

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

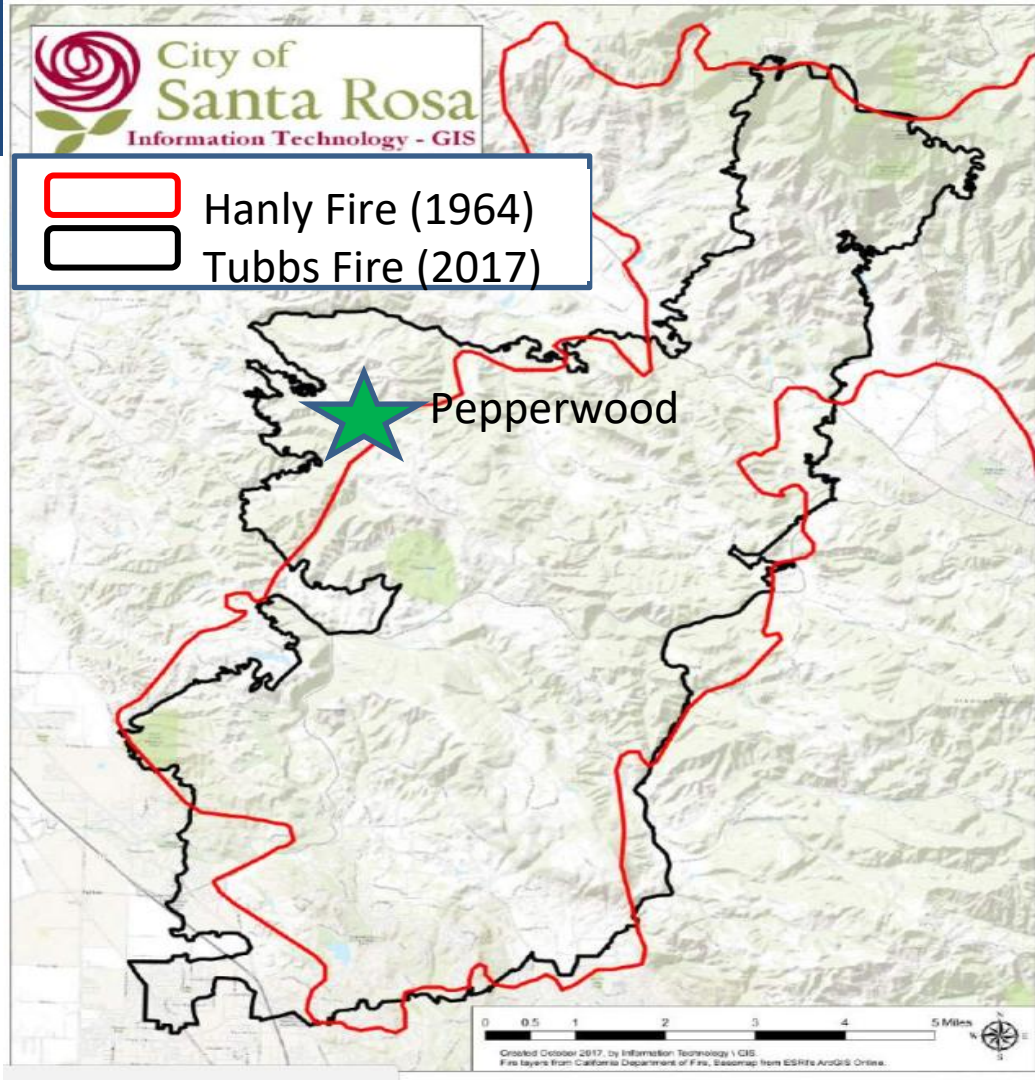
1923

1964

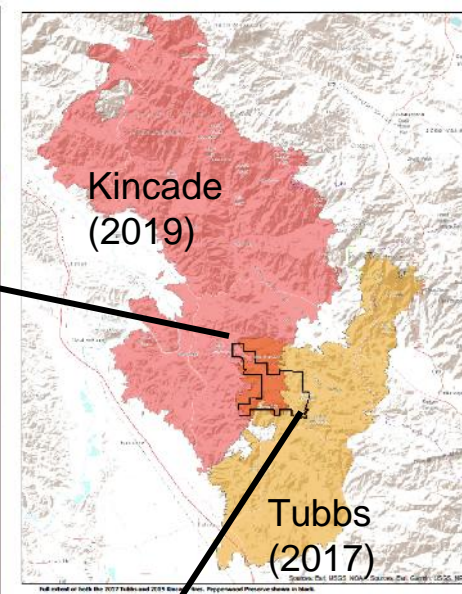
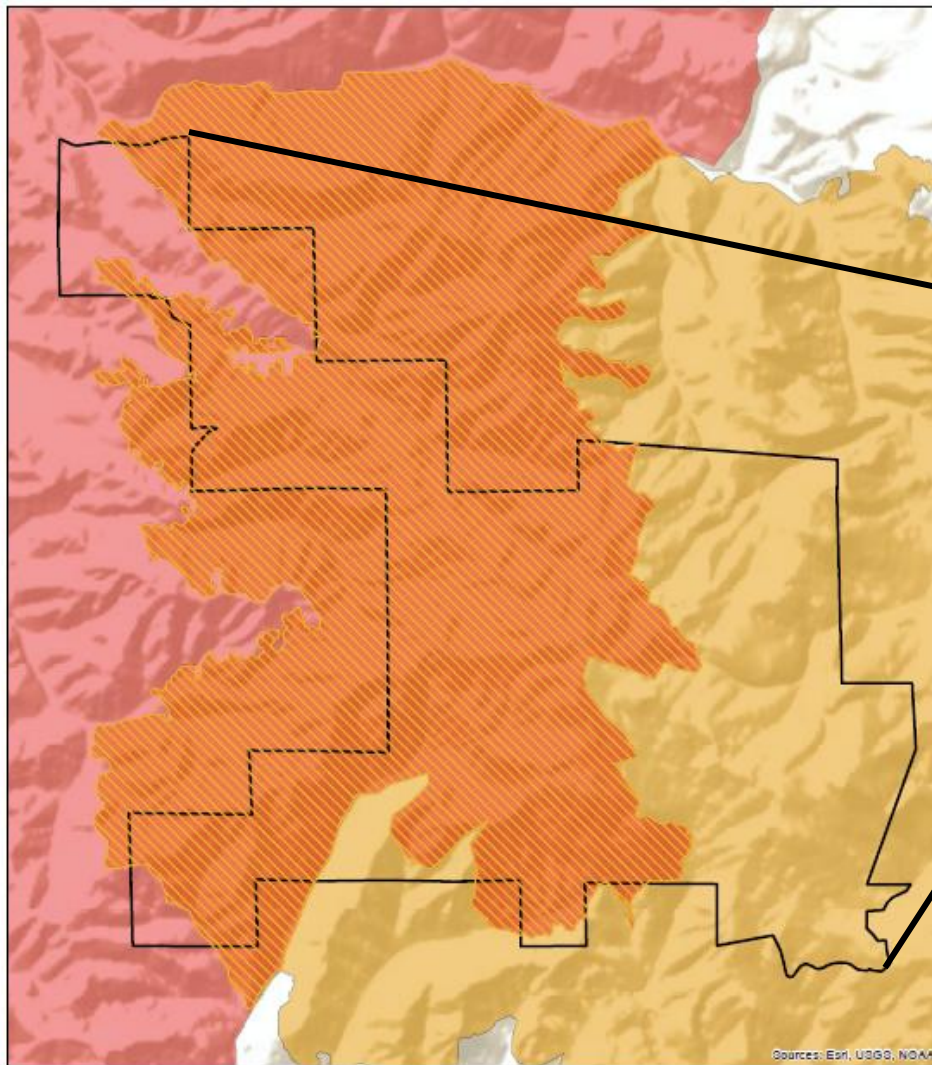
2017

2019

Next?



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











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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

