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Fire behaviour in mulched debris

Observations from experimental fires at the
Pelican Mountain FireSmart Research Area

Case study by Louis Price

Presented by Steve Hvenegaard
2017 Fall Advisory meeting

Line ignition



May 30 –

- 1613 to 1829
- Weather
 - Temp – 29
 - Rh – 26%
 - Wind Speed – 12.2 km/h

FFMC	DMC	DC	ISI	BUI	FWI
93	57	182	9.8	64	25

Fire Behaviour



- Upper 5 cm of mulch very dry with wet fuel below
- Max. flame length – 2.0m
- Avg. flame length – 0.5m
- Scorch on adjacent trees
- IR platform measured temp of trees at 200°C

Point Ignition



May 31 –

- 1444 to 1634
- Weather
 - Temp – 33
 - Rh – 27%
 - Wind Speed – 11.6 km/h

FFMC	DMC	DC	ISI	BUI	FWI
93	63	190	9.5	69	25

Fire Behaviour



- Max. flame height – 2.5m
- Avg. flame height – 1.0m
- Vigorous flanking fire
- Spotting distance – 40 to 80m ahead of fire
- Fire whirls observed prior to spotting

Suppression challenges

- Very difficult to control with 5/8" hose and Wajax bags
- Radiant heat and smoke made for difficult control operations
- Hanson nozzle more effective than fog nozzle
- Wet line is a very effective control line
- Ignition from firebrand in mulch area burned on previous day
- Retardant line was breached in 4 minutes

Take home messages

- Fire in mulched fuels responds instantly to wind gusts
- Confirmed spotting potential for mulched fuels
- Potential for holdover fires and reburns
- Lots of water/foam is required for suppression and mopup
 - Wajax bags and 5/8" hose will have limited value
- ATV with water tank was very mobile on mulch debris
- Retardant seems to have holding potential
 - More studies required



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Thank you

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