

Give Native Plants a Chance:

Restoring a coastal oak woodland on
Santa Cruz Island by removing invasive
eucalyptus (*Eucalyptus* spp.)



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Santa Barbara

Ventura

Santa Cruz Island

San Miguel
Island

Santa Rosa Island

Anacapa Island

Los Angeles

Santa Barbara Island

Channel Islands National Park

Collection of five islands

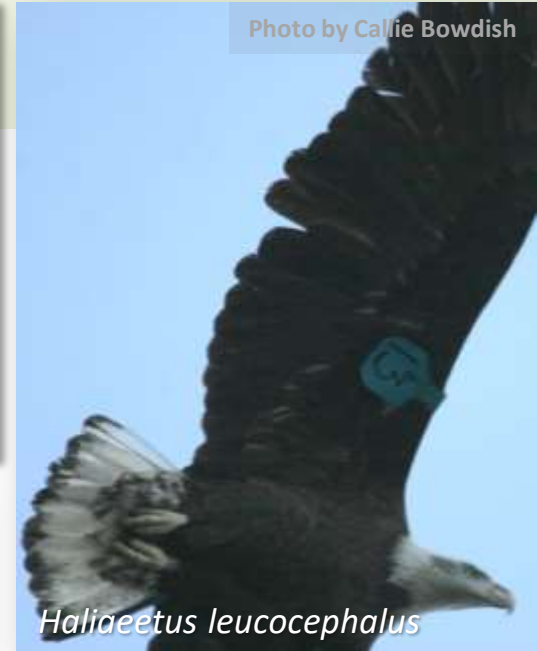
20 miles off the southern CA coast

Supporting over 100 Endemic Island Species

Santa Cruz Island



Provides 96 square miles of habitat for protected, endemic and rare species.

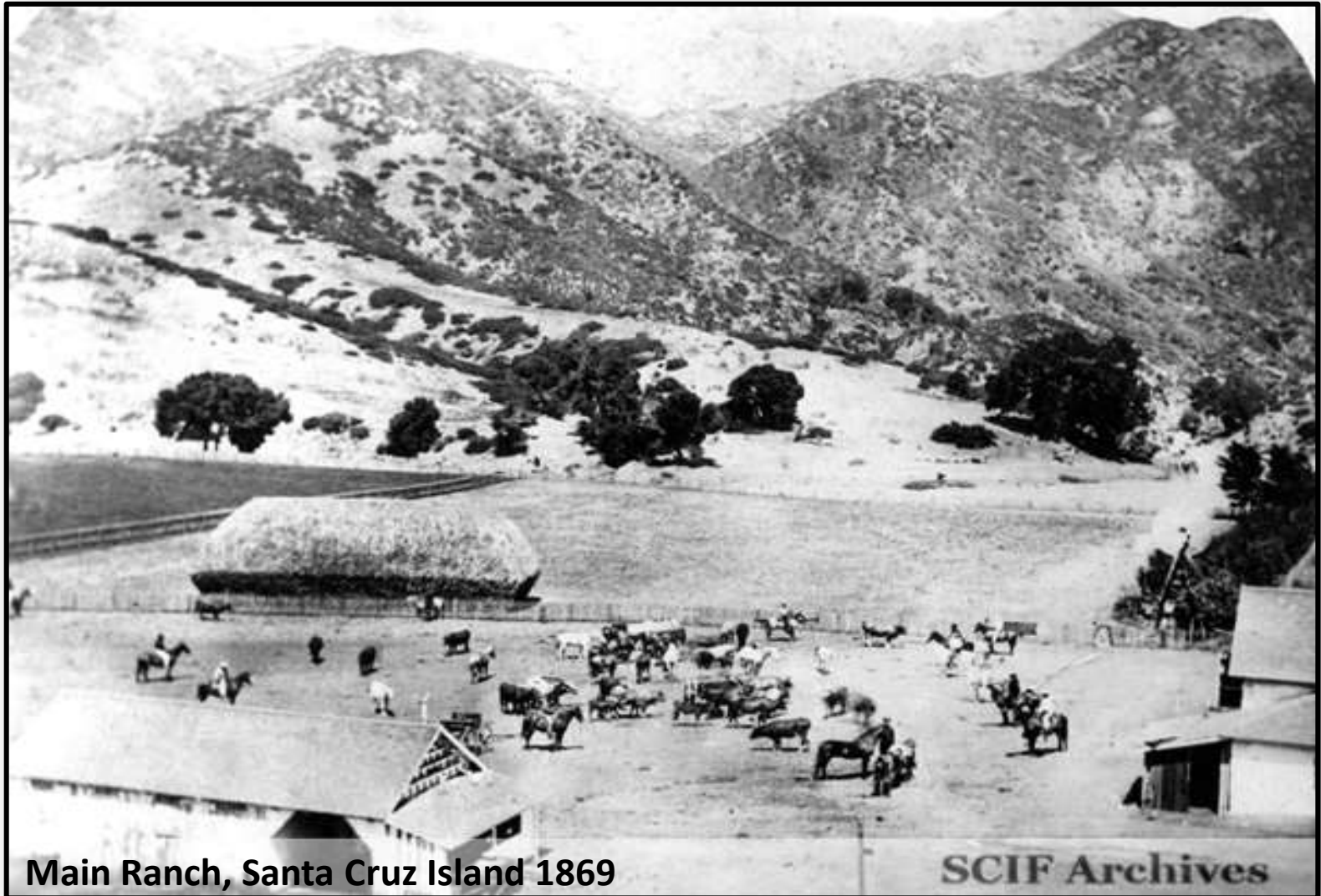


Only single island endemic in North America!



