

Wildfire: The Big Picture!

**NC Prescribed Fire Council Meeting
August 2018**

Kevin Harvell
Type 2 Incident Commander
Regional Forester - NC Forest Service



Series of recent news headlines. Notice that the Largest fire in several state's history has occurred in the recent past. Finally a slide previewing the later discussion on Climate Change

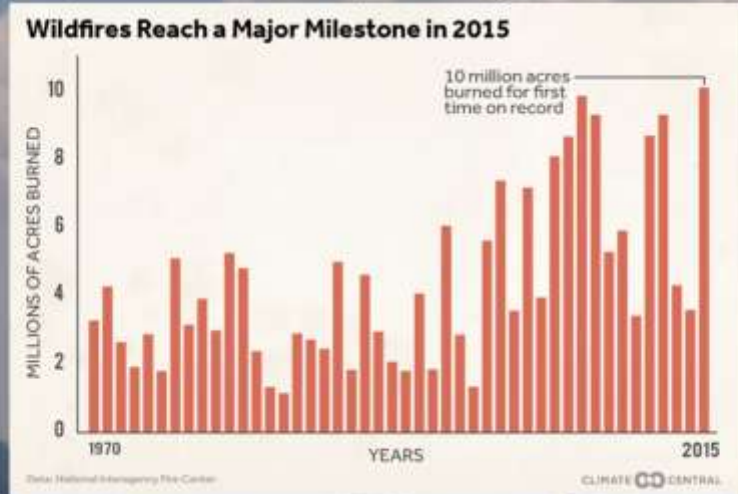
Questions & Thoughts

- Are Fires Harder to Control? Average Fire Size has Increased
- Fire Season is Longer than it Used to be
- Are there Less Wildland Firefighting Resources Available?
- Is Climate Change to Blame?
- The Fire Paradox?

After looking through the headlines here are a series of thoughts and questions that I had

Wildfire Statistics

- Nationwide (Federal and State) including Alaska from NIFC



This chart shows the total acres burned each year since 1970. Note the 10mil acre mark was topped in 2015 (All data is pulled from NIFC's web page).

Wildfire Statistics

- Nationwide (Federal and State) including Alaska from NIFC



These two charts were generated from raw NIFC data and show average acres burned annually per decade and avg annual number of fire per decade. Notice the opposing trends.

Wildfire Statistics Cont.

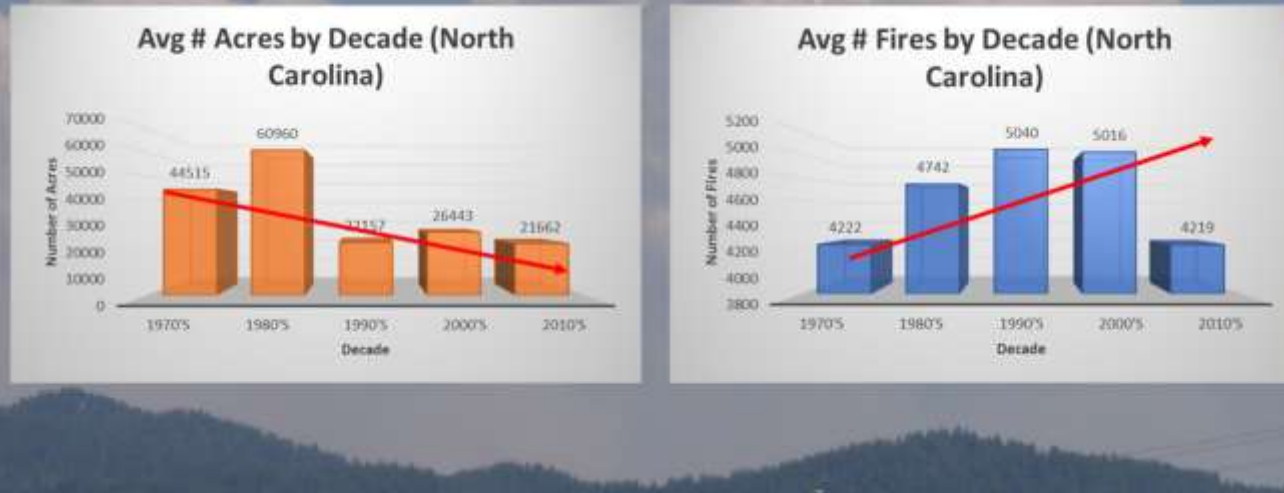
- Average Fire Size Nationwide (Federal and State) including Alaska From NIFC



Again raw data from NIFC. Showing the obvious average fire size increase since the 1970's and the rise of the "Mega Fires" or fires over 100,000 acres. NIFC data on their web site only goes back to 1997 on the 100,000 acre fires. Data does show that these "Mega" fires did occur prior to this data set but they were much rarer. Example is the Yellowstone Fires in the late 1980s.

