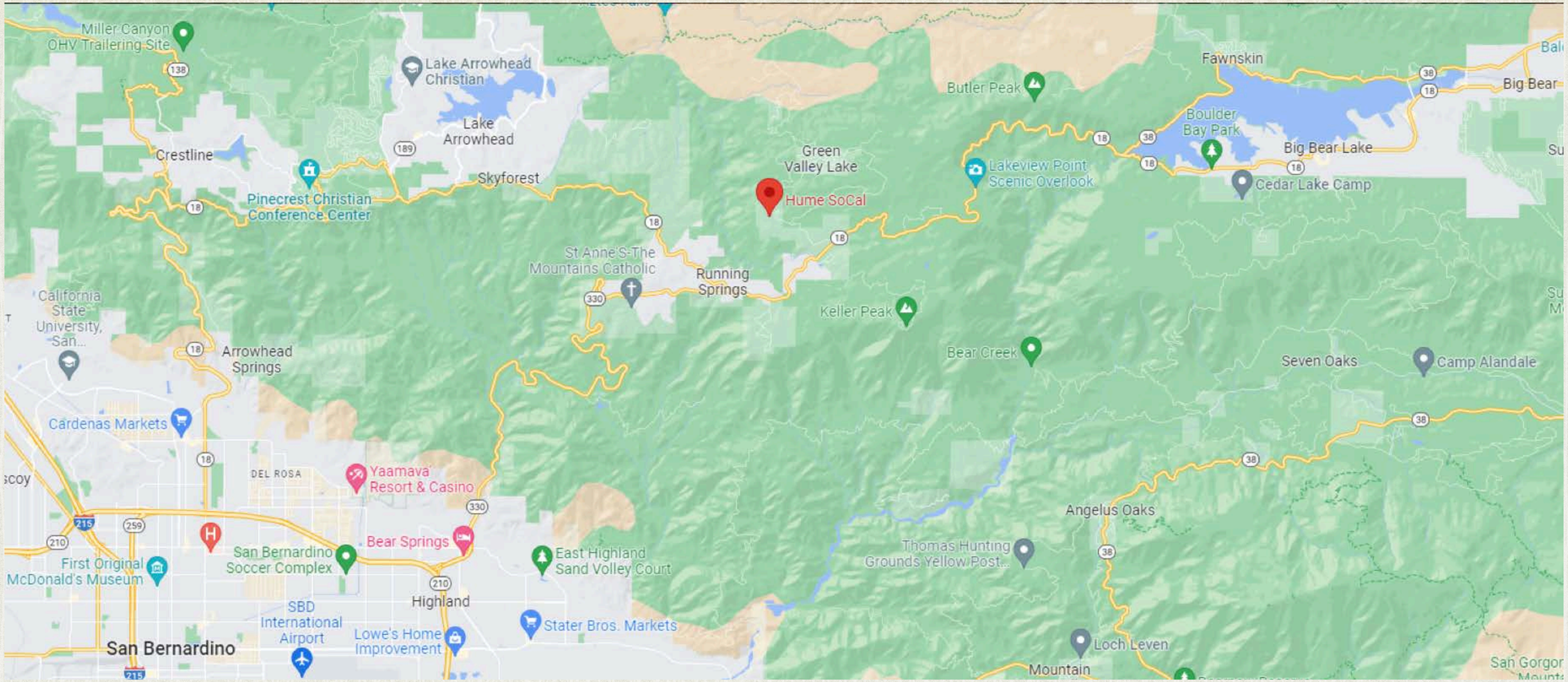