Ranching Era: 1800's

Drastic landscape changes included the introduction of eucalyptus



Main Ranch, Santa Cruz Island 1869

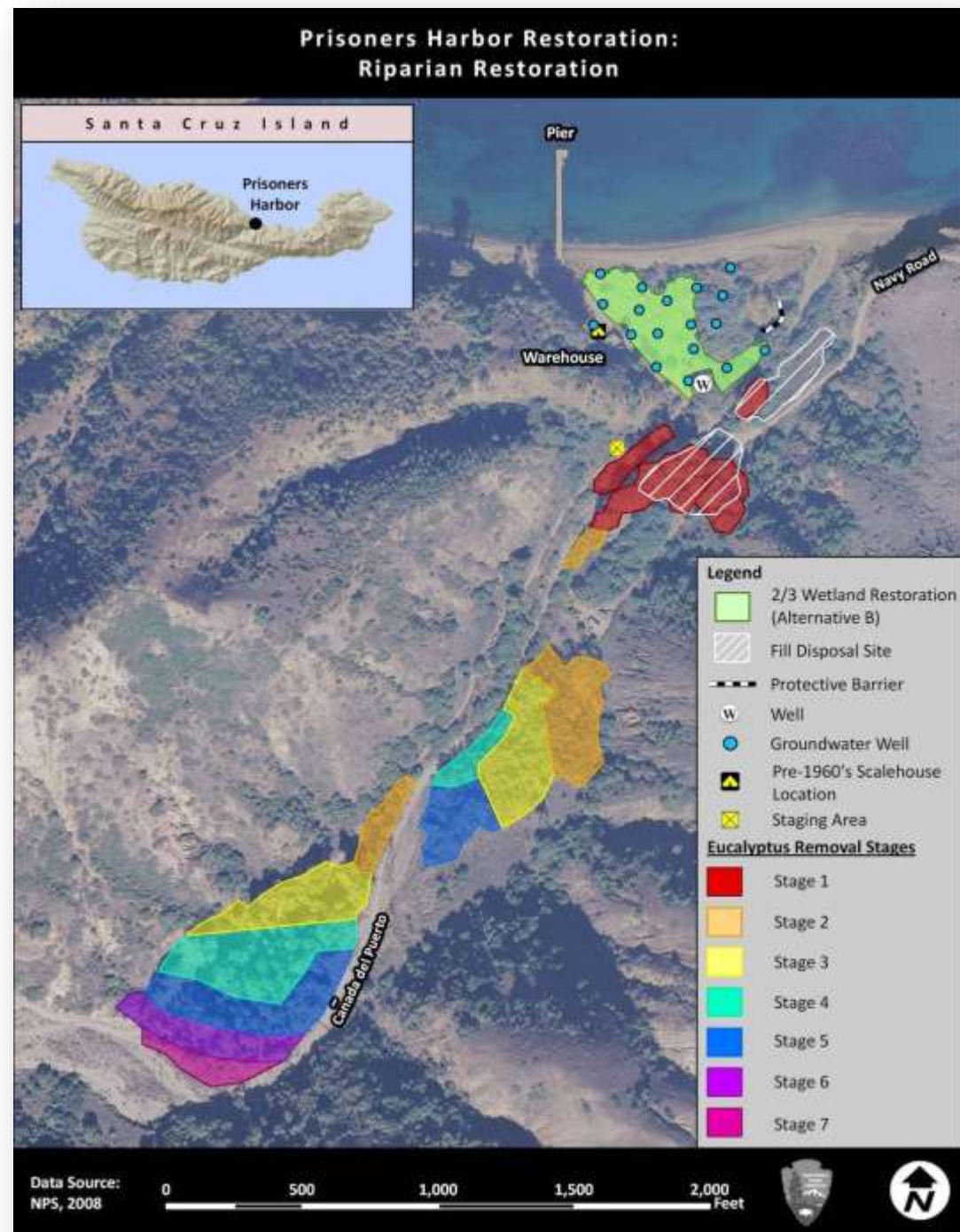
SCIF Archives

Larger Restoration Plan:

Prisoners Harbor coastal wetland and associated riparian corridor

hydrologically connected

- Environmental impact statement: 2010
- Section 106 consultation with SHPO: 2015





Eucalyptus effects:

- **Fire-hazards:** Litter depths reaching 42cm
- **Reduced habitat quality** for native animal species: Island Scrub Jay, Fox, Black-bellied Salamander
- **Intensify competition with natives** for limited:
 - Light: shade out native species
 - Nutrients: change nutrient cycling
 - Water: divert groundwater

NPS/TNC Removal began in 2011



NPS Hotshot
Crews at work



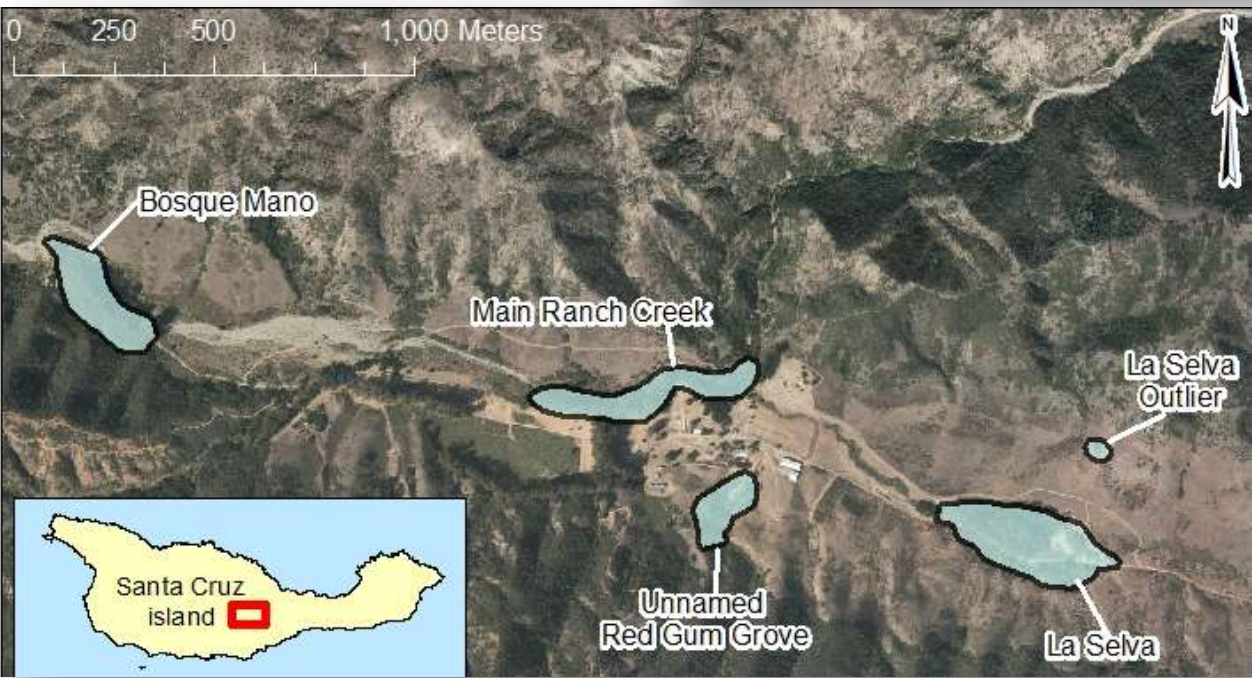
Active Restoration



Time of last
disturbance ($t=0$)

