



# Multi-Year Forestry Impacts

Daniel DePinte-Forest Health Specialist, USFS

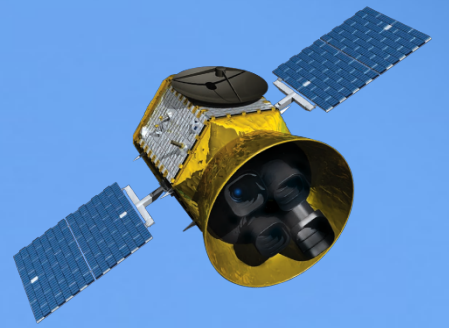


# Which Forests in the Pacific Northwest Do We Monitor?

~69,000,000 acres annually!

An aerial photograph of a vast mountain range. The foreground and middle ground are dominated by rolling hills and valleys covered in dense, green coniferous forests. The terrain is rugged, with rocky outcrops and varying elevations. In the background, a series of high, jagged mountain peaks rise against a clear blue sky with a few wispy clouds. The mountains are mostly brown and grey, indicating rocky or sparsely vegetated slopes. The overall scene is a wide, panoramic view of a large natural area.

**How do we monitor such a large area?**



A screenshot of a GIS software interface. The main window displays a map with various colored overlays and a network of blue lines. On the right side, there is a legend panel with a table of categories and their corresponding colors. Below the legend, there are buttons for 'AUTO SAVE', 'CLR.', 'ADD', and 'APPLY'.

QUICK KEYS	LISTS	LAYERS
1	2	
3	4_WA	
5	GB	
6L	GP	
GW	7	
8	SB	
9	BEAR	
	RD	
FBRE	AB-L	
AB_Mat1	AB-H	
AB-M		

Percent of tree area affected:

1-3	4-10	11-29	30-50	>50
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AUTO SAVE

CLR. ADD APPLY



# **What do we monitor for?**

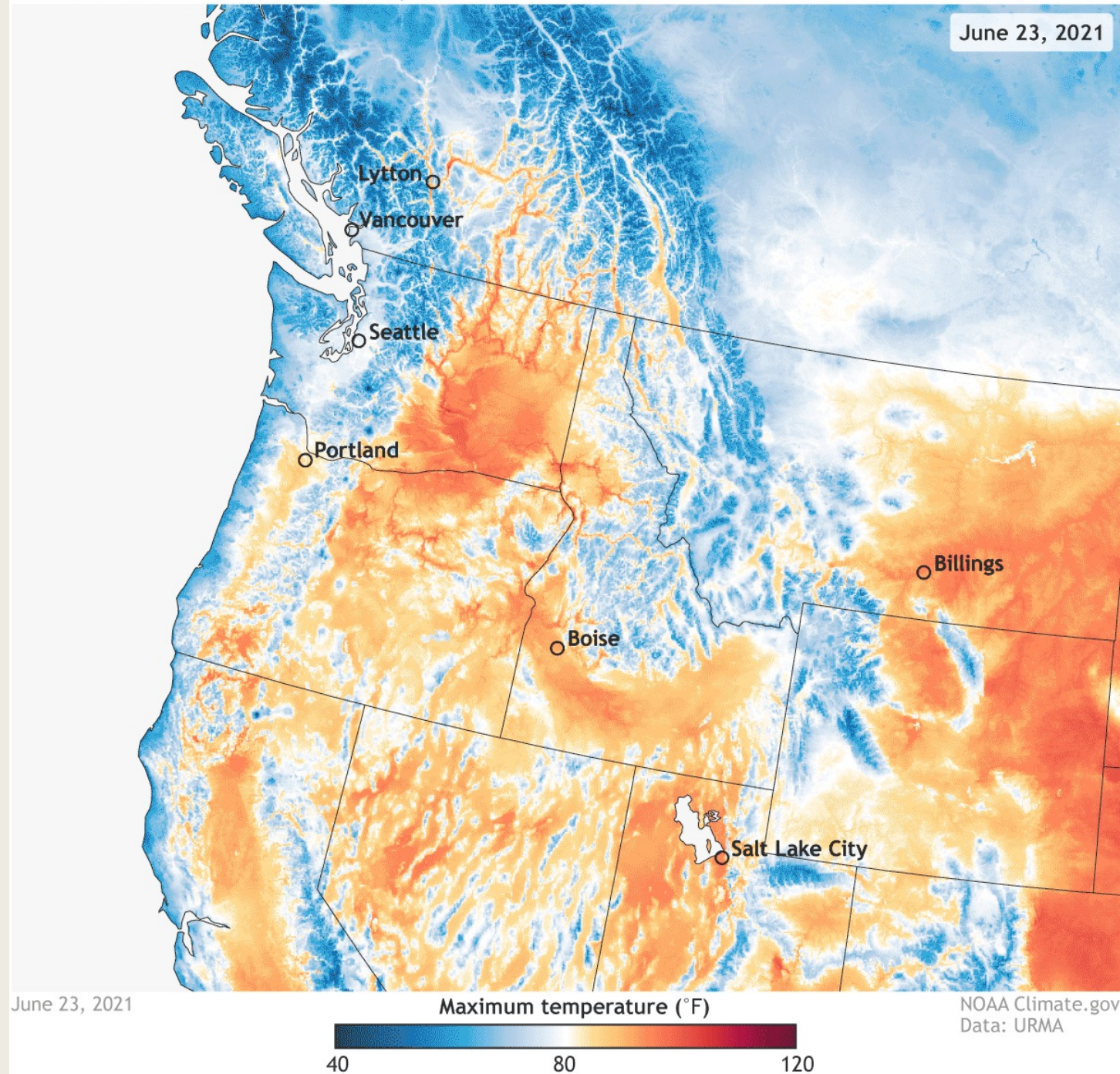
**Biotic Forest Damage:  
Defoliation  
& Mortality**