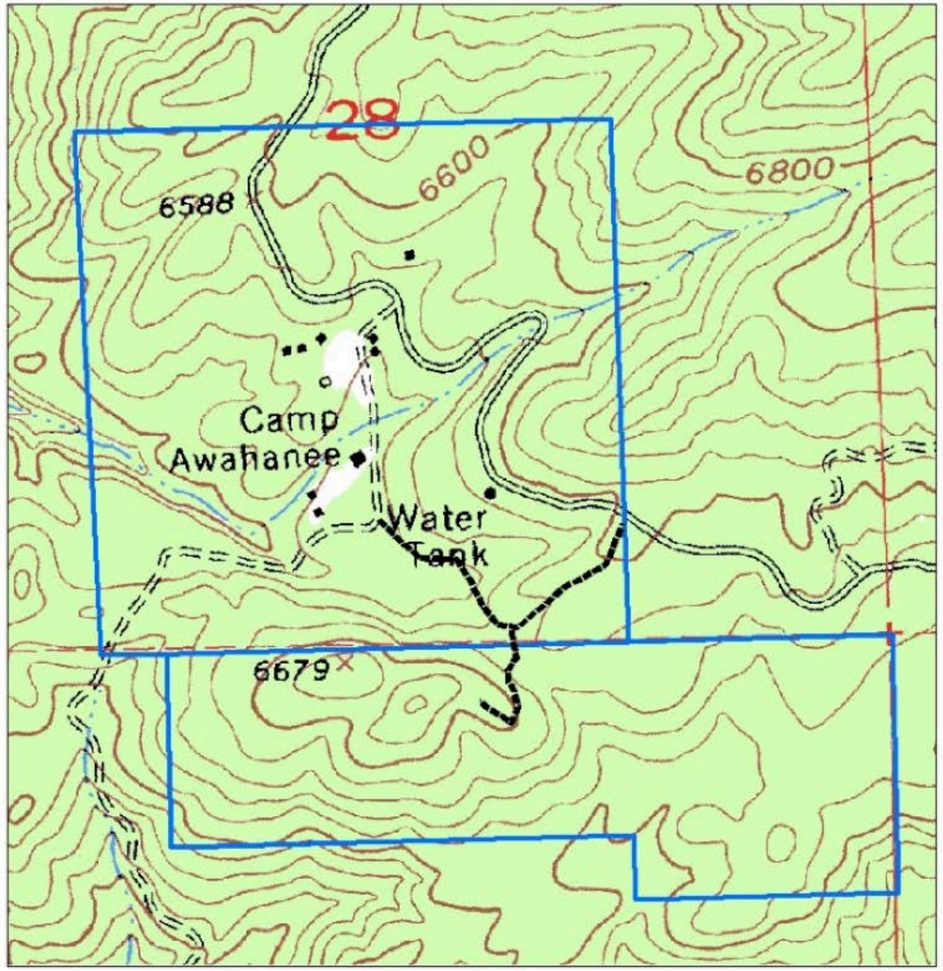