Wildfire Statistics Cont.

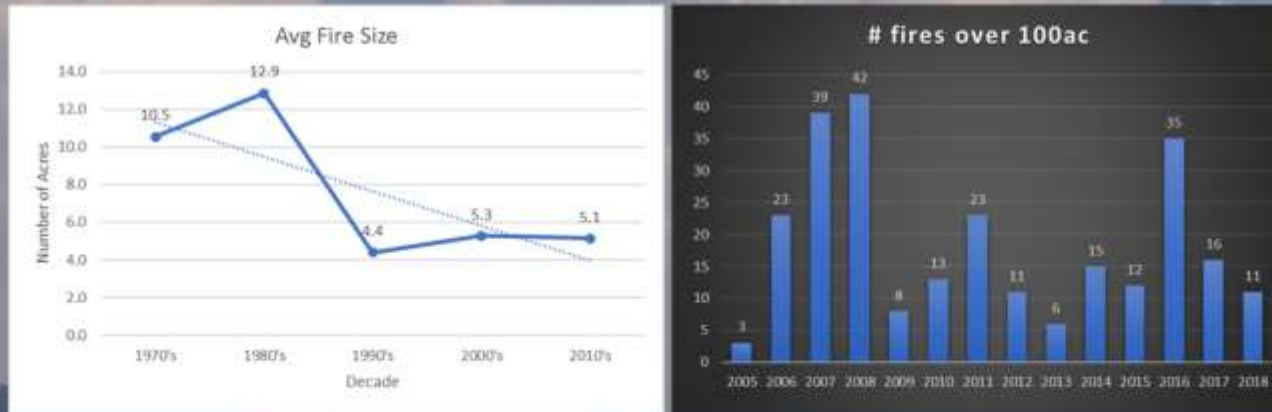
- North Carolina (State and Private Land Only)



NC Data to contrast the national data. Notice that the trends are opposite the national trends.

Wildfire Statistics Cont.

- Average Fire Size - North Carolina (State and Private Land Only)



Second slide of NC Specific data. Notice the bumps in the fires over 100ac. These match up with extreme or exceptional drought years as triggered by La Nina

Length of Fire Season (Western US)

	1973–1982	1983–1992	1993–2002	2003–2012
Julian Date For Large Fires (>400ha)				
First Discovery	154	150	115	120
Last Discovery	284	286	281	282
Last Control	292	316	316	342
Season Length	138	166	202	222
Mean Burn Time	6	23	40	52

Westerling ALR. 2016
 Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring. Phil. Trans. R. Soc. B 371: 20150178

In NC we have often referred to our fire season as annual especially in the sandhills. Is there any data to support a longer fire season nationally? This research by Westerling indicates that not only is fire season starting sooner it is going much longer (up close to Christmas in some cases). Notice the mean burn time. Going from less than a week in the 1970's to almost 2 months in the 2000's

IMT Resources Available

Table 1. Counts of Federal and state-sponsored IMTs by type in 2004 and 2011

IMTs by Type	2004	2011
Type 1 Federally Sponsored IMTs	17	16
Type 2 Federally Sponsored IMTs	35	33
State-sponsored IMTs (Type 1 and Type 2 Qualified)	22	34
Fire Use Management Teams (Short Teams)	7	2
NIMO (Short Teams)	0	4
Area Command Teams	4	4

Note: The 2004 data is from the National Complex Incident Study.

Source –

*Evolving Incident Management:
A Recommendation for the Future.*

IMTs by Type	2018
Type 1 Federally Sponsored IMTs	16
Type 2 Federally Sponsored IMTs	32
NIMO	3
Area Command	3
State Sponsored Teams (Type 1 & 2)	24* (2-NC)

Source – Geographic Coordination Centers

Does IMT availability have much to do with this issue of larger longer burning fires? For the most part the number of IMTs has stayed the same over the last 14 years. Note: Information in State Sponsored Teams is very hard to find. Most states including NC do not have any information on their teams on their website. Also of importance is that many of these teams have shortages at critical positions and do not have some positions filled on their team roster. Only stating fill upon dispatch. Thus it is unlikely that all of these teams could be dispatched at any given time

Large Air Tanker Resources Available



Does not include
11 Call When
Needed Air
Tankers

Aviation resources are a hot topic and often debated. Large & Very Large Air Tankers (VLAT) are at the top of the list. Even when you include the Call when needed aircraft it is hard to miss the sharp decline in those available to the USFS since the early 2000's.