An aerial photograph of a vast, dense forest of coniferous trees. The trees are mostly green, but there are significant patches of brown and reddish-brown, indicating areas of tree mortality or stress. In the bottom right corner, there is a semi-transparent white callout box with a curved top edge, containing text.


**Abiotic Events:**  
mudslides,  
avalanche, drought,  
heat

- Three days of consecutive new all time recorded high temperatures
- June 26-high at 108°F
- June 27-high at 112°F
- June 28-high at 116°F
- Previous record was set at 107°F in 1981

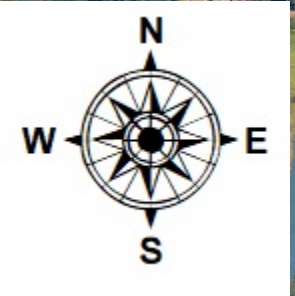
Heatwave in the Pacific Northwest, June 2021



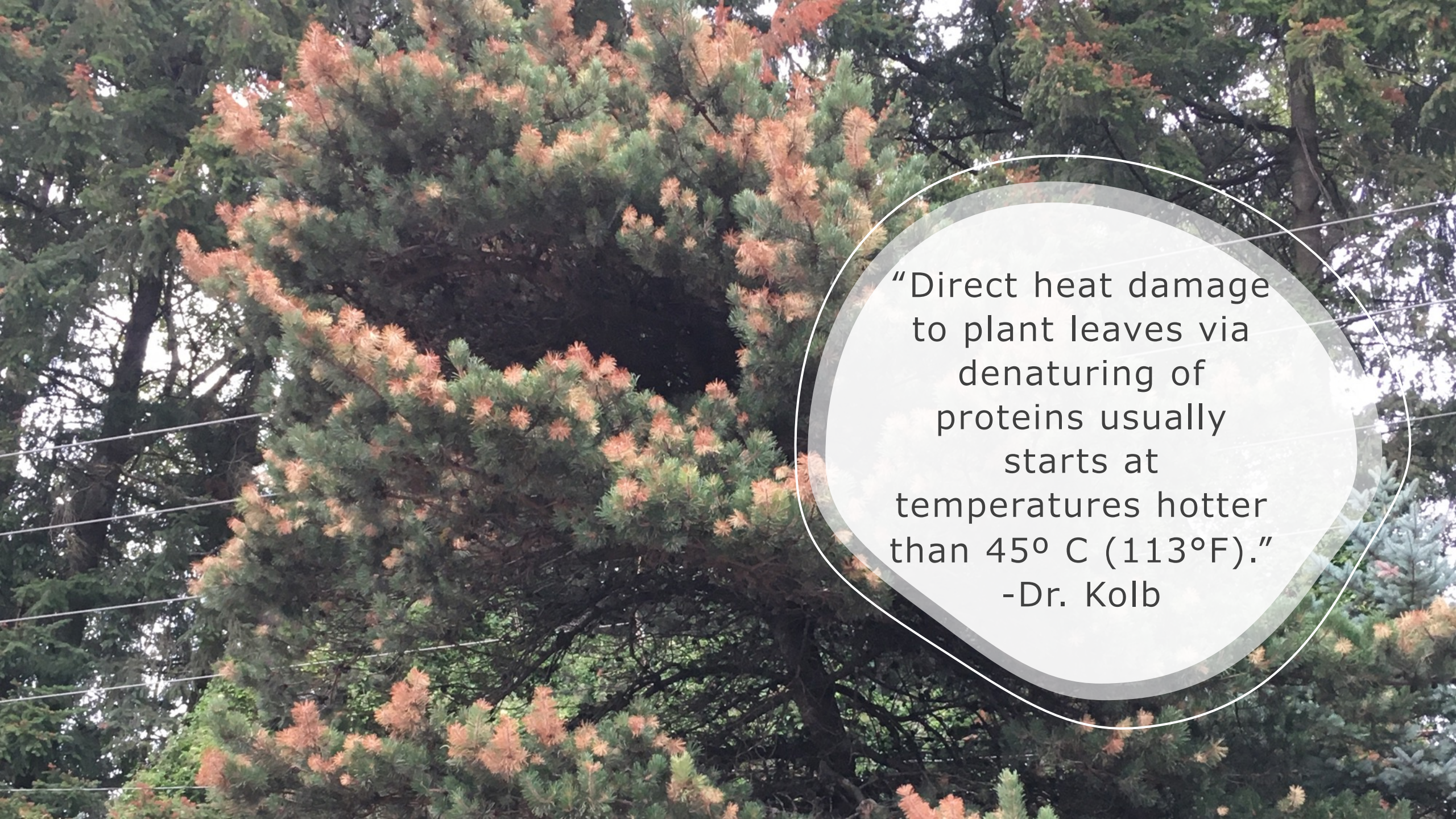




South and west sides  
of tree crowns had red  
foliage, associated with  
the sun location during  
the hottest time of day.