OUR LOCATION

Calvary Chapel



0 470 940 1,880 Feet

1:7,000

Legend

roads

Calvary Boundary

Sec. 28 & 33, T2N, R2W, SBBM
Keller Peak 7.5" Quadrangle

Contour Interval = 40'

SAN BERNARDINO AREA

- Native Americans resided and used to travel to these mountains for food
- Ranchers came with herds for grazing the land during the late 1800s
- Became recreational area in the 1920s during an industrial shift

HUME SOCAL

Historical Background

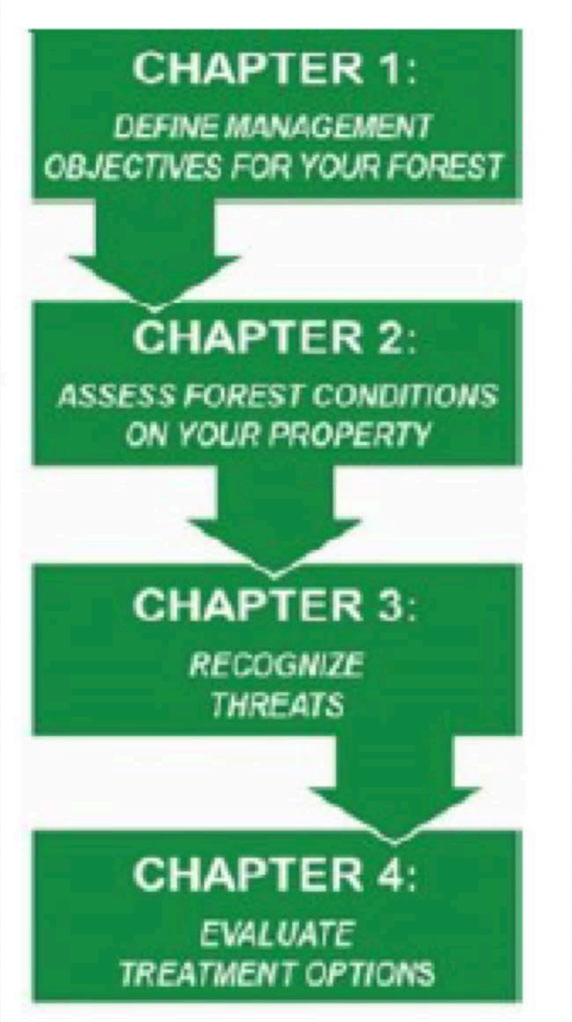
- 250 acre private property
- Boy scout camp from the 1950s to early 1980s
- Demolished and turned into Hume Socal which opened in 1994

Threats Faced

- Bark beetle infestations between 1999-2003
- Slide 2 Fire in 2007 which burned 12,759 acres

FOREST MANAGEMENT PLAN

- What is a forest management plan?
  - A long term plan used by landowners to determine the best pathway in managing their forests



CURRENT SITUATION

- Ownership has changed
- Outdated forest management plans
  - 2012 Stewardship Plan becoming the California Cooperative Forest Management Plan
- Need to fit new regulations and standards

OBJECTIVES

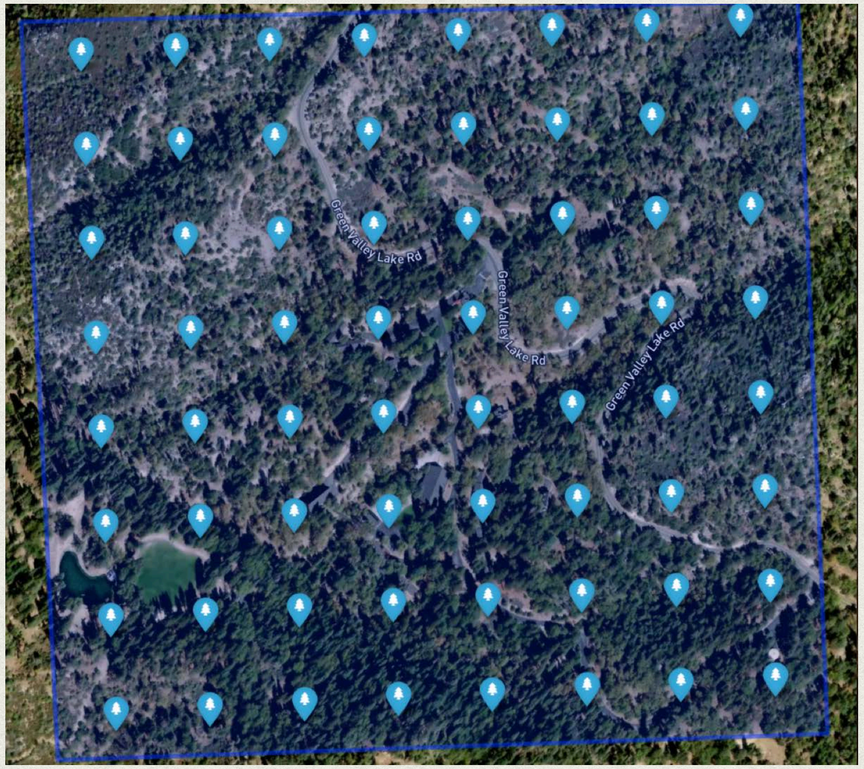
CHAPTER 1:
DEFINE MANAGEMENT OBJECTIVES FOR YOUR FOREST

- Expanding recreational activity
  - Hiking trails
- Sustaining forest health
  - Preventing fires and other ecological disasters
  - Creating more open space

