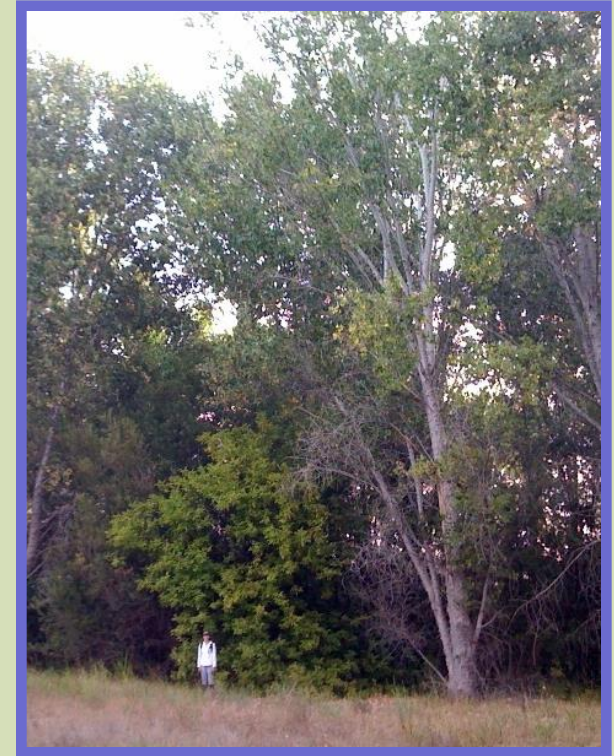


Long Term Monitoring of Horticultural and Ecological Performance of Riparian Restoration



J.E. Hammond
&
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Background of Riparian Habitat Conservation in California

- 95% reduction
- Managed hydrology
 - Limits recruitment
 - Promotes invasive weeds
- Decreased biodiversity
 - Many T&E species were once common
- Habitat restoration gained traction in 1980' s



Riparian Restoration

- Estimated 15,000+ acres in Sacramento and San Joaquin River
 - Horticultural restoration
- Recreation benefits
- Wildlife benefits
 - Avian monitoring (PRBO)
 - Pollinators
 - Mammals



Horticultural Restoration

Project Goals:

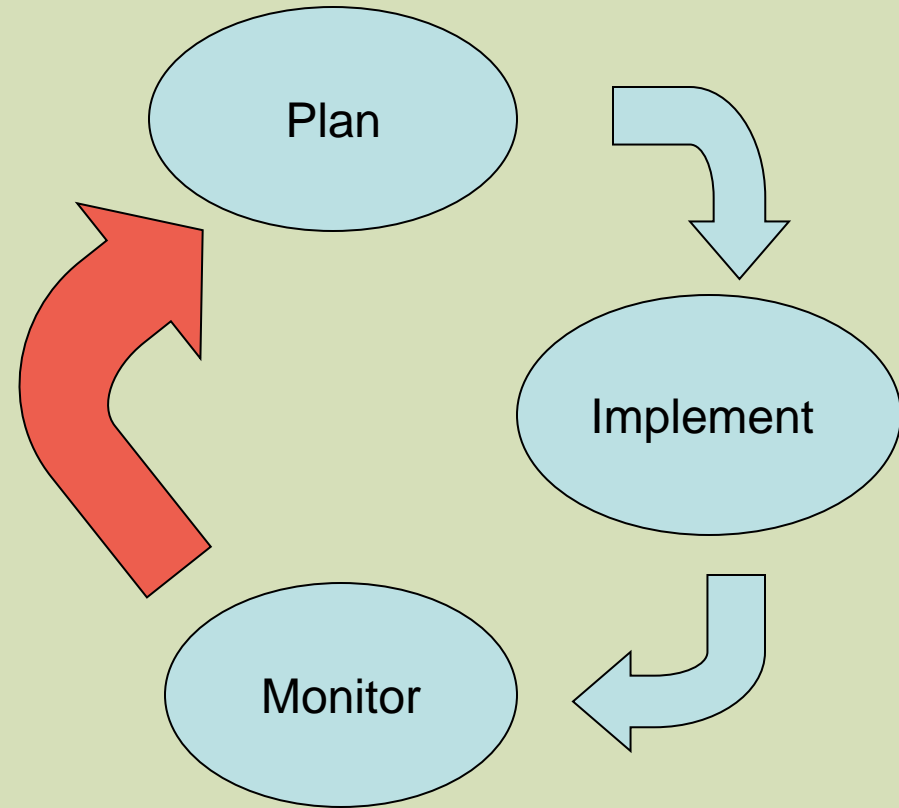
- Wildlife habitat
- Ecological resilience
- Reduce problematic weeds
- Recreation and economic incentives
- Prioritization of land



Creating wildlife habitat for the benefit of people and the environment.

Restoration: How are we doing?

- Monitoring
 - Wildlife
 - Vegetation
- Feedback
 - Researchers
 - Practitioners
- Initial planting data
 - Understand change through time



How are we doing?