Hot Shot Crew Resources



Raw Data from:
Hotshot Crew History
in America – National
Interagency Hotshot
Crew Steering
Committee, 2017

As a sharp contrast to the air tankers the number of Hot Shot Crews has steadily increased over the years. The spike in crews during the early 2000's was due to an emphasis on increasing this capability in the National Fire Plan.

What about Climate Change?

- "...human-caused climate change caused over half of the documented increases in fuel aridity since the 1970s and doubled the cumulative forest fire area since 1984. This analysis suggests that anthropogenic climate change will continue to chronically enhance the potential for western US forest fire activity..." John T. Abatzoglou and A. Park Williams; Impact of anthropogenic climate change on wildfire across western US forests *PNAS* October 10, 2016; 201607171; published ahead of print October 10, 2016.

Could Climate Change be the cause. As we saw earlier fire season has increased by over 100 days in the last 40 years. At least 1 research paper thinks so...

What about Climate Change?

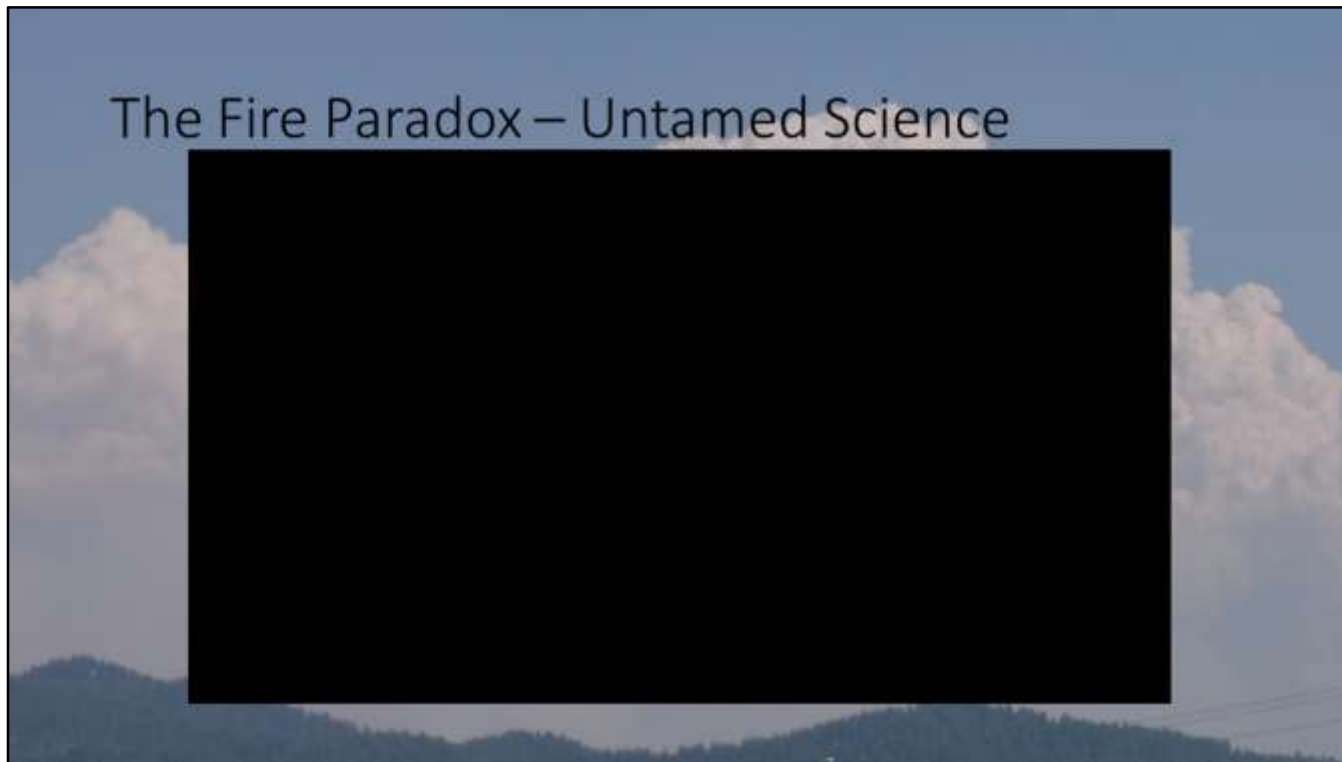


What data is out there to back up the climate change possibility. Theory is that early snow melt has a direct correlation to earlier fire season activity in the west. Data shows that Spring temps has increase by as much as 5° in western states since the 1970's

What about Climate Change?



