

# A Tale of Two WildFires: Post-fire Weed Management @Pepperwood Preserve

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# Pepperwood Foundation

mission

to advance science-based conservation  
throughout our region and beyond



3200-acre Biological  
Field Station



The Dwight Center  
for Conservation Science

# Living Laboratory



measuring, mapping,  
modeling and testing solutions

# Presentation Outline



Invasive Plant Species  
Response to Fire

Fire Break Impacts and Weed  
Prevention

Increased Fire Frequency

Additional Lessons Learned

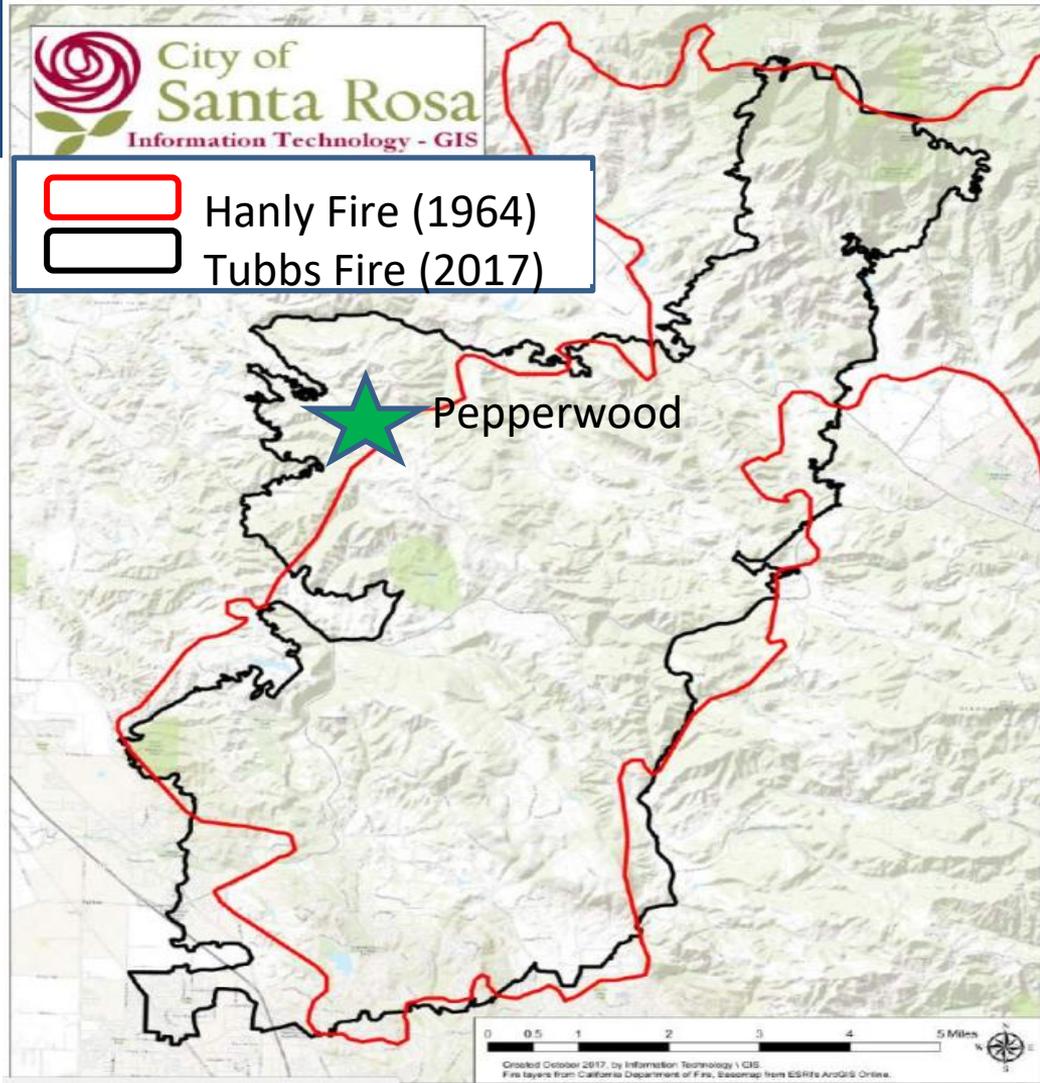




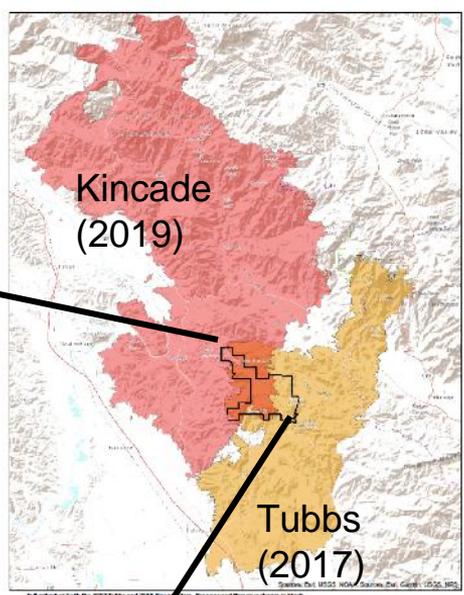
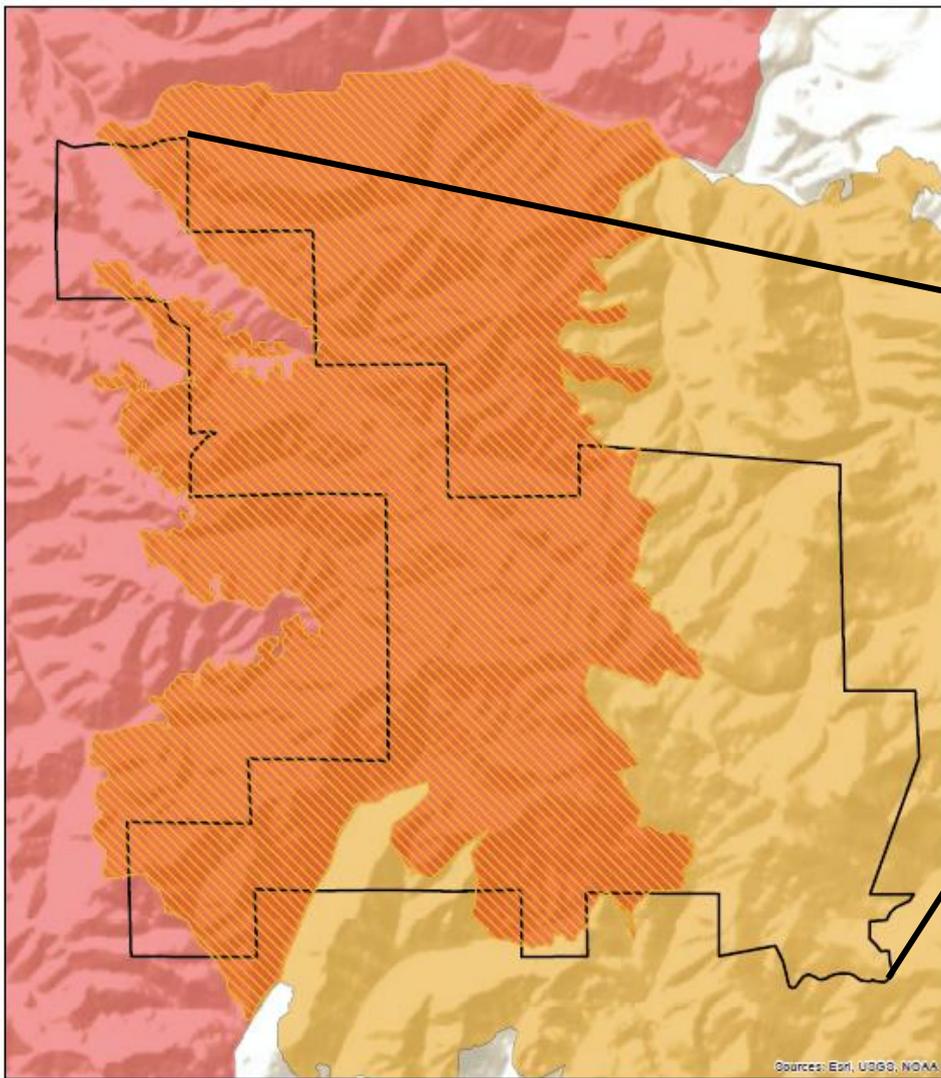
# Fire Corridor

## Fire History

1871  
1923  
1964  
2017  
2019  
Next?