ASSESSING CONDITIONS

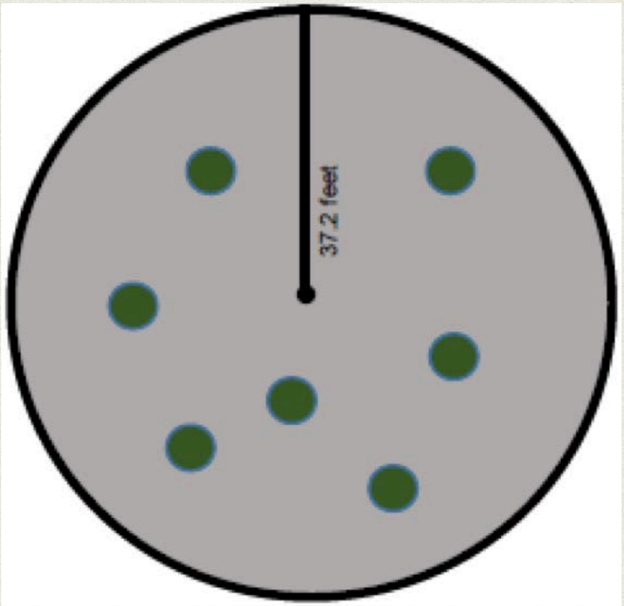
CHAPTER 2:
ASSESS FOREST CONDITIONS ON YOUR PROPERTY

- Data Collection
  - Property was divided into 64, 1/10 of an acre plots
  - A plot was given to all 13 teams to combine data



DATA COLLECTION

- Identify the plot center
  - Using loggers tape, we measured a radius of 37.2 feet
- Diameter at breast height as well as plant identification
  - Move in clockwise direction



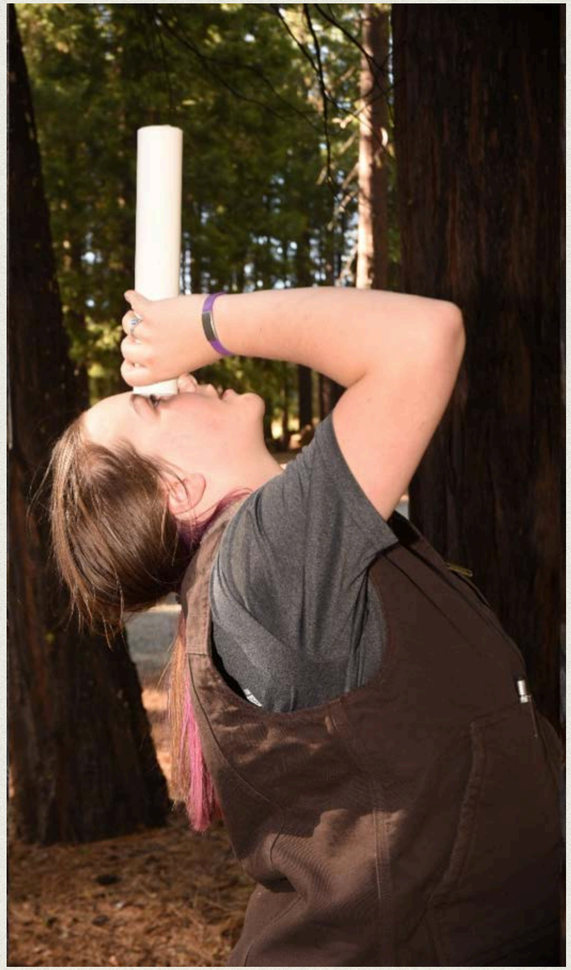
DATA COLLECTION

- Basal Area
  - Angle Gauge
  - To find this, you use a formula: #of trees “in” * the BAF used
  - For example: 20 trees “in” * 20 BAF = 400 square feet of basal area