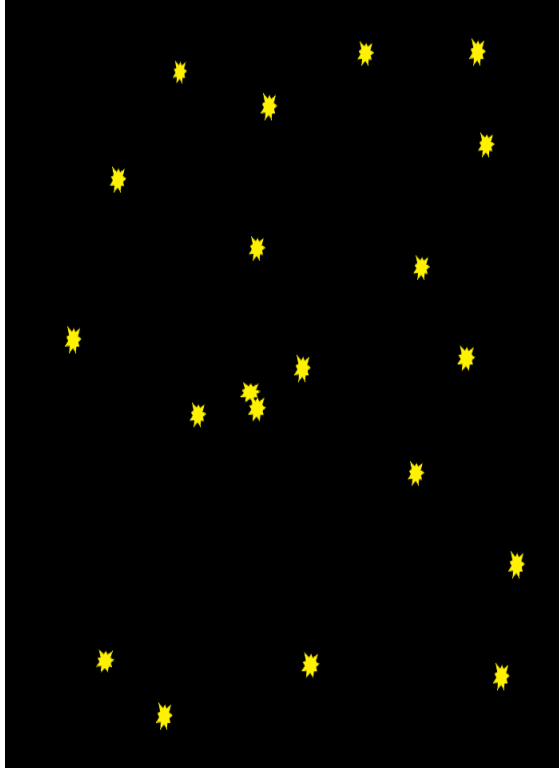
Year 2 – Greater numbers but in more distinct populations

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

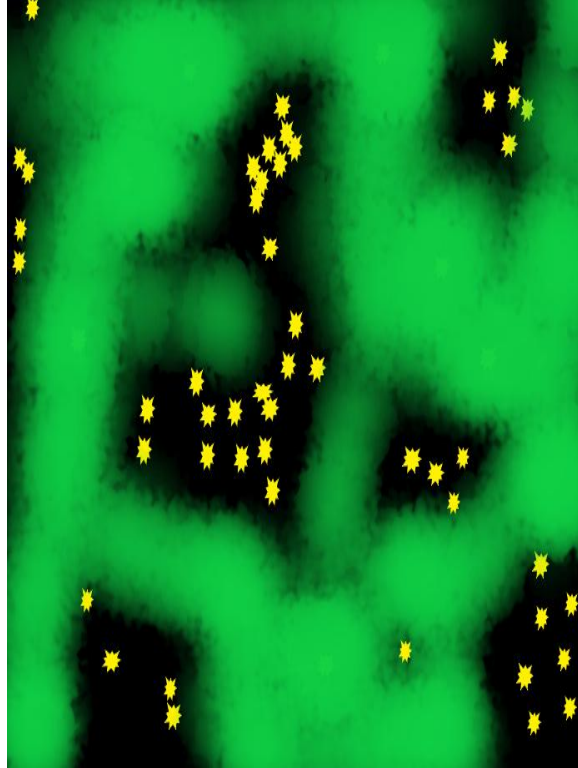
ACT FAST... early detection rapid response