Coastal Range of Oregon, 2021

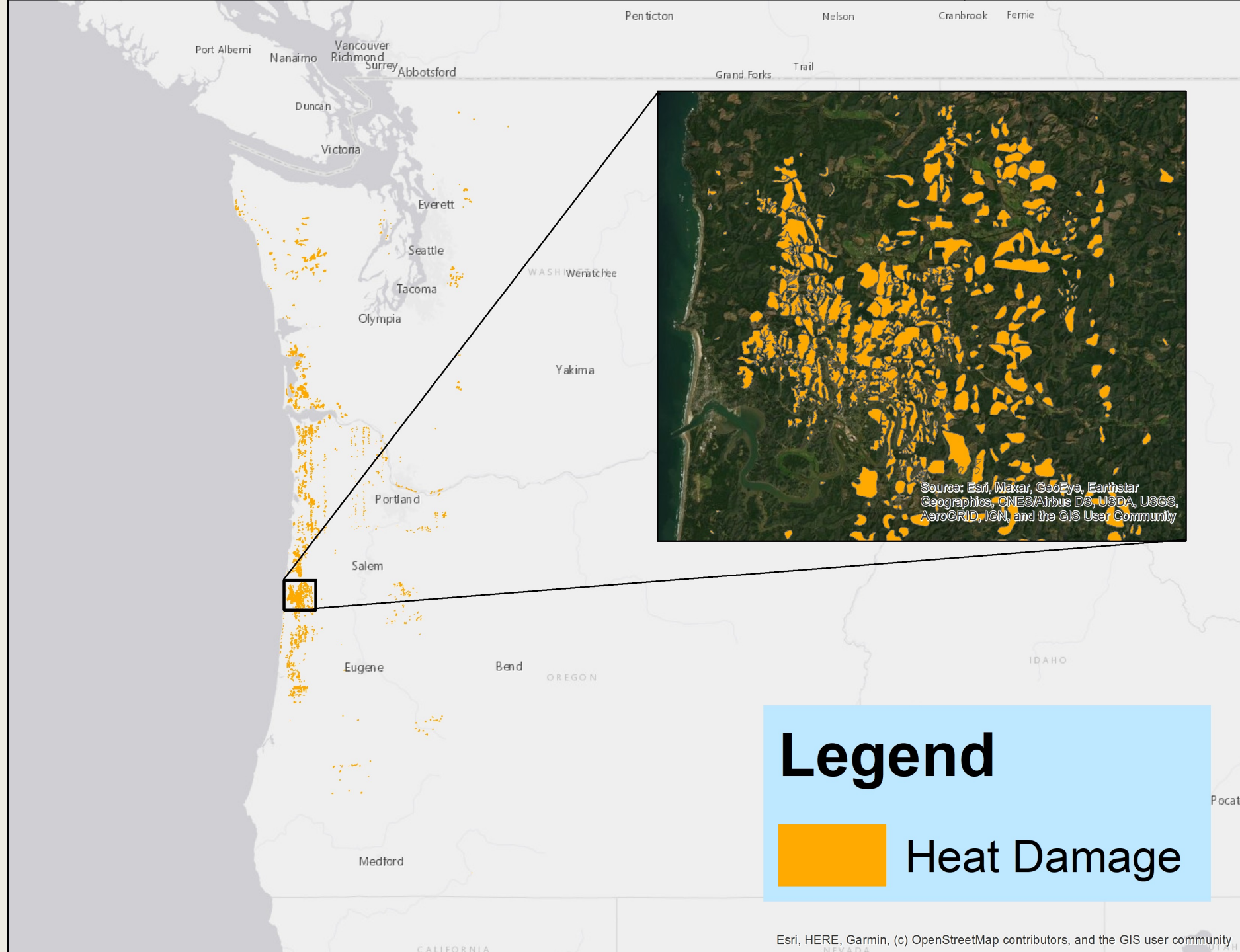


“Direct heat damage to plant leaves via denaturing of proteins usually starts at temperatures hotter than 45° C (113°F).”  
-Dr. Kolb