DATA COLLECTION

- Densitometer
  - Determines canopy presence/ absence
    - Based on 10, 20, and 30 foot points from the plot center
- Compass
  - Finds direction when pointed at something which allows the NSEW points

Point #	1	2	3	4	5	6	7	8	9	10
Canopy Above? Yes or No										



DATA COLLECTION

- Count the number of seedlings and saplings
  - Assessing future growth of trees
- Increment Borer
  - Determines age and tree's health of the most dominant tree
    - Important to tell if the tree is struggling

DATA COLLECTION

- Determine percentage of brush cover
  - Scale of 25
- Determine debris
  - Low, Med, High

DATA COMPARISON

- Comparison to 2015 data
  - Trees per acre has increased from 63 to 115
  - Canopy cover increased from 53% to 55.6%
  - Live crown increased from 53% to 27%
  - Basal area increased from 105 to 161 sq ft

2015

Cruise Summary						
Basal Area				Trees Per Acre	% Canopy Cover	% Live Crown
105				63	53	53

2022

plot	Averages
TPA	115
BA	161,666666
%CC	56,6666666
Seedlings	31,6666666
Saplings	8,5833333
growth/20y	1,65
%ULVC	27,0833333

THREATS

CHAPTER 3:
RECOGNIZE THREATS

Ranked in importance*

- Fires
- Drought
- Bark Beetle Infestation
- Overcrowded/Competitive Plants

FIRES

- Debris
- Humans
  - Hand thrown pollution
  - Repression of fires
- Ladder Fuel

OUR PLAN

CHAPTER 4:
EVALUATE
TREATMENT OPTIONS

- Recreation
  - Hiking Trails
    - Created through clearing paths, stamping roots, fixing uneven terrain
    - Different difficulties due to terrain
- Reason
  - Allow for the owners and visitors to utilize their property
  - Beneficial to receive a grant

OUR PLAN

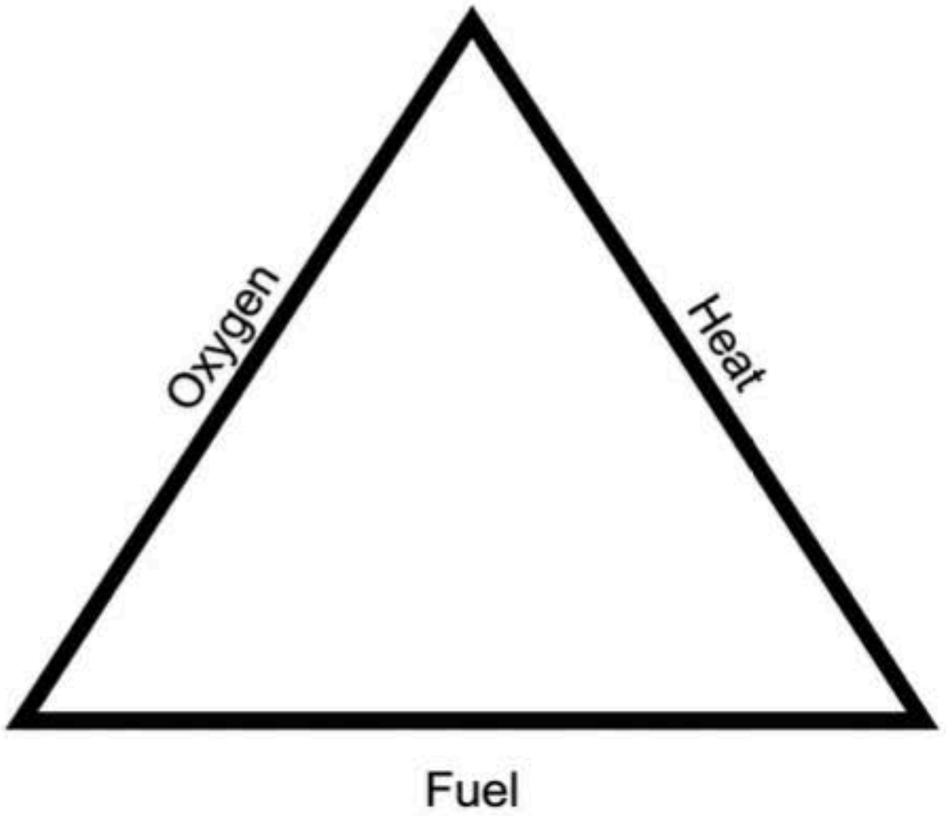
- Recreation
  - Camping
    - Propane vs. firewood
    - More visitors
    - Entertainment
- Reason
  - Usage of the forest
  - Education of living in the forest
  - More financial benefits
  - More open space