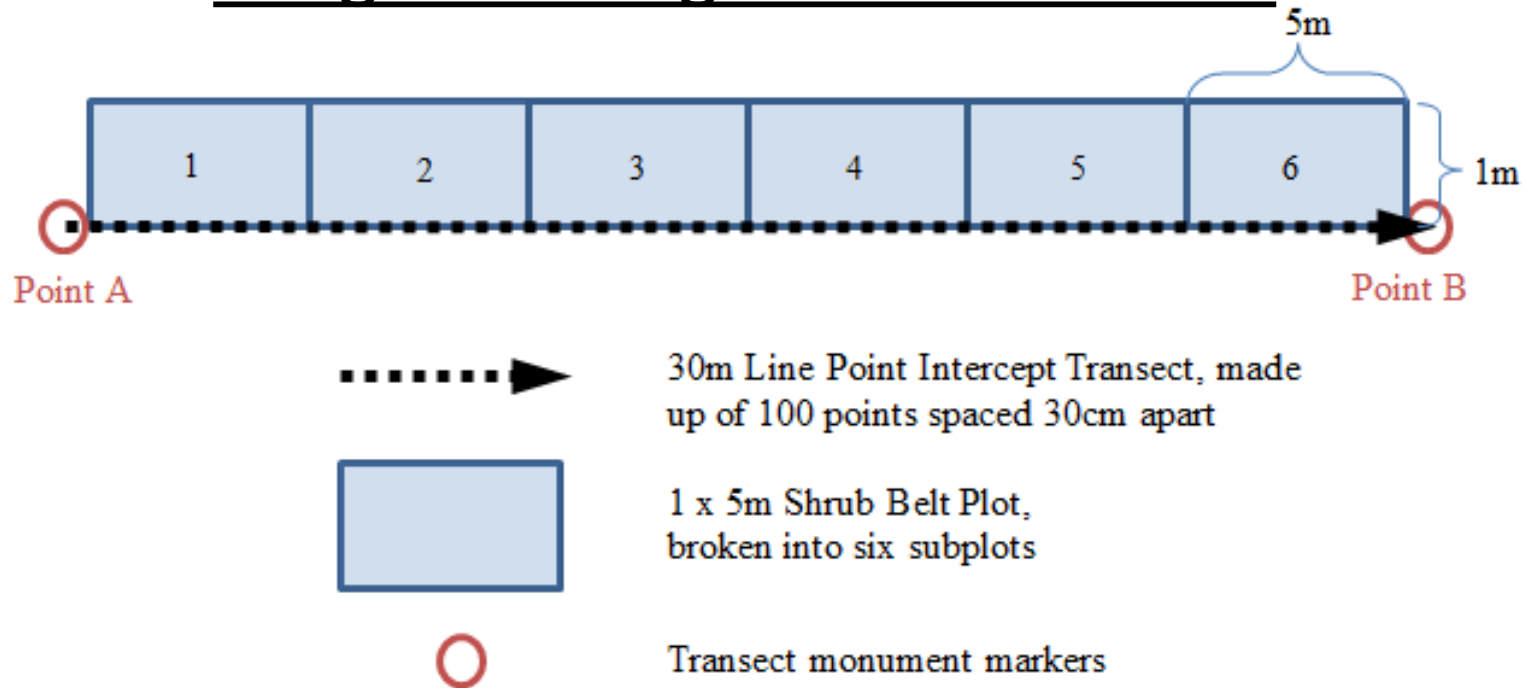


Intact invasive eucalyptus grove at Bosque Mano ($t = -1$)



Six months post fire at La Selva ($t = 0.5$)