	Hanly (1964)	Tubbs (2017)
Time to urban area	3 days	3 hours
Structures destroyed	~100	~5500
Lives lost	0	22



Sources: Epi, USGS, NOAA







# Pepperwood





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# Invasive Species Responses

## Seed dispersal during fire event

- Immediate population increase of disturbance-promoted species (e.g. Stinkwort)

## Delayed colonization

- Later establishment in barren soils (e.g. Thistles)

## Flushing of seedbank in the soil

- Plants with established seedbank (e.g. Broom spp.)

## Delayed regeneration

- Perennial and biennial species (e.g. Thistles, Himalayan Blackberry)



Stinkwort (*Dittrichia graveolens*)



French Broom (*Genista monspessulana*)

# Dispersal through Fire



# Dispersal through Fire

## Treatment

Hand pull (wear gloves)

Aster-specific herbicide (e.g. Transline)



# Dispersal through Fire

## Treatment

Hand pull (wear gloves)

Aster-specific herbicide (e.g. Transline)

## No Treatment

Year 1 – Finding invasives in new locations

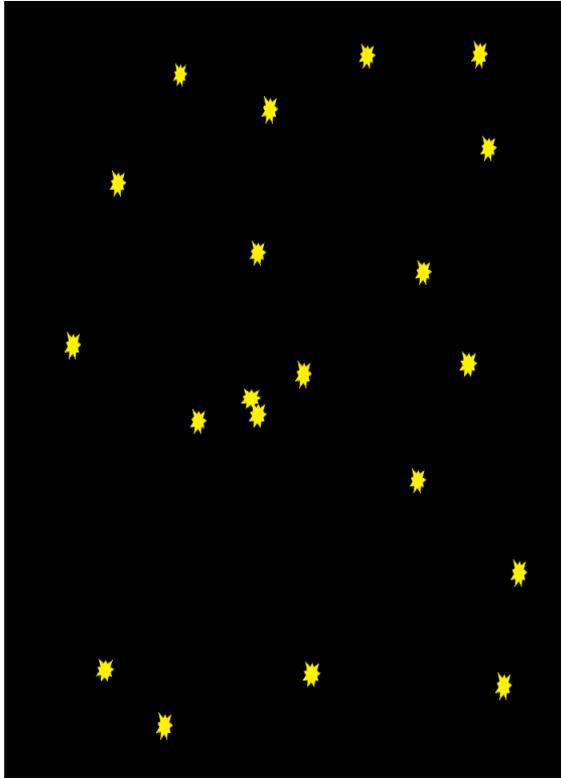
Year 2 – Greater numbers but in more distinct populations

Year 3 – Population sizes decreased, mainly found in areas that burned hot (impacted soil)

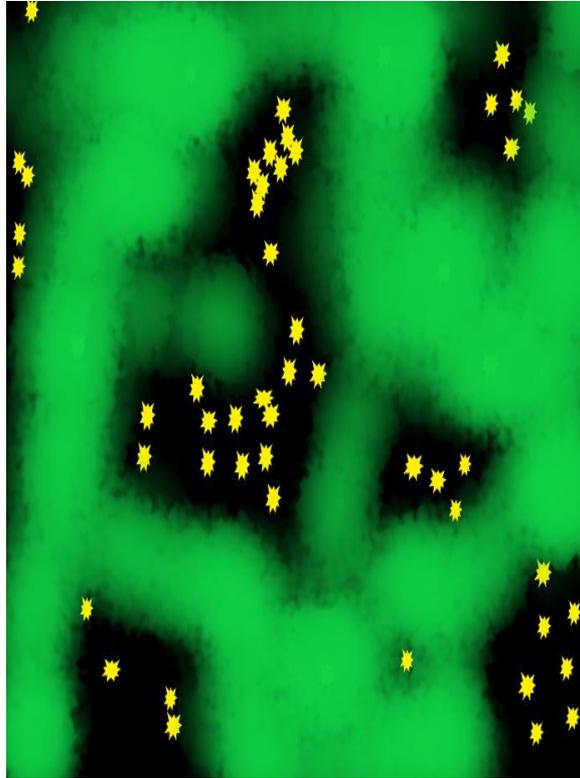
ACT FAST... early detection rapid response