OUR PLAN

- Fire prevention
  - Clear paths
  - Reducing surface fuels

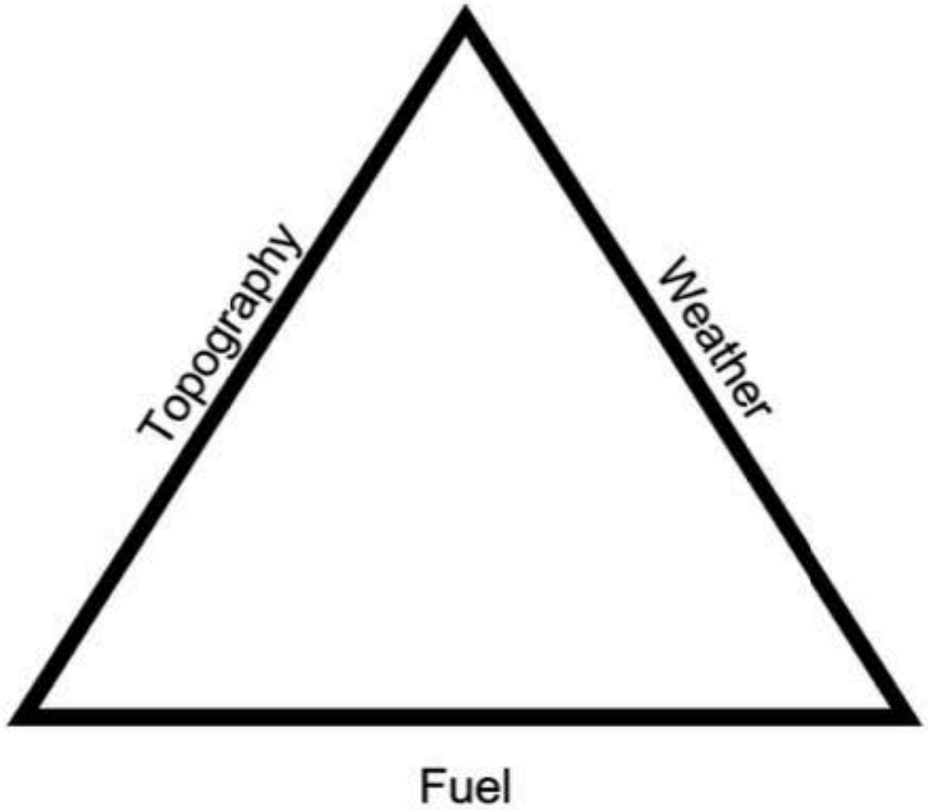
- Reason
  - More open space
    - Promote growth
  - Protecting forest health

WHAT FUELS A FIRE?



Stephen Fitzgerald , Oregon State University.

Figure 1. The fire triangle.



