Fuels and Fire Behavior Digital Dictionary

The Fire Behavior Assessment Team

Aspen Fire
Plot 1

7/27/2013
Region5/Sierra NF

Transect 1, Pre, 0-50 ft

Transect 1, Post, 0-50 ft

Transect 1, Pre, 50-0 ft

Transect 1, Post, 50-0 ft

Transect 2, Pre, 0-50 ft

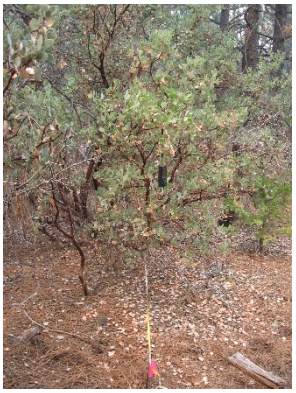
Transect 2, Post, 0-50 ft

Transect 2, Pre, 50-0 ft

Transect 2, Post, 50-0 ft

Transect 3, Pre, 0-50 ft

Transect 3, Post, 0-50 ft



Transect 3, Pre, 50-0 ft

Transect 3, Post, 50-0 ft

Fuels, Topography, Weather

Site Info	
Veg Type	Ponderosa pine plantation, manzanita understory
Slope (%)	11
Aspect (deg)	315
Elev (ft)	6844

Climatic Variables	
Fire Arrival (Date, Time)	7/27/13, 17:59
Burn End (Date, Time)	7/27/13, 19:20+
20ft Wind (mph), 10min avg./gusts	9/16
Onsite wind(mph), eyelevel (10min avg.)	n/a
Wind direction (azimuth)	233
RH (%)	48
Temp (F)	58
ERC/BI	45/35
Drought Index	n/a
Live FM% (Herb/Woody)	197/204
Dead FM% (1/10/100/1000hr)	11/10/14/12

Plant Species	Fuel Type	Average Fuel Moisture (%)
Manzanita	woody	45
	leaves	112
White fir	needles	125
Ponderosa pine	needles	124
	1000-hr	13
Sugar pine	1000-hr	10

Fuel Model (low/high)
181/188

Surface Fuels - Pre	Tons/ac
1-hour	0.03
10-hour	0.2
100-hour	1
1000-hour	0.3
Litter	1.2
Duff	12
Total Fuels	14.7

Understory Veg.	Tons/ac
Live/Dead Shrub	4.454/1.11
Live/Dead Herbaceous	0.0011/0.0004

Canopy & Stand	
Canopy Bulk Density (kg/m^3)	0.18
Canopy Base Height (ft)	4
Basal Area (ft^2/ac)	180
Overstory Trees/ac	659

Climatic Variable Details:
Weather and fuel moisture taken form Mt. Tom RAWS using NFDRS2016. ERC and BI are scores not percentiles.

Site History:

Fire Behavior

Fire Behavior	
Fire Type (min)	Surface, backing
Fire Type (max)	Isolated shrub torching
ROS - sensor source (ch/hr) (min/max/avg.)	0.64
ROS - video interp. (ch/hr) (min/max/avg.)	1 to 2
Flame Length (ft) (min/max)	1+/ 2 to 4
Direction fire spread is going. (azimuth)	~45

