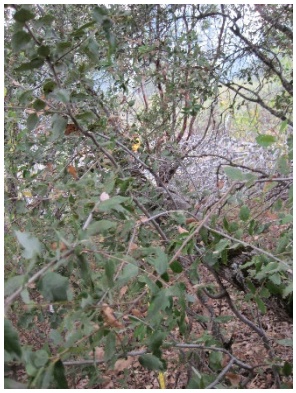
Fuels and Fire Behavior Digital Dictionary

The Fire Behavior Assessment Team

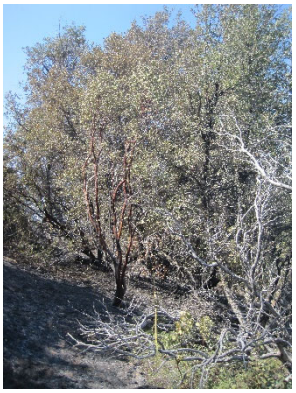
Willow Fire	7/31/2015
Plot 5	Region5/Sierra NF



Transect 1, Pre, 0-50 ft

Transect 1, Post, 0-50 ft

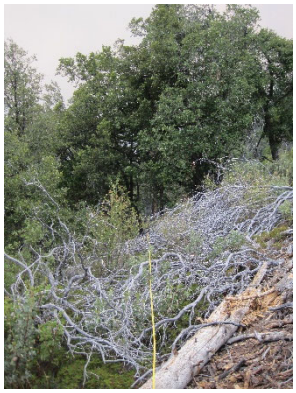
Transect 1, Pre, 50-0 ft



Transect 1, Post, 50-0 ft

Transect 2, Pre, 0-50 ft

Transect 2, Post, 0-50 ft



Transect 2, Pre, 50-0 ft

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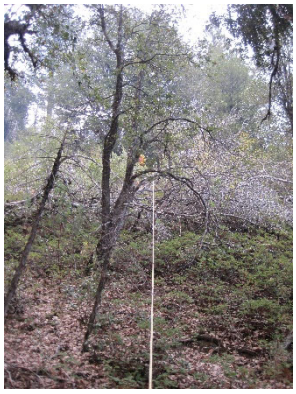
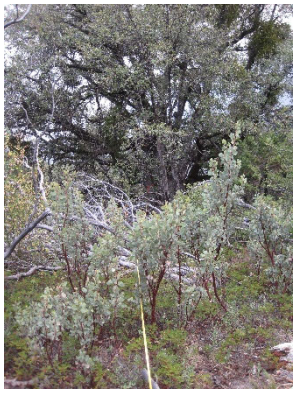
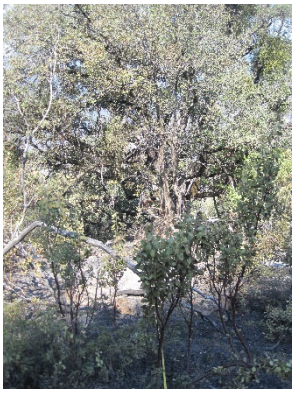


Transect 3, Pre, 0-50 ft

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	Oak woodland, chaparral
Slope (%)	42
Aspect (deg)	300
Elev (ft)	4,331

Climatic Variables	
Fire Arrival (Date, Time)	7/31/15, 23:11
Burn End (Date, Time)	8/1/15, 00:15+
20ft Wind (mph), 10min avg/gusts	3/9
Onsite wind (mph), eyelevel (20min avg)	1.6
Wind direction	225
RH%	32
Temp (F)	76
ERC/BI	64/33
Drought Index	n/a
Live FM% (Herb/Woody) from RAWS	30/110
Live FM% (taken onsite)	n/a
Dead FM% (1/10/100/1000hr)	7/5/9/11

Fuel Model (low/high)
142/145

Surface Fuels - Pre	Tons/ac
1-hour	0.5
10-hour	0.9
100-hour	0.8
1000-hour	8.9
Litter	5.5
Duff	19.8
Total Fuels	36.4

Understory Veg.	Tons/ac
Live/Dead Shrub	7.91 / 2.69
Live/Dead Herbaceous	0.004 / 0.004

Canopy & Stand	
Canopy Bulk Density (kg/m^3)	0.056
Canopy Base Height (ft)	6
Basal Area (ft^2/ac)	36
Overstory Trees/ac	201

Climatic Variable Details: Onsite eyelevel wind at plot 5 is based on 20min ave. Weather and fuel moistures taken from Northfork RAWS station using NFDRS 2016. Onsite wind was collected from an anemometer. ERc and BI are scores, not percentiles.