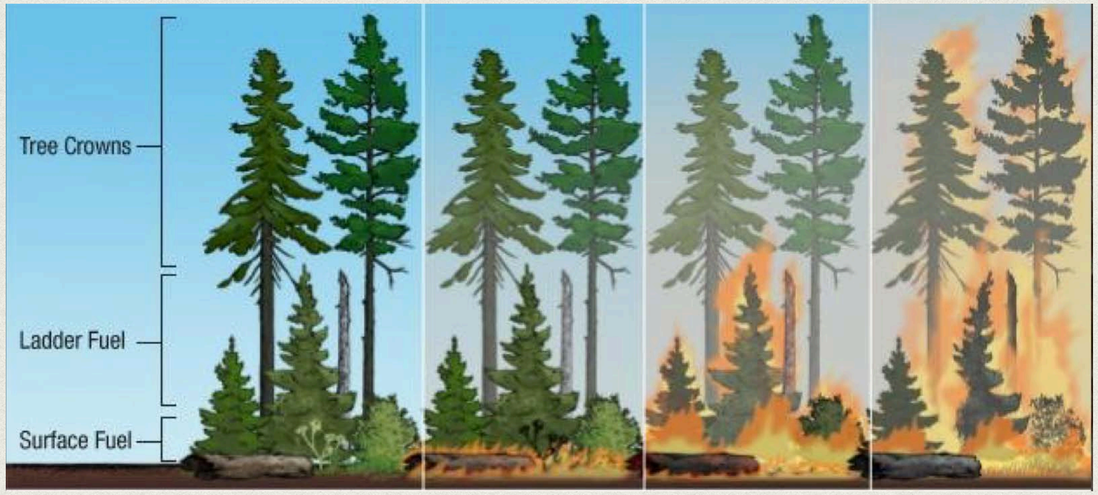
Stephen Fitzgerald , Oregon State University.

Figure 2. The fire behavior triangle.

TREATMENT CONSIDERATIONS

- Prescribed Fires
  - Prescribed Broadcast Burn
    - Need conditions of no wind, open space, lack of ladder fuels
-

Danger of not having a prescribed fire:



TREATMENT CONSIDERATIONS

- Best option
  - Intensive manual labour for slopes and depressions

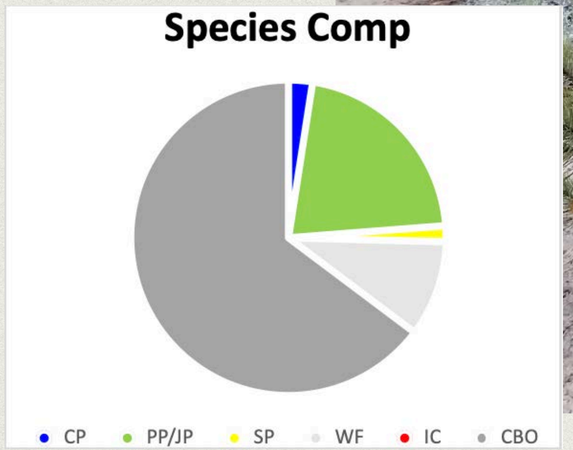
Table 3. Effects, cost, and considerations of fuel-reduction methods when used as stand-alone treatments

Method	Effects on...			Cost per acre	Considerations
	Surface fuels	Ladder fuels	Crown fuels		
Thinning	Increase	Decrease	Decrease	$100–$800[1]	Requires slash abatement to be effective.
Pruning	Temp. increase	Decrease	No effect	$50–$250[2]	Best combined with thinning in young stands with low branches.
Prescribed under-burning	Decrease	Decrease	No effect	$50–$450	Initial mechanical treatment will facil-itate safer burning; liabilities increase risk for private owners.
Cut and scatter	Increase	Decrease	No effect	$50–$450	Use where fuel loads are light. May substantially increase surface fire behavior in areas where slash is concentrated.
Cut, pile, and burn	Decrease	Decrease	No effect	$275–$1,500[3]	
Chip and scatter	Decrease	Decrease/ no effect	No effect	$500–$1,500	
Mowing	Decrease	Decrease/ no effect	No effect	$40–$150	Feasable only in fine fuels (e.g., bitterbrush)
Slash-busting/ mastication	Temp. increase	Decrease	Decrease/ no effect	$250–$700	
Utilization	Decrease	No effect	No effect	Offset costs or produce a small profit.	Labor intensive

[1] Depending on slope and other terrain factors, stand density, tree size, equipment, etc. [2] Depending on height and number of trees pruned.
[3] Major cost is piling.