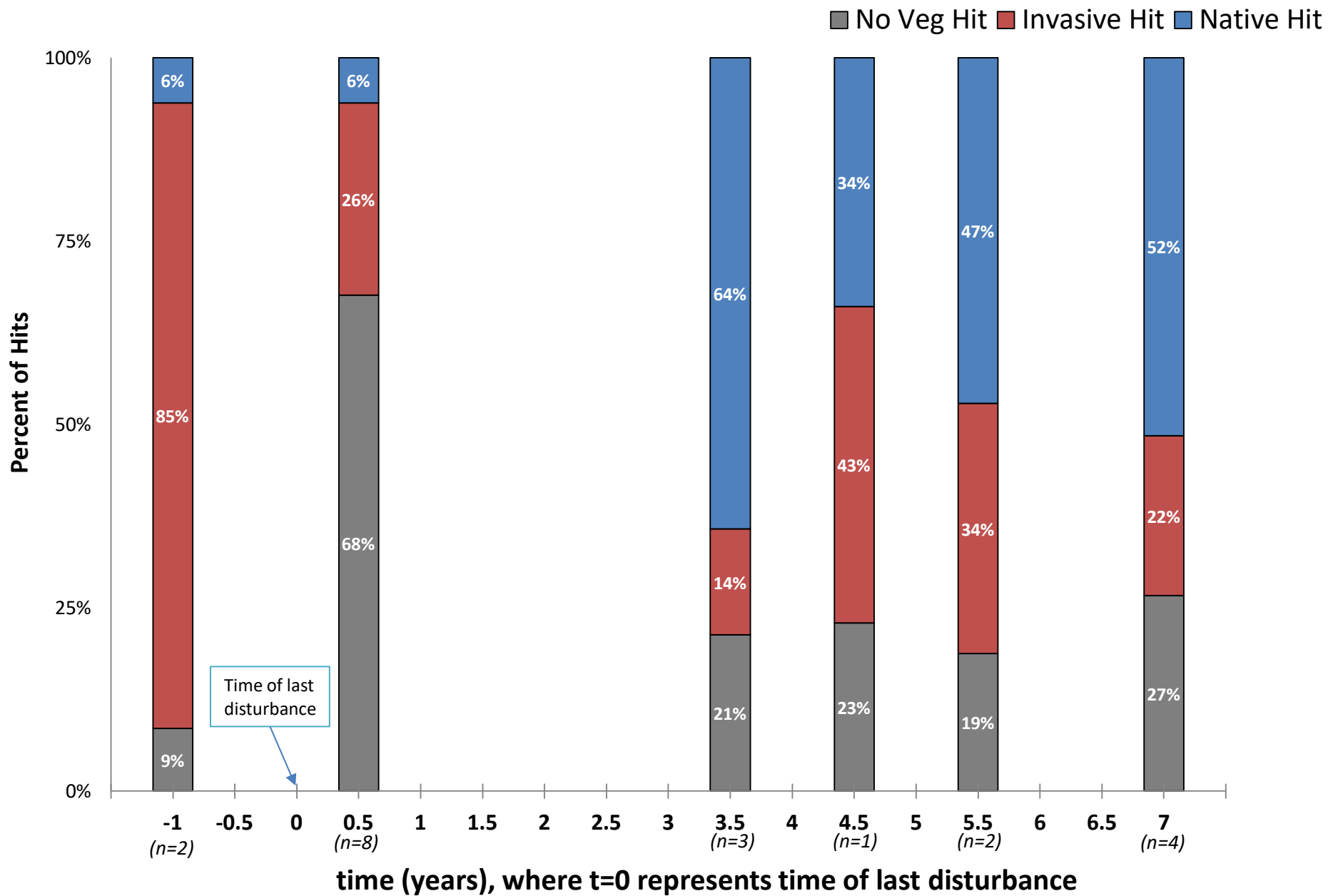
Long Term Vegetation Protocol

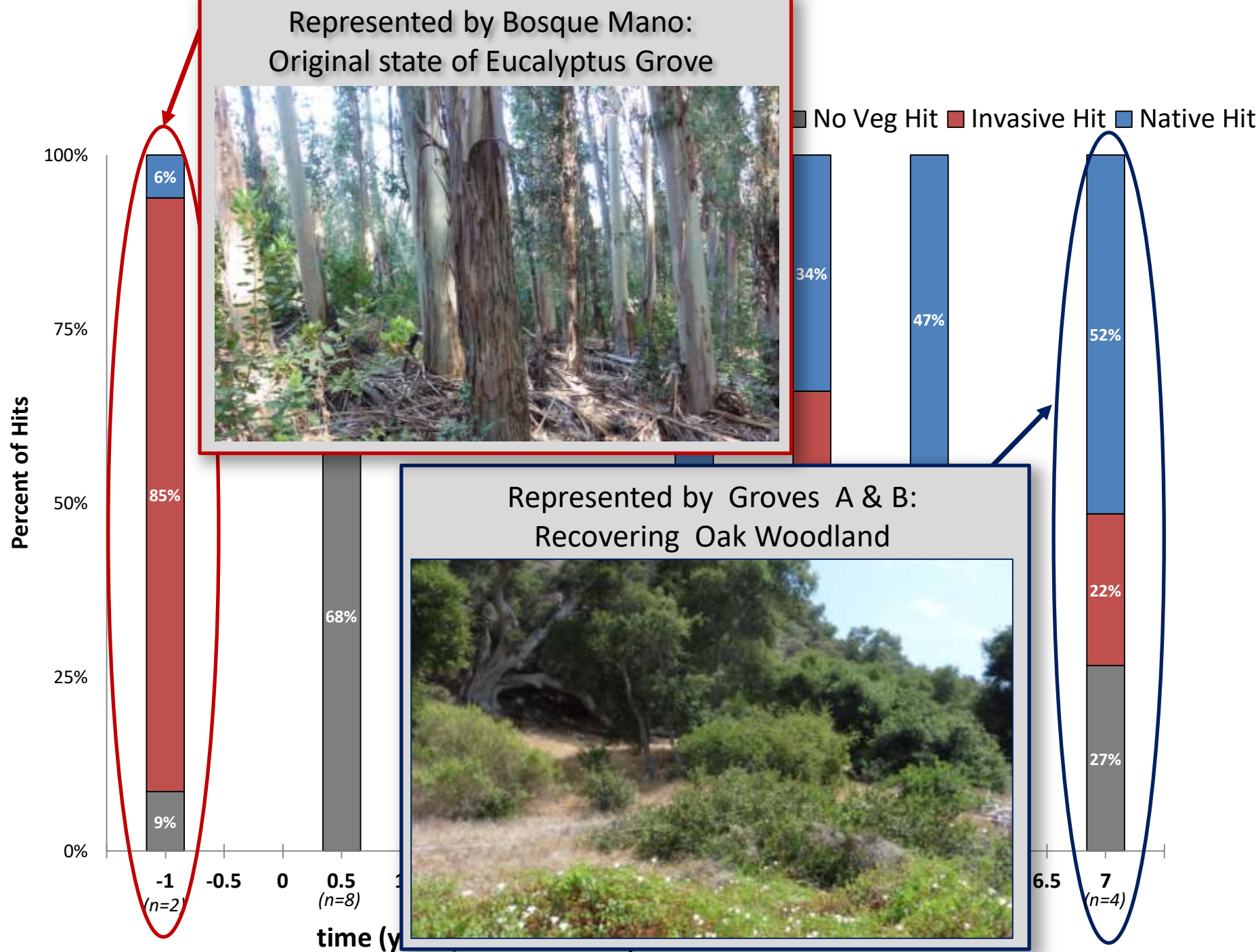


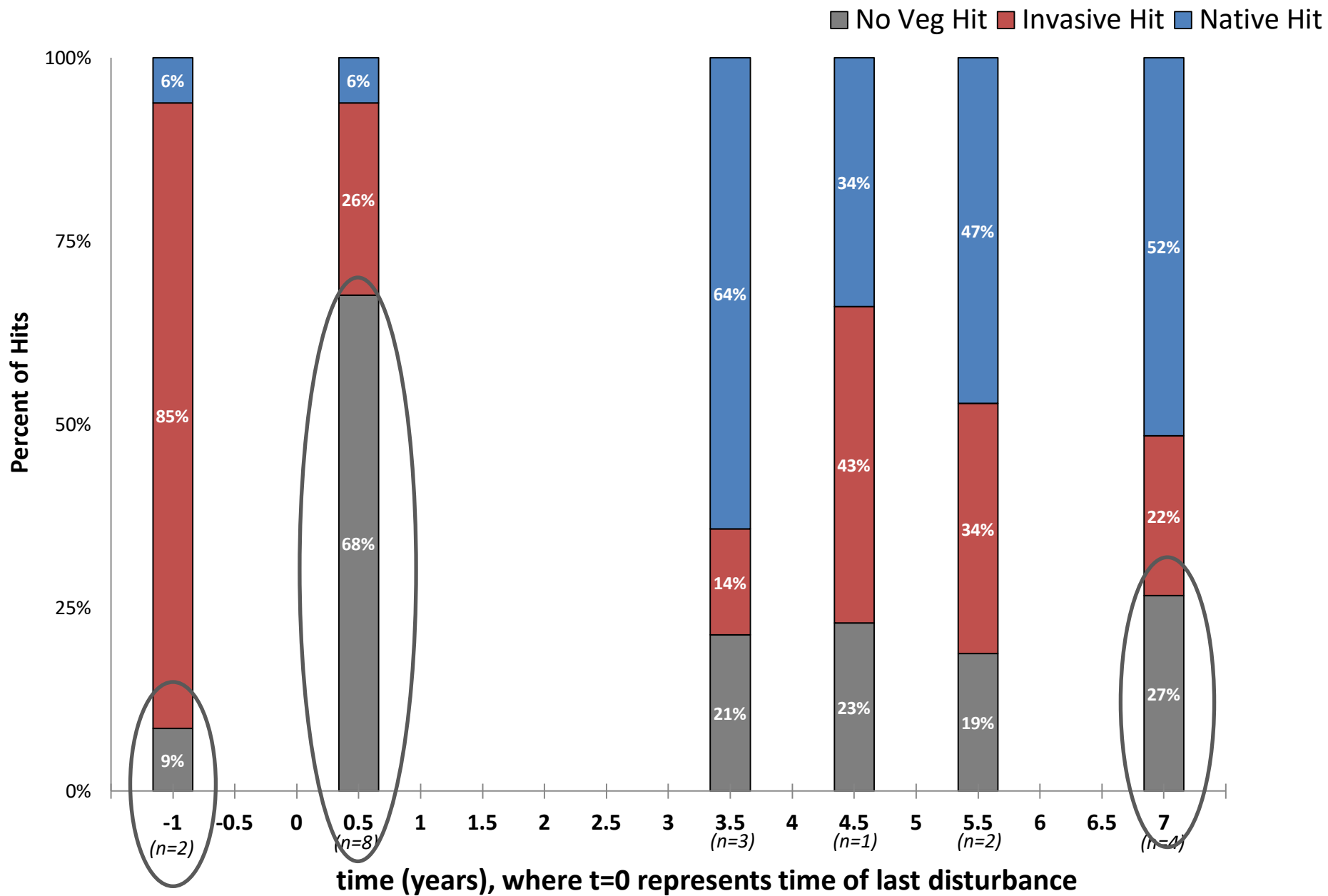
Transect line and shrub belt schematic based off of MEDN monitoring protocol (Tiszler et al, 2016)