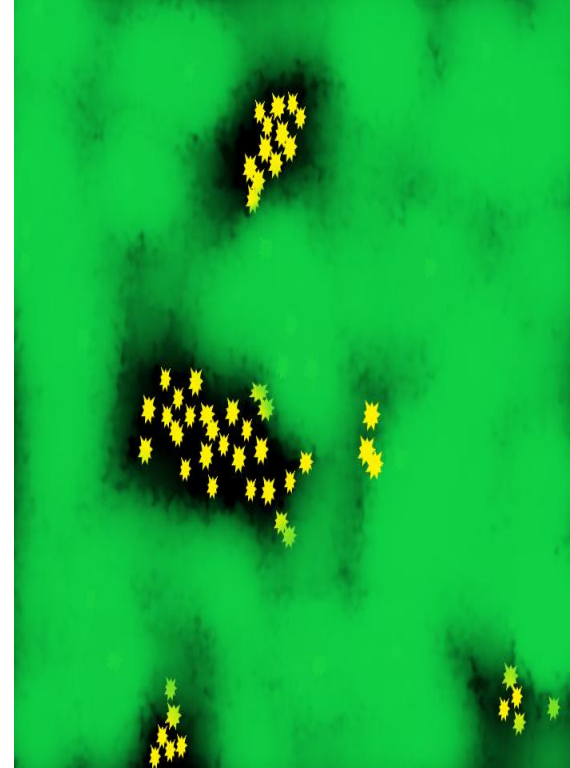
Dispersal through Fire



1st Year



2nd Year



3rd Year

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



Pepperwood

Delayed Colonization



Delayed Colonization





Spring
2018



Spring
2019



Spring
2020

Delayed Colonization



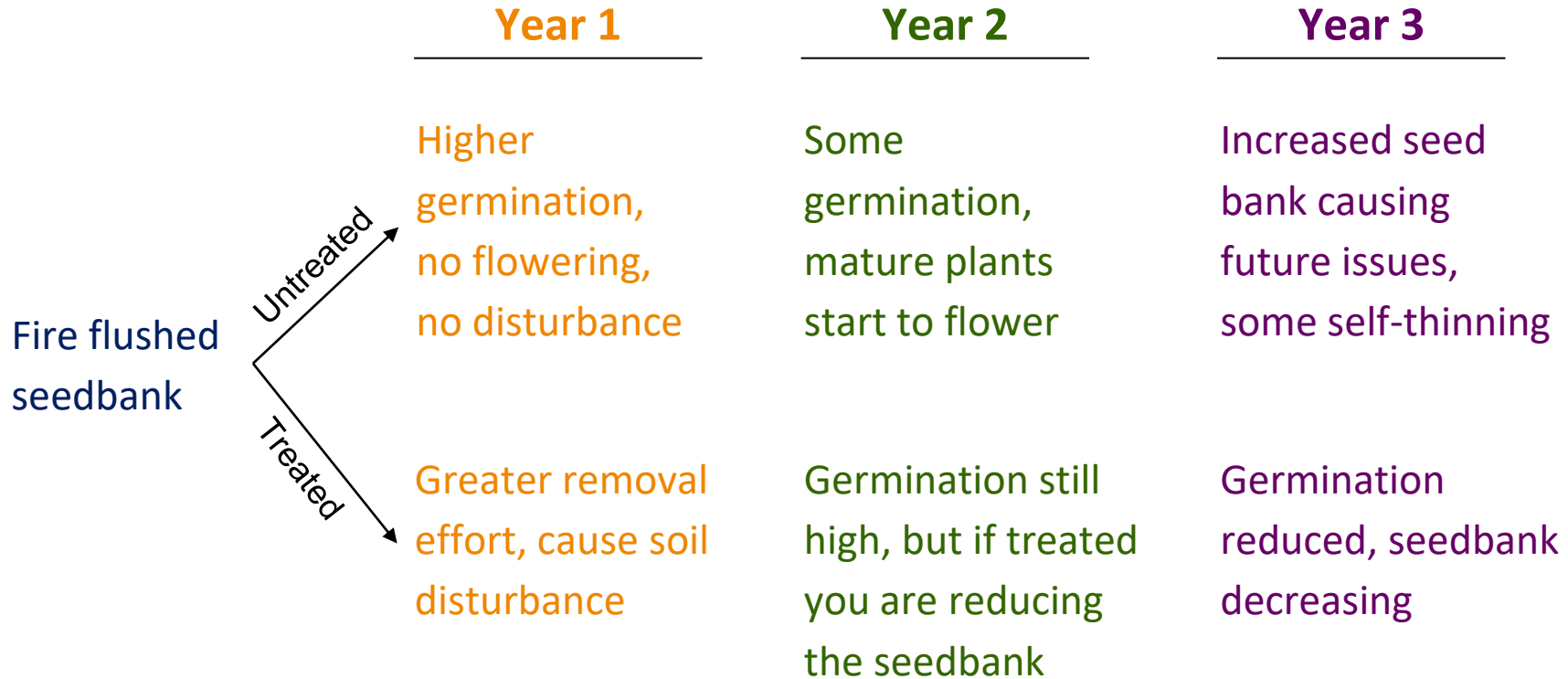
Species w/ this Behavior

- Thistle sp.
- Oblong Spurge (*Euphorbia oblongata*)
- Queen's Anne's Lace (*Daucus carota*)
- Wild Teasle (*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





Pepperwood

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Twice Burnt (2017,
2019)

Once Burnt (2017)



Pepperwood

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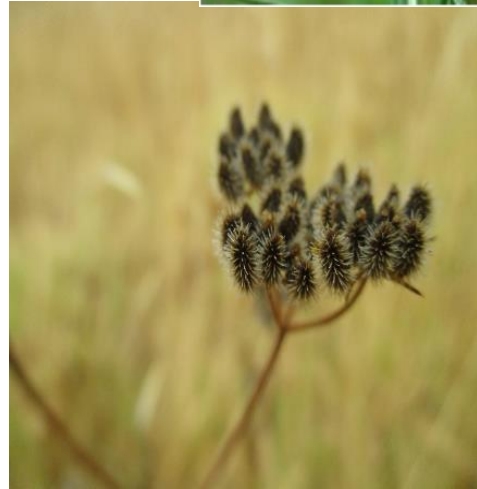
Additional Lessons Learned



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!

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