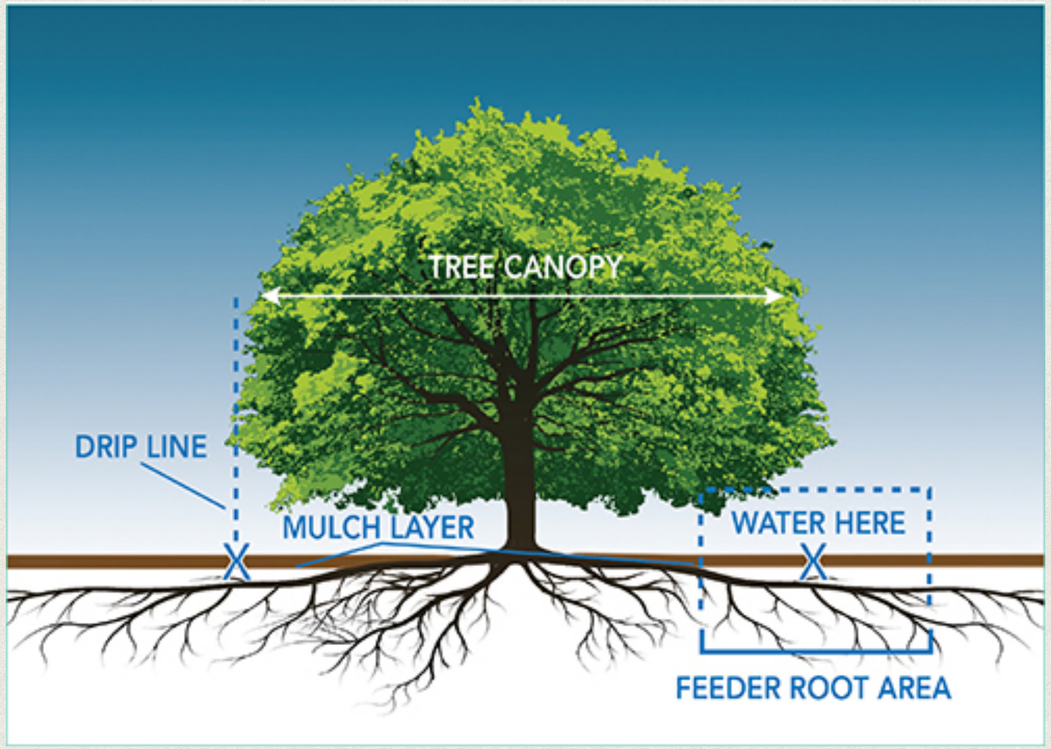
OUR PLAN

- Drought
  - Ideally there would be only dominant and lack of variety
    - Mixed conifer environment
- Reason
  - Increases competition between plants



TREATMENT CONSIDERATIONS

- Cut less pines, and more California Black Oak
  - Pines have a higher canopy cover
    - Preserves moisture in the ground, keeping water resources in the area
    - Other trees should have lower canopy covers



OUR PLAN

- Bark Beetles
  - Create galleries/grooves in the tree which disrupts nutrient flow to the top of the tree
    - Struggles to make white pitch
      - No more defense mechanism
- Reason
  - Keeps forest alive

TREATMENT CONSIDERATIONS

- Kill the trees that are breeding homes for bark beetles
  - Do not have white pitch strength
- Manually cut down infested areas of the trees as soon as possible

IN CONCLUSION:

- Human involvement can help with the overcrowding of the forests
- Forest management is what allows our forests to remain healthy and survive