Objective: *Evaluate performance of restoration plantings beyond the establishment period.*

Plant density

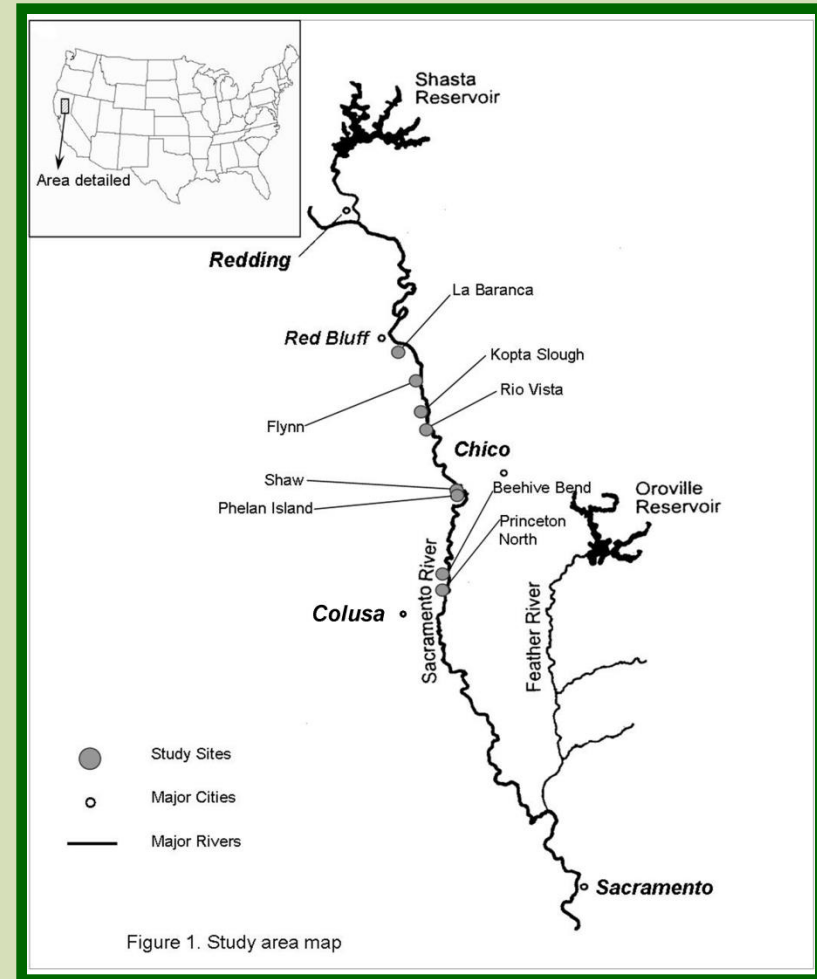
Vegetation structure

**Diversity and
Community composition**



Study Sites

- Sacramento River
- 16 sites: 2 age categories
 - 8 and 15 year old sites
- 80 vegetation plots
 - 0.04 hectare / 0.1 acre plots
- Structural and community data collected