- ~229,000 Acres of Heat Damage Mapped Across Washington and Oregon

- Actual Extent of Heat Damage is Much Larger



**Legend**

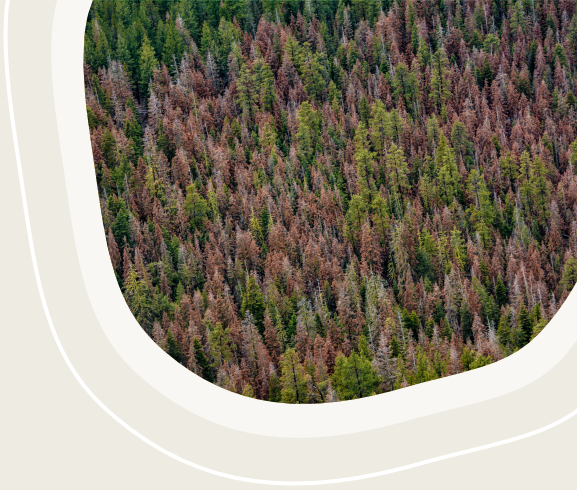
 Heat Damage



# **Fir Mortality Event 2022 Drought, Insects, and Disease, oh my!**



# Oregon's Area of Drought 2022

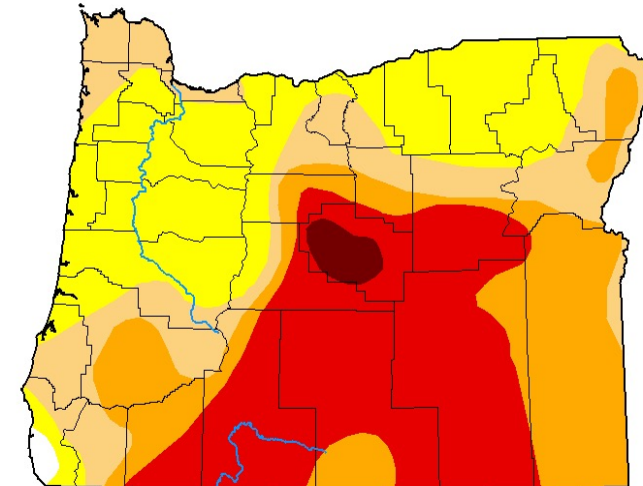
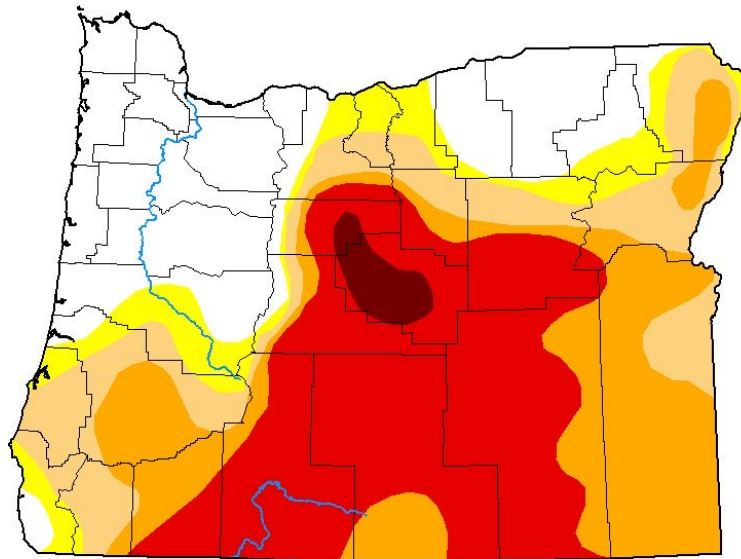
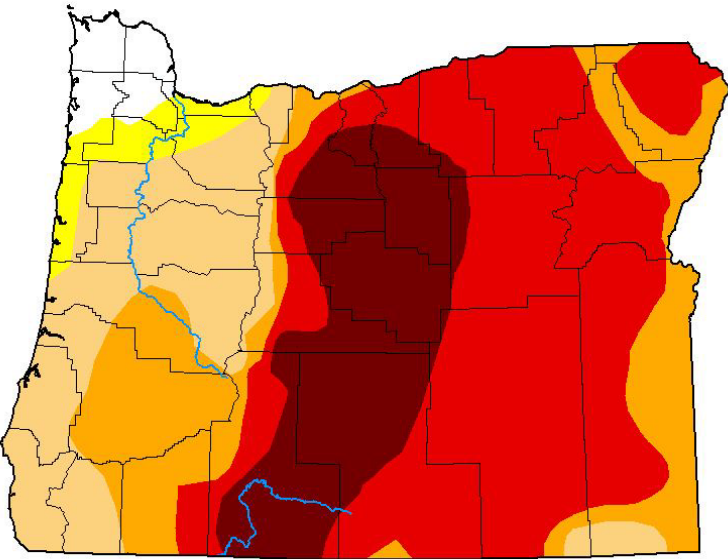


December 28, 2021

July 12, 2022

U.S. Drought Monitor  
Oregon

October 11, 2022  
(Released Thursday, Oct. 13, 2022)  
Valid 8 a.m. EDT



- Intensity:**
- None
  - D0 Abnormally Dry
  - D1 Moderate Drought
  - D2 Severe Drought
  - D3 Extreme Drought
  - D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <http://droughtmonitor.unl.edu/About.aspx>*

