THE COMPLEXITY OF RESTORING COMPLEXITY

Amelia Ryan Brent Johnson **Pinnacles National Park**

Pinnacles Expansion:

Acquisition of over 2000 acres in 2006



Bottomlands Restoration

Goals:
Manage invasives
Restore Oak Savannah with diverse native communities

Invasive Plants

the second secon







120 Acres of YST Burned



Broadcast Herbicide Treatment April 2010



YST Density Before Any Treatments



YST Density After Prescribed Burning Treatment



YST Density After Broadcast Herbicide Treatment



YST Density After Broadcast Herbicide Treatment



Bottomlands Restoration – Phase 1

- Successful reduction of yellow star thistle to <1% for 7 years
- •Replacement with annual grasses

Bottomlands Restoration – Phase 2

- •What should our target native plant communities be?
- •How to restore them?

Native Perennial Grasses?

•60 Acres Seed drilling 2014-2016



Wildflower dominated habitats

- How does focusing on wildflowers shift the way we think about historic landscapes and restoration
- •What are key aspects of wildflower dominated habitats?



"When California was wild, it was one sweet bee-garden throughout its entire length, north and south, and all the way across from the snowy Sierra to the ocean"

John Muir – *The Bee Gardens*

Pinnacles National Park has the highest diversity of bees ever recorded (Messinger and Griswold 2003)

479 species and counting...

HOW TO RESTORE

KEY CHALLENGES:1)Thatch2) Wildflower seedbank

Experimental Wildflower plots

- Seeded with 10 species of wildflower
- Worked with the Amah Mutsun tribal band to select ecologically appropriate and culturally significant species
- 600 seeds/m²
- 4 site treatments: Fall Herbicide + Seeding (H1) Spring + Fall Herbicide + Seeding (H2) Scraping + Fall Herbicide (SS) Control

Percent Cover

Experimental Wildflower Plots – Year 2

Treatment

Treatment

Treatment

YEAR THREE?

Next Steps

- Collect and increase wildflower seed
- Scale up scraping treatment
- Experiment with grazing and mowing to reduce thatch and summer mustard long term in a sustainable way
- Quantify pollinator use?

•<u>More research and more experimental</u> restoration aimed at wildflowers

oming soon?

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QUESTIONS?