Average Annual temps are also increasing in the West



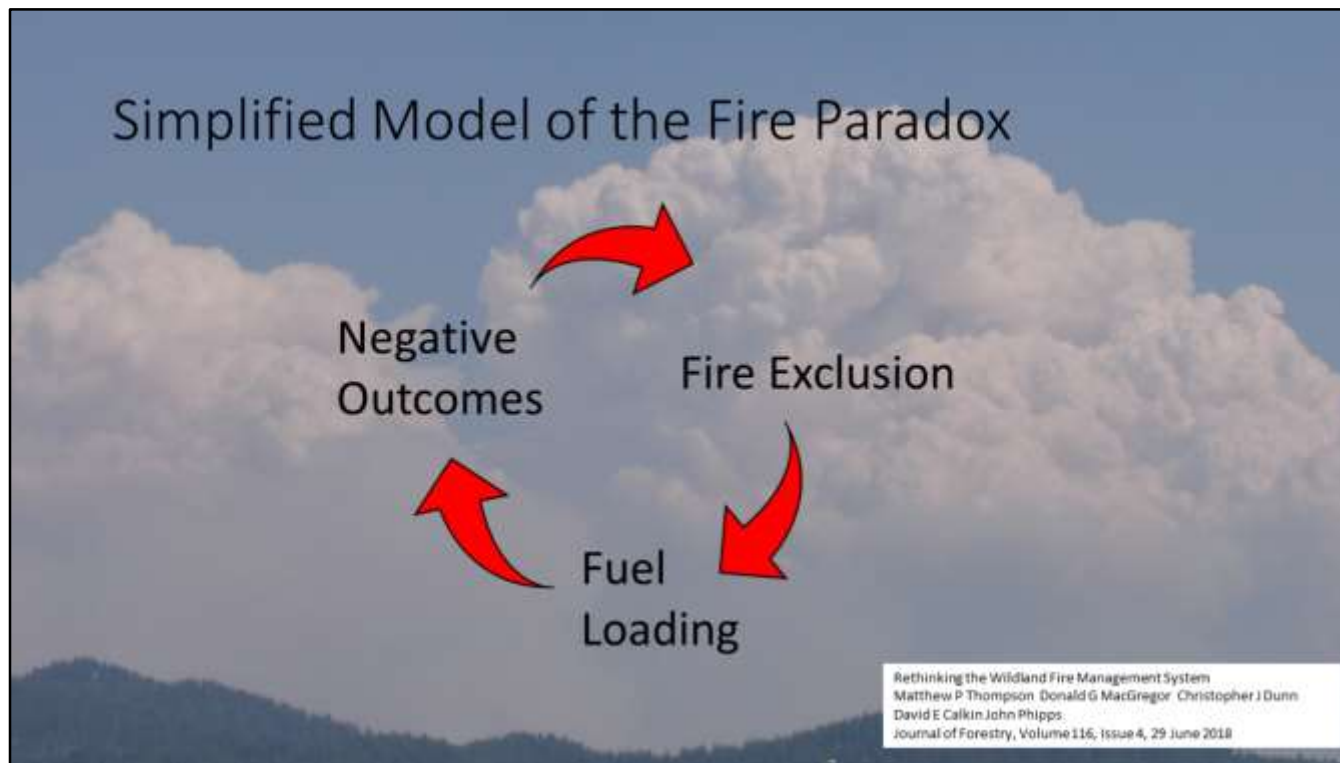
Trailer for Untamed Science “The Big Picture of Wildland Fires in 90 Seconds”

<https://www.youtube.com/watch?v=-haJHutc4d8&feature=youtu.be>

The full video Untamed Science “Wildland Fire Basics + How to Think About Them!”

<https://youtu.be/F7yLPUzRoeY>

1st place that I saw the term Fire Paradox



Research published in the July 2018 Journal of Forestry. Reinforcing that we need to rethink our national wildfire policies if we expect to break the cycle of large fires.

Where do we Go from Here?

What is the Future of Wildland Fire?



Tying up the presentation with some news clips on how we can look to solve the Paradox. Finishing up with Collaborative efforts in NC to Rx burn large acreages across the landscape. My contention is that the NC Prescribed Fire Council and it's members can make a difference and that we are part of the solution through projects like these.

Questions



Kevin Harvell, CF, RF
NC Forest Service
Region-2 Regional Forester / Piedmont Division Director
kevin.harvell@ncagr.gov