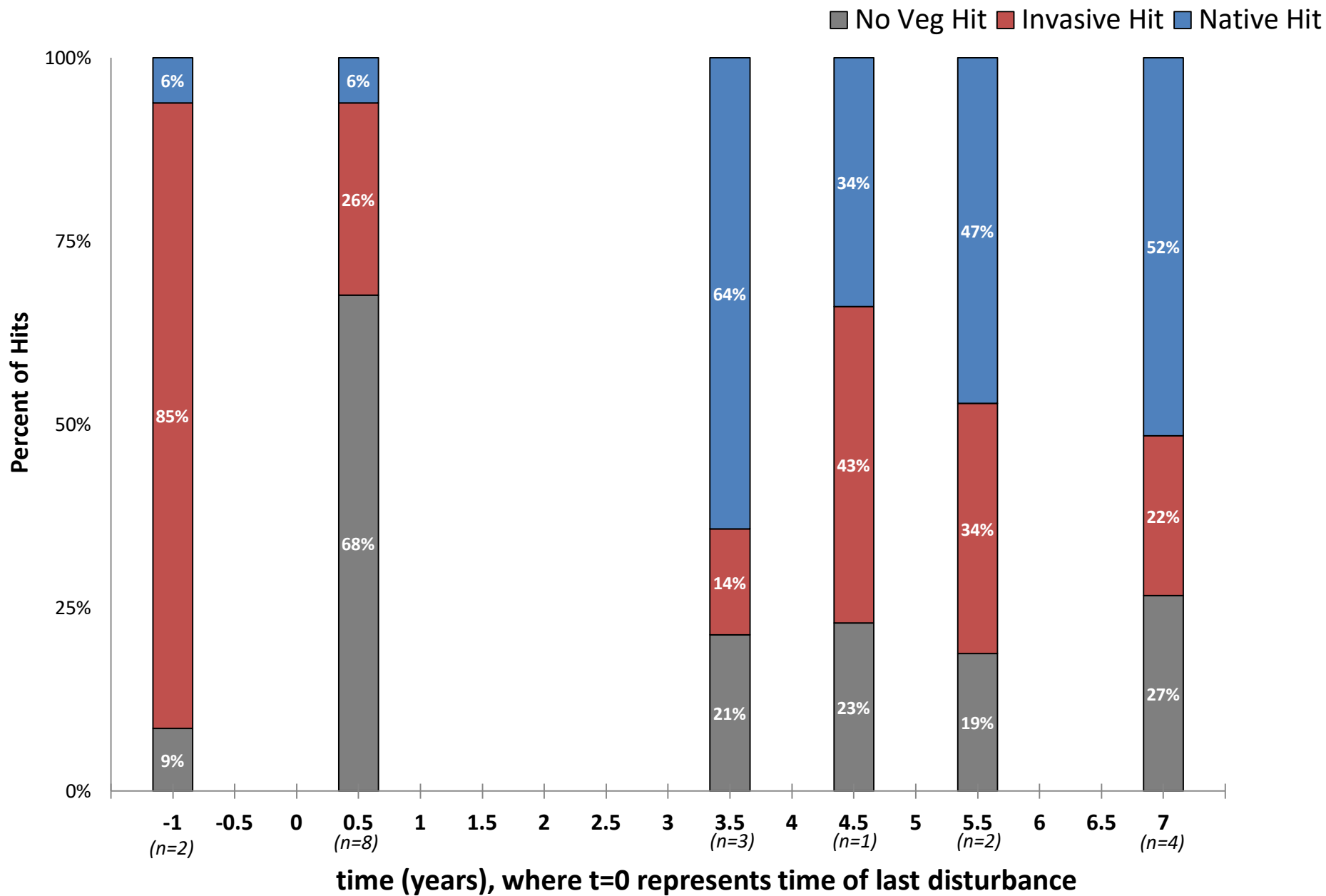
Objectives:

- Organize transect data by assigned time-value in relation to time since last disturbance ($t=0$)
- Categorize data “hits” as **native vegetation**, **invasive vegetation**, or no vegetation hit









North Grove

Site-specific features:

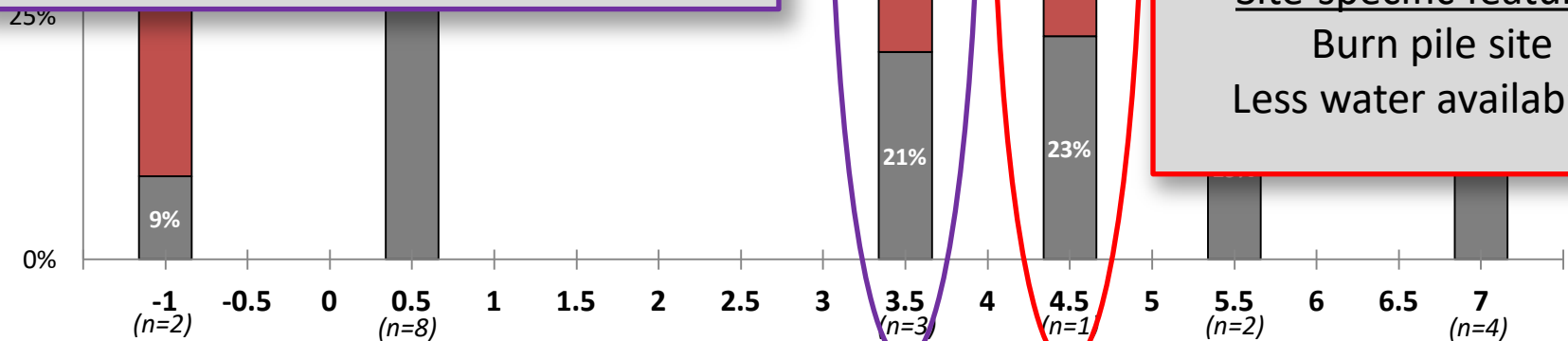
Not a burn site

Roses present prior to disturbance

Increased water availability



Percent of Hits



time (years), where t=0 represents time of last disturbance

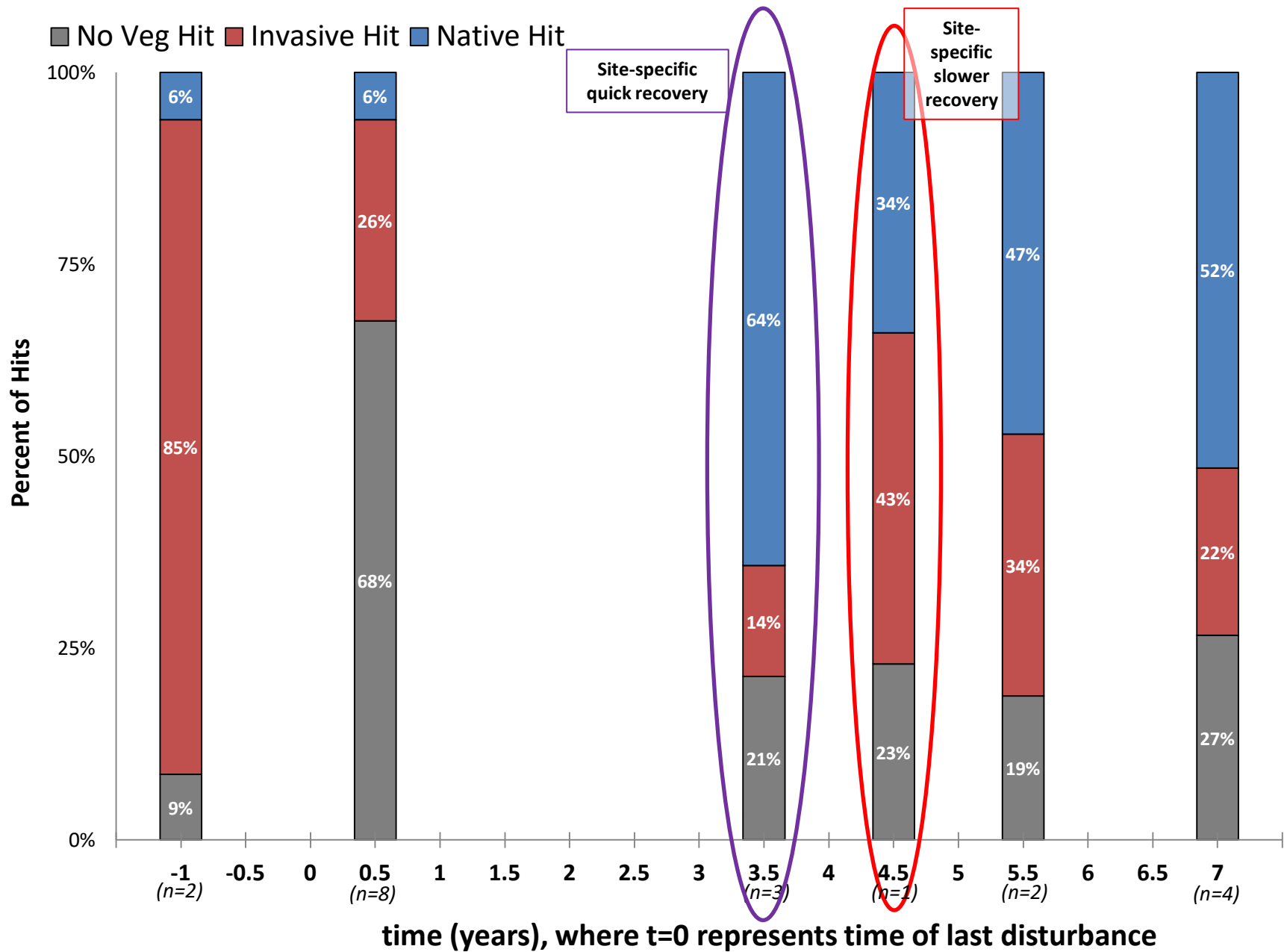
Middle Grove

Site-specific features:

Burn pile site

Less water availability





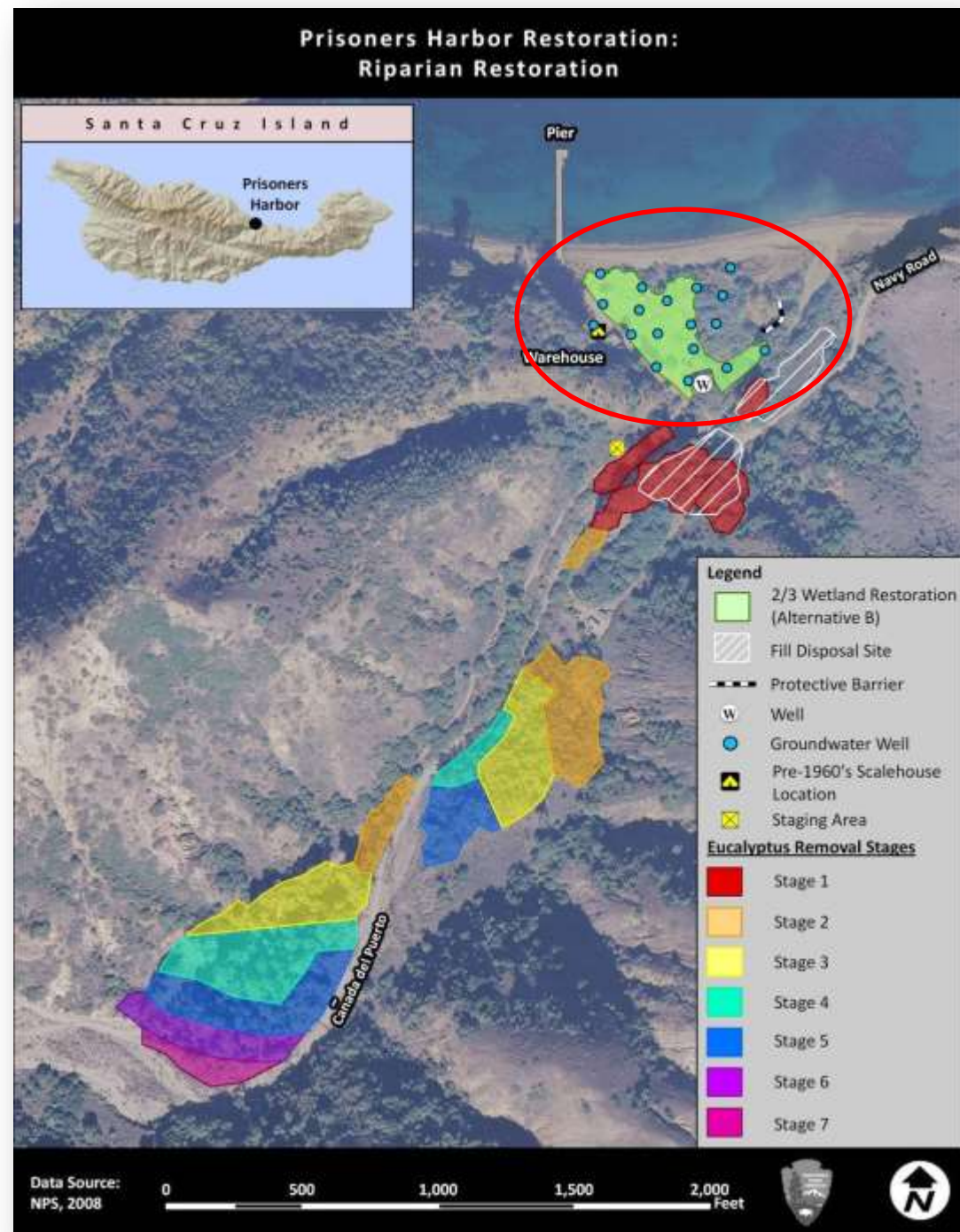


Removal efforts **release native plants from competition** with Eucalyptus for light, nutrients and water.