Fire Video	Description
	n/a

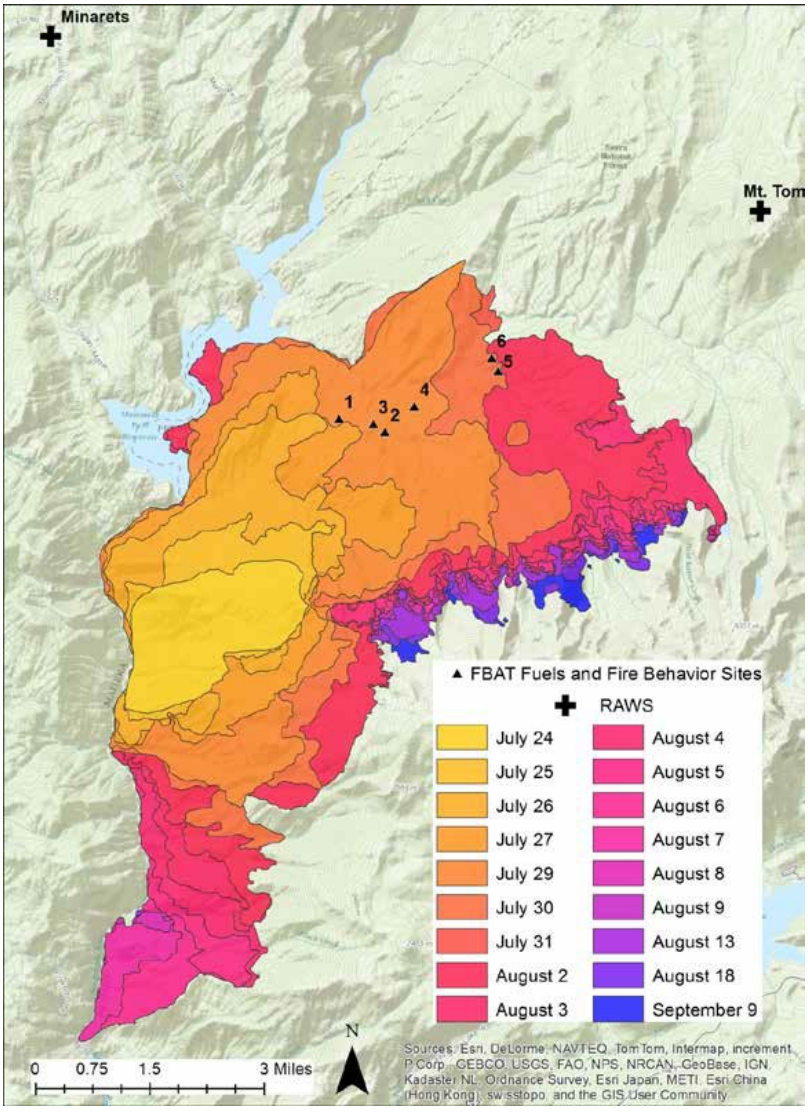
Fire management actions affecting plot:

Fire Effects

Fire Severity	
Substrate Score (1-5)	3.3
Understory Vegetation Score (1-5)	2.3
Avg. % tree canopy scorch	5
Avg. % tree canopy torch	0
Avg. tree bole char (ft)	No data

Fuel Consumption	%
1-hour	100
10-hour	50
100-hour	0
1000-hour	13
Litter	83
Duff	83

Severity category definitions: 1= unburned, 2=low, 3=moderate, 4=high, 5=very high



Aspen Fire, Plot 1, 2013

About the Fire Behavior Assessment Team (FBAT)

Abstract

Despite the scope of the US wildfire problem, capabilities for monitoring active wildfires to answer pressing questions about fire behavior and personnel safety are severely limited. The **Fire Behavior Assessment Team (FBAT)** is the only team currently collecting applied science data on active wildfires. FBAT functions in collaboration with land managers and interested research groups. In coordination with incident management, sites are placed opportunistically ahead of the fire accounting for current and expected fire behavior, safe access, and fire management tactics.

FBAT can collect standard weather, fire behavior and fire severity observations as well as set up dataloggers which store wind speed, direction, temperature and RH. FBAT can also take plot data which includes:

- Heat resistant fire behavior equipment left on-site (video camera, 5-foot anemometer, sensor array for rate of spread/temperature profile through time, heat flux sensor).
- Fuels data collected on canopy, surface and ground fuels before and after the fire, and fire severity assessment post-fire. Fuel moisture data is often collected prior to the fire.

More information about methods and data can be found on the FBAT website:

https://www.frames.gov/fbat/home

The report for this fire which includes field methods and other background can be found at: https://www.fs.fed.us/adaptivemanagement/reports/fbat/Antelope_detail.pdf