Site History: 2001 North Fork Fire.

Fire Behavior

Fire Behavior	
Primary Fire Type	Surface
Secondary Fire Type	n/a
ROS - sensor source (ch/hr) (min/max/avg)	.04/4.9/1.7
ROS - video interp. (ch/hr) (min/max/avg)	1.2/1.2/1.2
Flame Length (ft) (min/max/avg)	0.5/3/1
Direction Fire Spread is going (azimuth)	300

Fire Video	Description

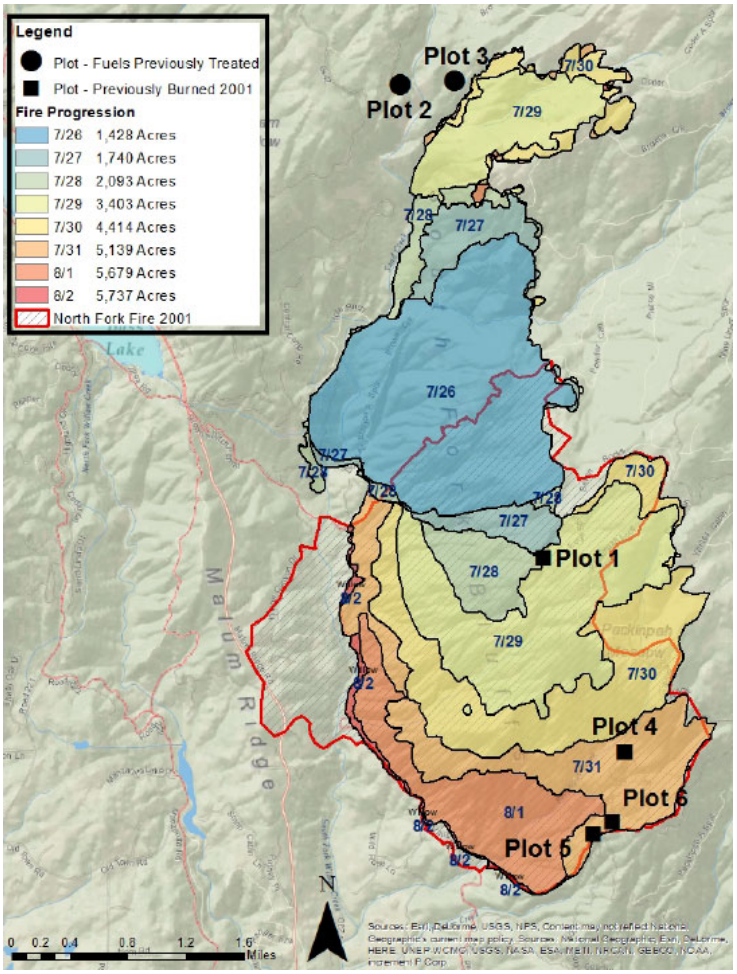
Fire management actions affecting plot:
Burnout operation

Fire Effects

Fire Severity	
Substrate Score (1-5)	3.3
Understory Vegetation Score (1-5)	4.1
Avg % tree canopy scorch	2
Avg % tree canopy torch	0
Avg tree bole char (ft)	0

Fuel Consumption	%
1-hour	62
10-hour	7
100-hour	49
1000-hour	94
Litter	81
Duff	63

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



Willow Fire, Plot5, 2015

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/2015WillowFire_FBAT_Summary_draft19Jan2016.pdf