Preliminary Hydrologic Data

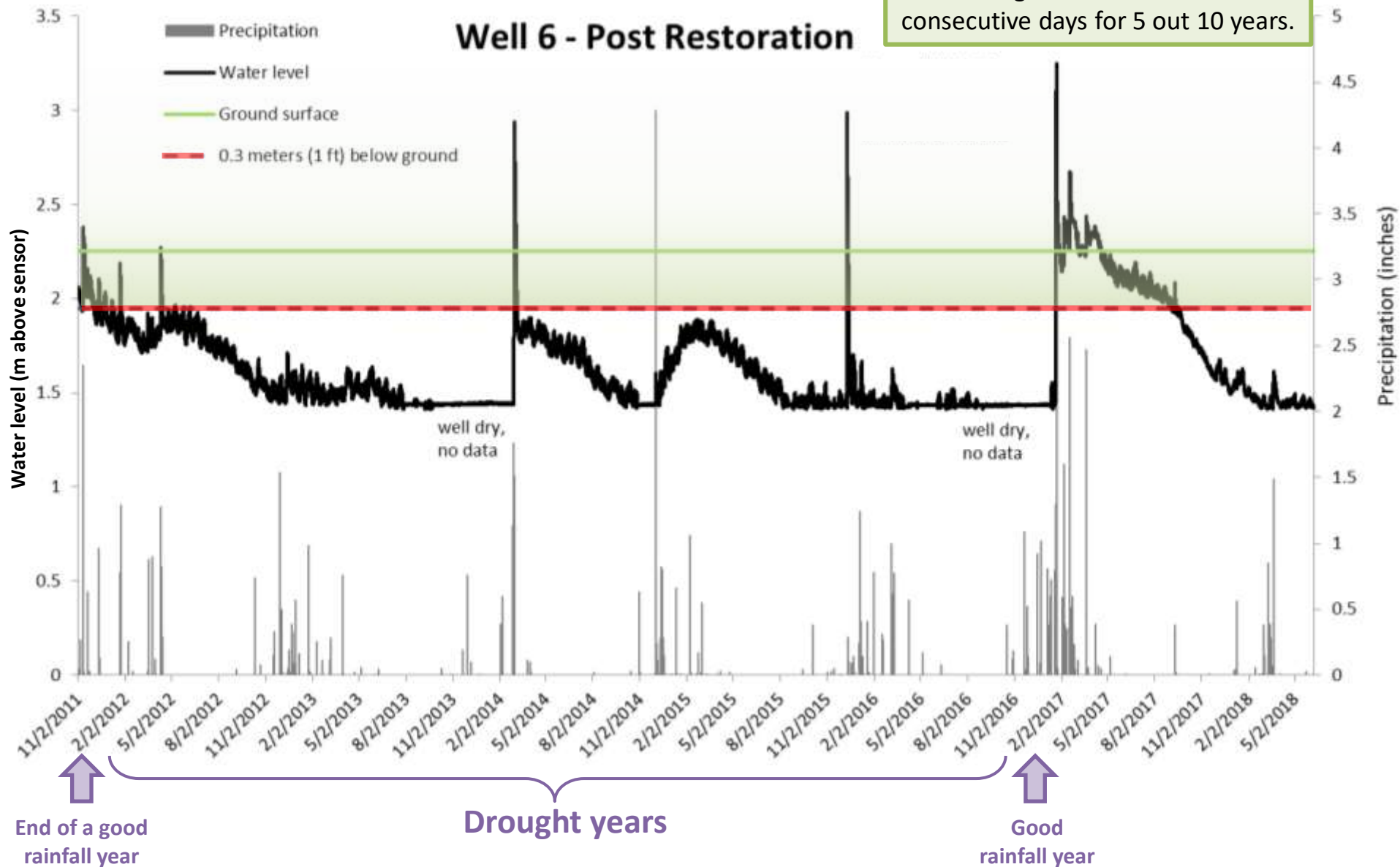
Groundwater observation wells:

- Installed 18 wells in 2004 **before** the wetland restoration
- Installed 5 wells in 2012 in Canada del Puerto
- Monthly hand reading
- Data recorders in 9 wells