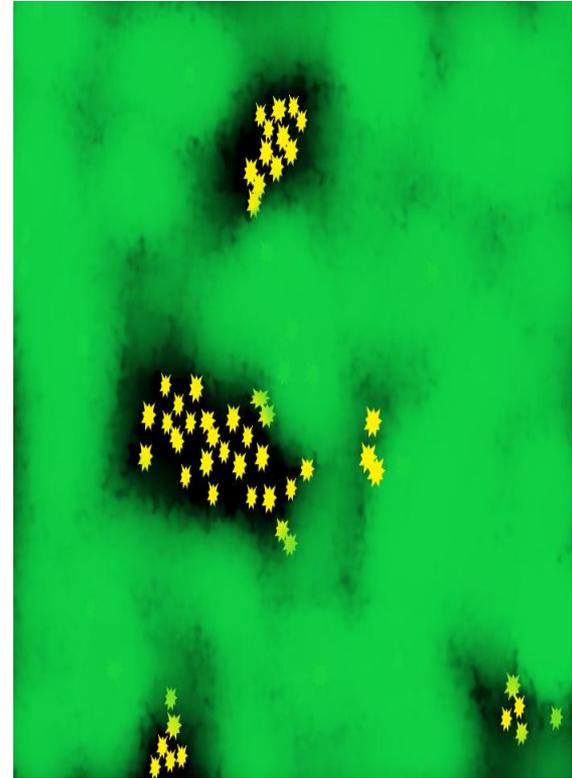
# Dispersal through Fire



1st Year



2nd Year



3rd Year

***Dittrichia graveolens* dispersal After Wildfire(w/ no treatment)**



# Delayed Colonization

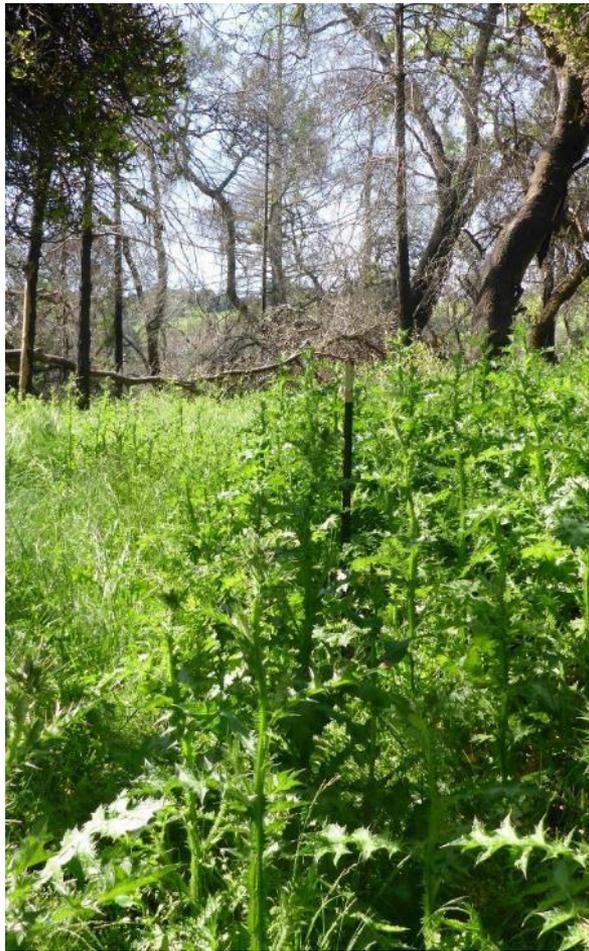


# Delayed Colonization





Spring  
2018



Spring  
2019



Spring  
2020

# Delayed Colonization



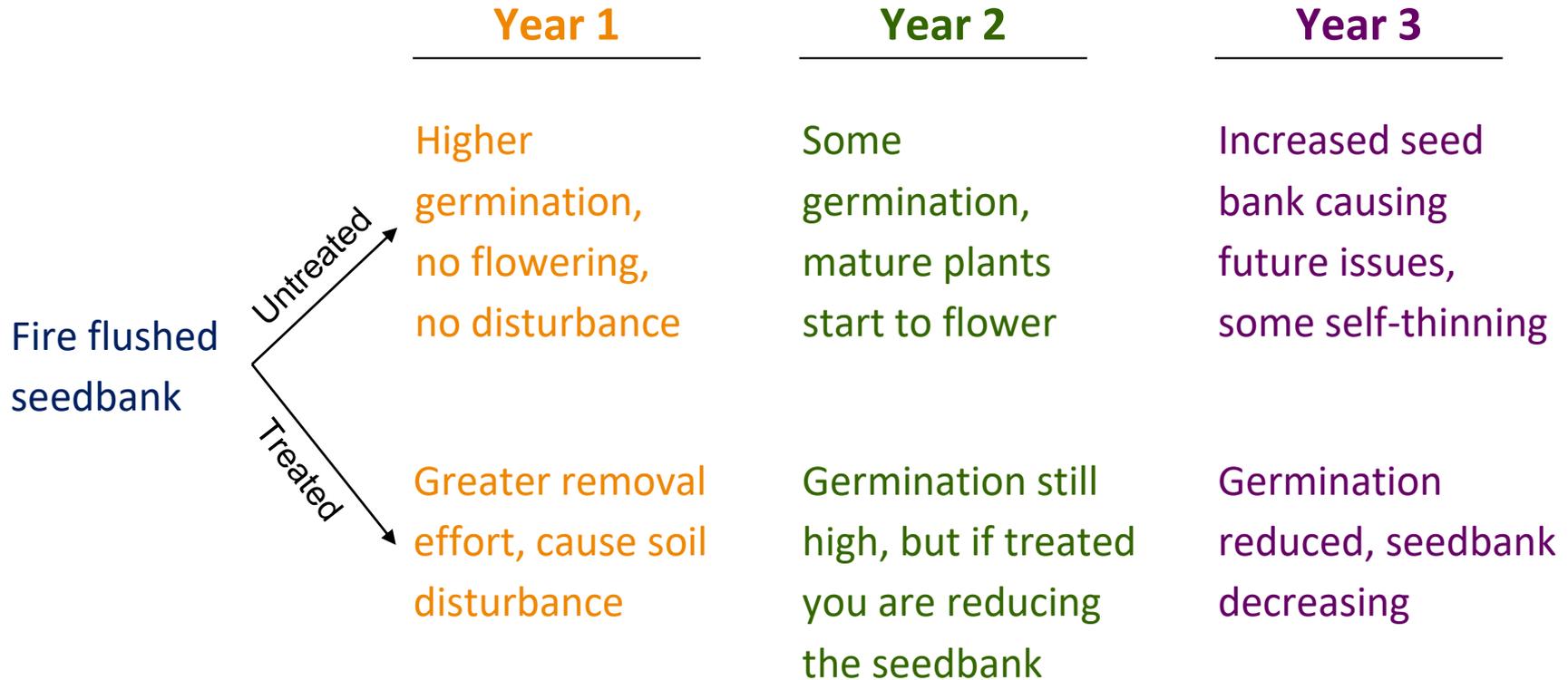
## Species w/ this Behavior

- Thistle sp.
- Oblong Spurge (*Euphorbia oblongata*)
- Queen's Anne's Lace (*Daucus carota*)
- Wild Teasel (*Dipsacus fullonum*)
- Fennel (*Foeniculum vulgare*)
- Yellow Star-Thistle (*Centaurea solstitialis*)

# Flushing the Seedbank



# Flushing the Seedbank



# Flushing the Seedbank



# Delayed Regeneration



# Delayed Regeneration



## Restoration Opportunity



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# Fuel Breaks