**Author:**  
Brad Pugh  
CPC/NOAA

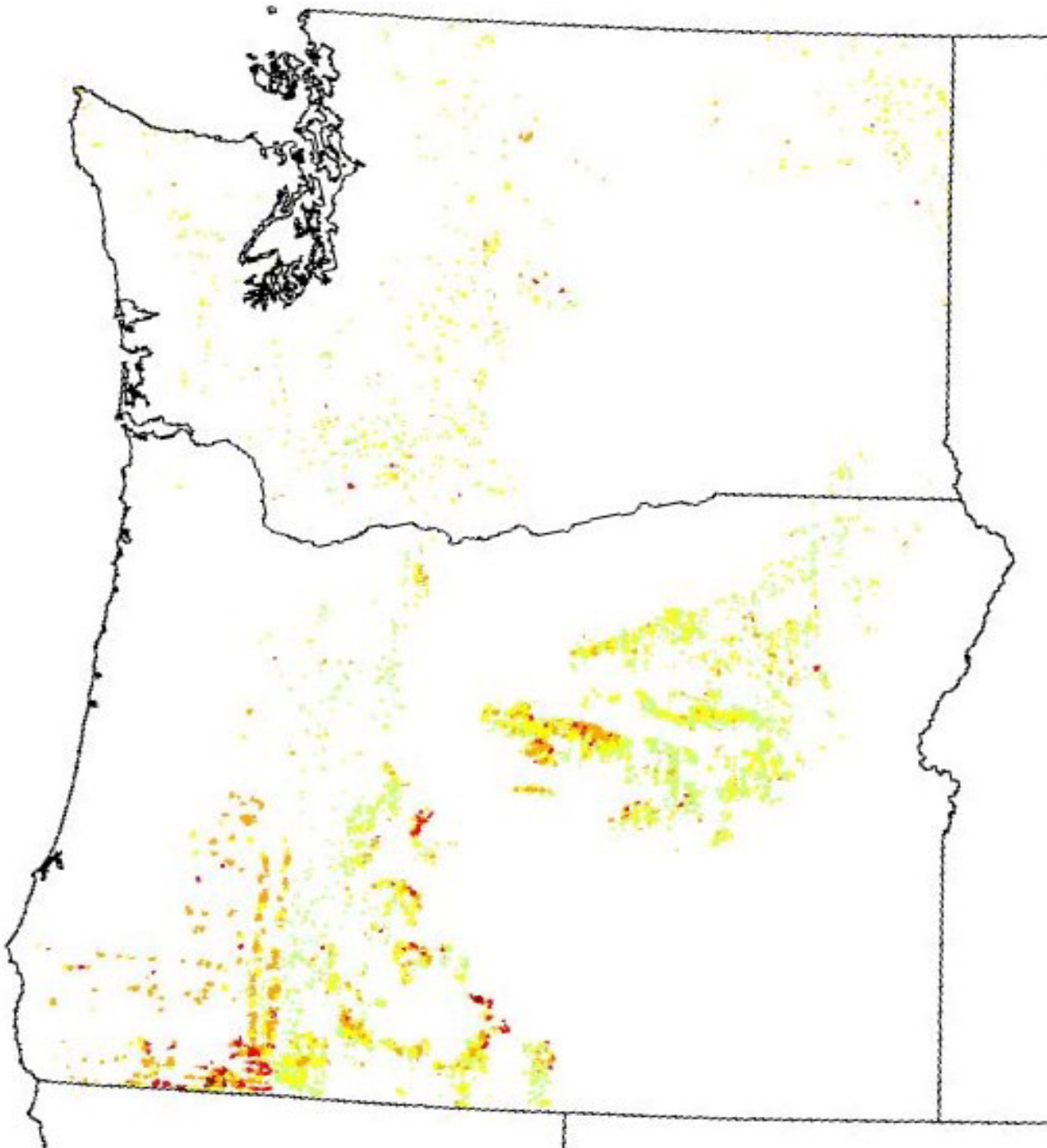


[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)