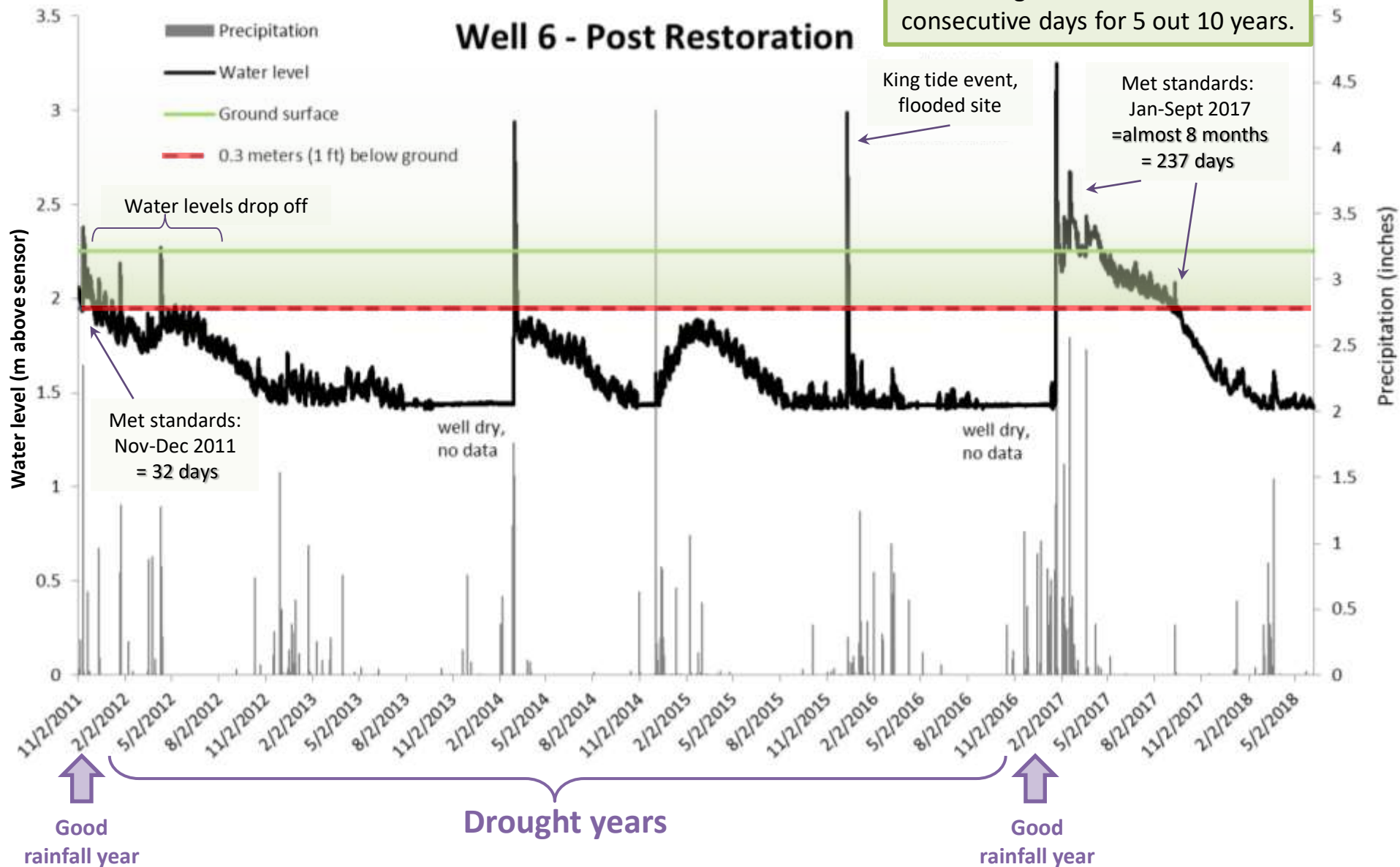
*Continuous eucalyptus cutting

Federal standard for a wetland=
Hydric Soils= water level be within
1ft of ground surface for 14
consecutive days for 5 out 10 years.

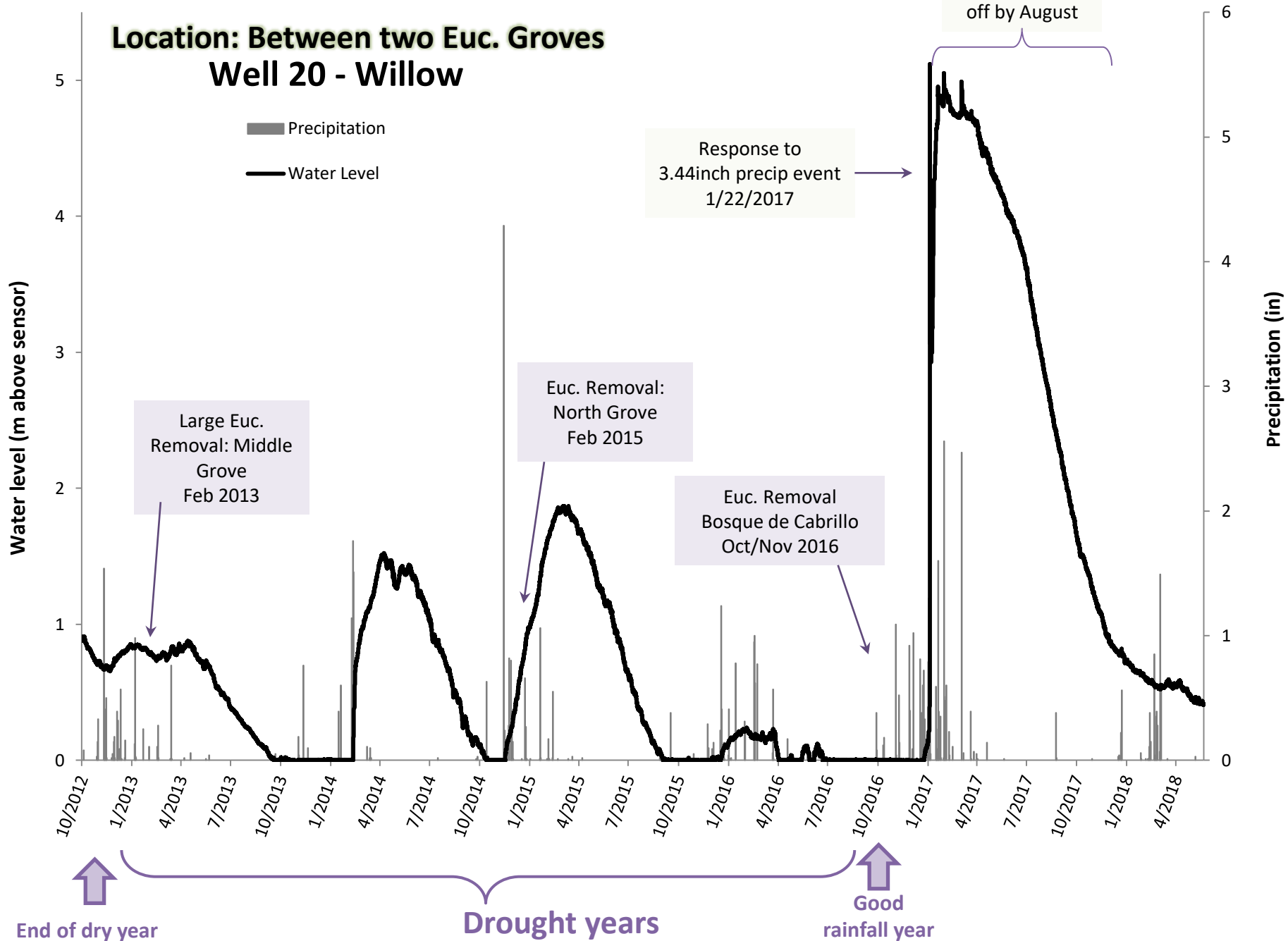


*Continuous eucalyptus cutting

Federal standard for a wetland=
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Location: Between two Euc. Groves Well 20 - Willow



Conclusions

- Eucalyptus groves dominate native vegetation
- Removing Eucalyptus provides opportunity for native plant recovery
- Recovery follows a general path, but there is site specific variation
- **Different community types emerging:**
 - Thicket forming plants
(Roses, sticky baccharis)
 - Willows
 - Oak woodland
- Continued data collection will provide
 - Better understanding of successional changes following eucalyptus removal
 - Better understanding of the effect of eucalyptus on hydrologic function



Reflective of healthy
Riparian ecosystem

Acknowledgements

The Nature Conservancy
Mountains Restoration Trust
Pacific West Region Fire
MEDN Fire
NPS Hotshot Crews
Channel Islands National Park Staff



Paula Power



Rocky
Rudolph



Clark Cowan



Dirk Rodriguez



Thank you!
+Questions?



Michelle
Gados



NPS Hotshot
Crews

NPS Crews:
-Arrowhead Hotshots
-Whiskeytown Hotshots
-Joshua Tree Hotshots
-Yosemite Falling Crew
-SAMO Fire



Jim Roberts