# Fuel Breaks





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Twice Burnt (2017,  
2019)

Once Burnt (2017)



Pepperwood

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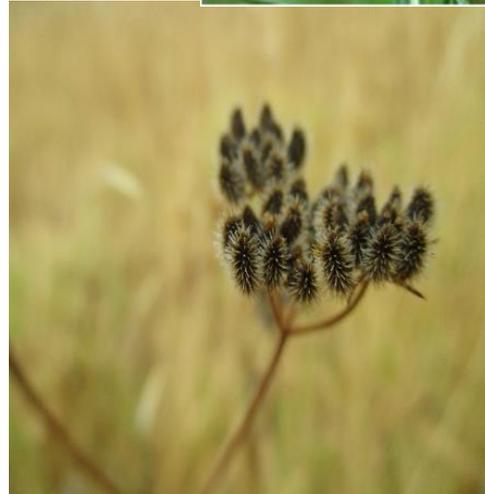
**Additional Lessons Learned**



# Additional Lessons Learned

Other invasives increasing post-fire:

- *Erodium cicutarium*
- *Trifolium angustifolium*
- *Torilis arvensis*



# Additional Lessons Learned



Some natives act this way too.  
They are great for creating  
ground cover, competition, and  
soil stabilization.

- *Erigeron canadensis*



# Additional Lessons Learned



Equipment loss

Safety concerns - Hazard trees

Can be very emotional time for people

Livestock needs



# In Gratitude



Thank you!



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## Stay in touch!

[www.PepperwoodPreserve.org](http://www.PepperwoodPreserve.org)



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