# Acres with Fir Mortality in 2022

Oregon ~ 1,100,000 Acres  
Washington ~ 69,000 Acres



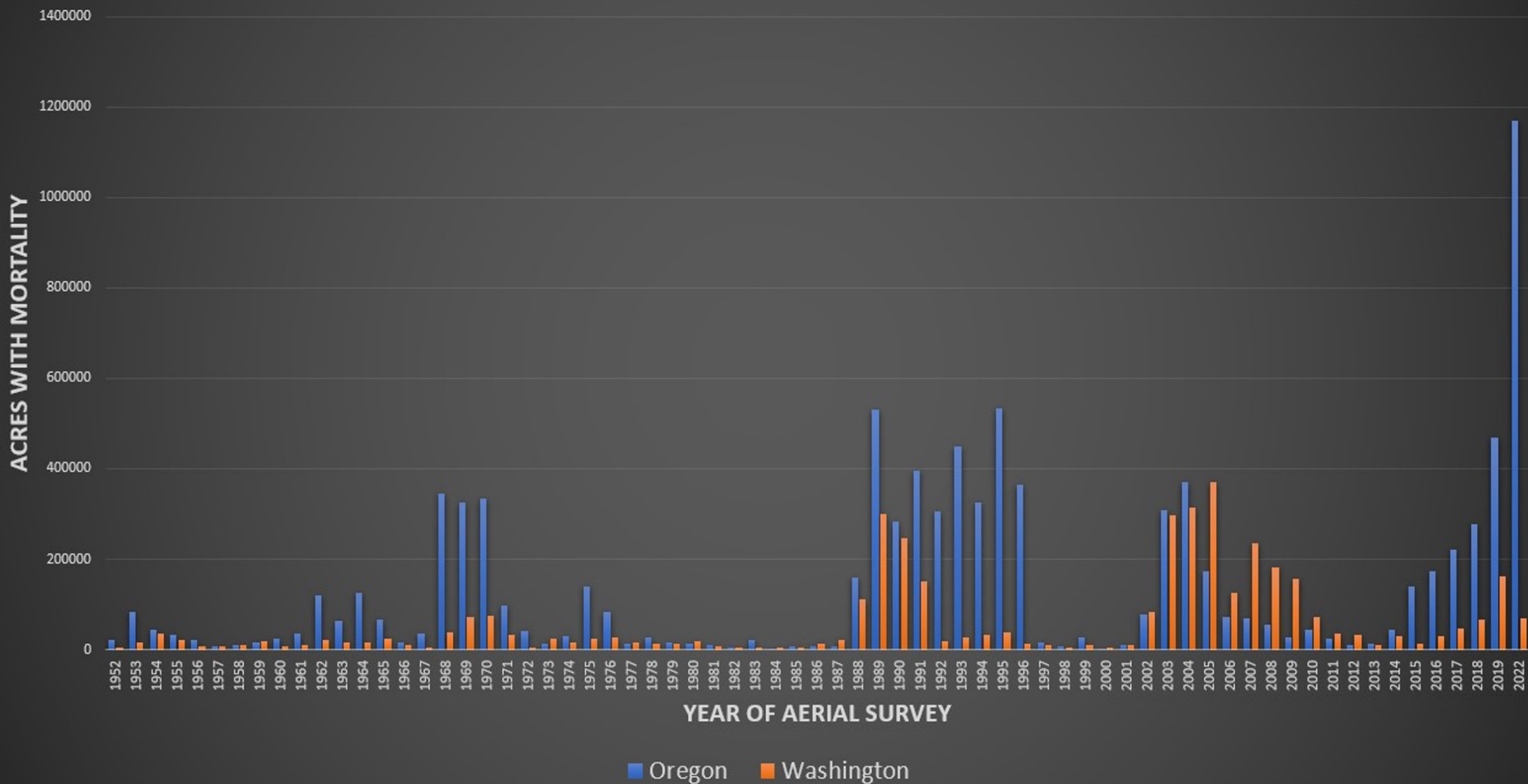
## Legend

### Fir Mortality 2022

#### Level of Severity

- Very Light (1-3%)
- Light (4-10%)
- Moderate (11-29%)
- Severe (30-50%)
- Very Severe (>50%)

# Acres with Fir Mortality in the Pacific Northwest



# More Impacts on Forest Health



## DOUGLAS-FIR MORTALITY IN SOUTHWEST OREGON



## FLATHEADED FIR BORER



An aerial photograph of a vast, dense forest. The trees are mostly green, with some showing hints of autumn colors like yellow and orange. In the background, there are rolling hills and mountains under a bright blue sky with scattered white clouds. The text "THANK YOU" is overlaid in the center of the image in a white, serif font.

THANK YOU