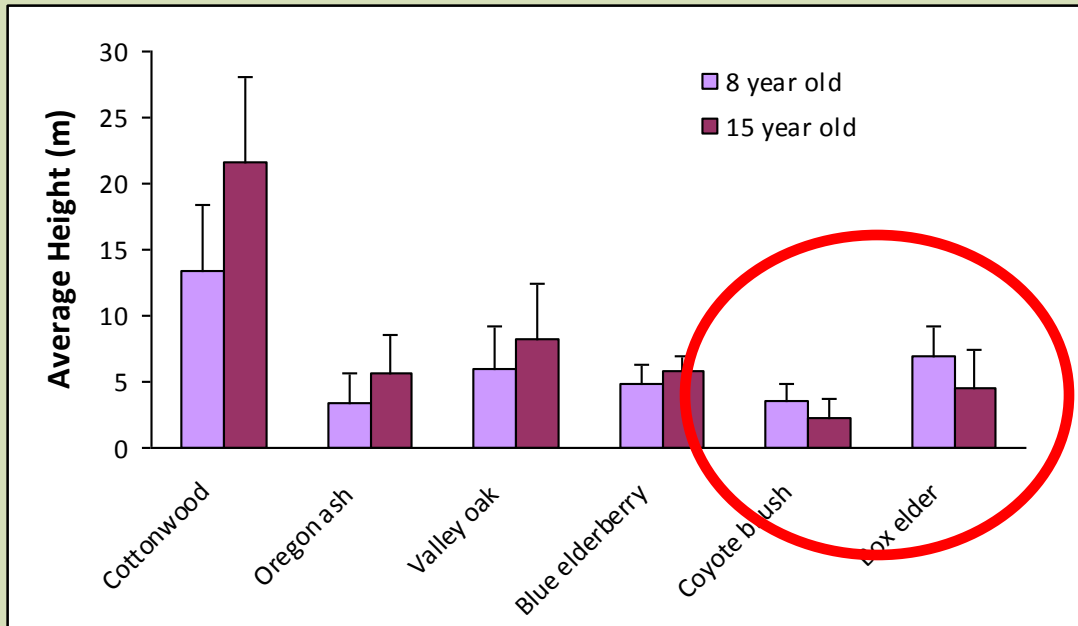


Results: Plant Density



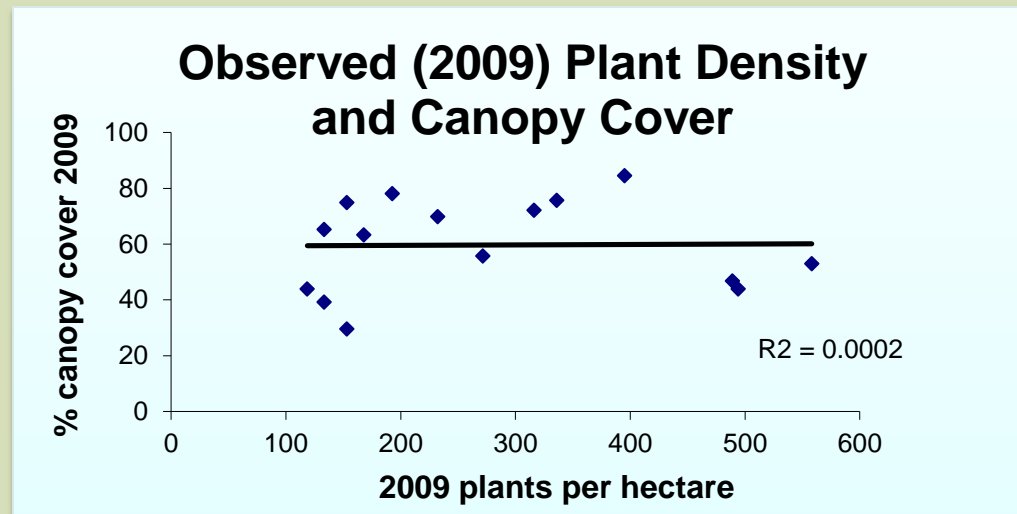
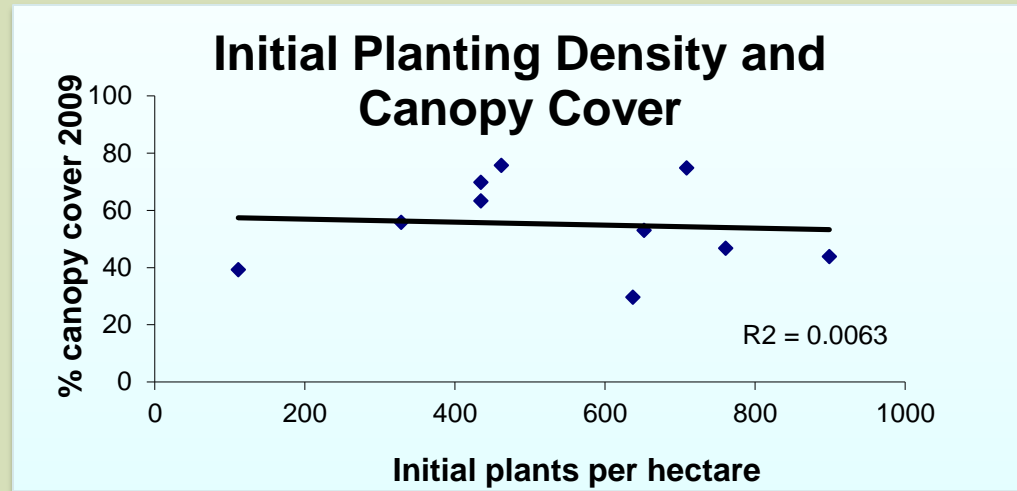
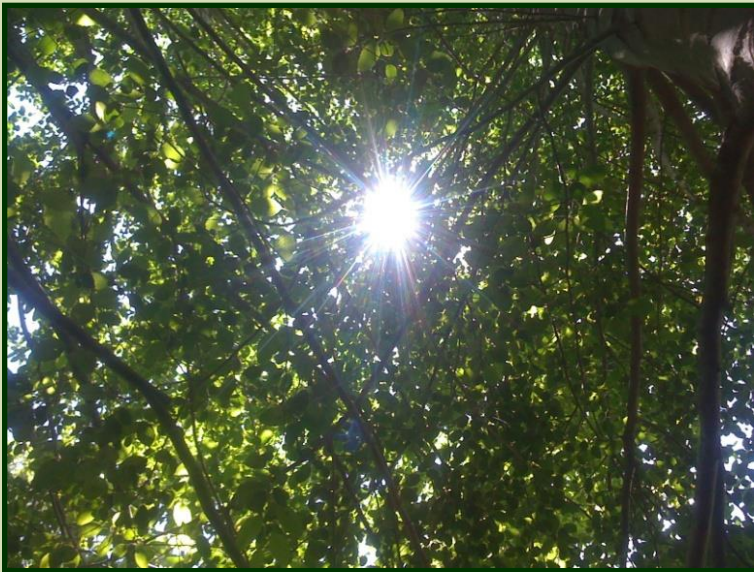
Results:

Vegetation Structure



Results:

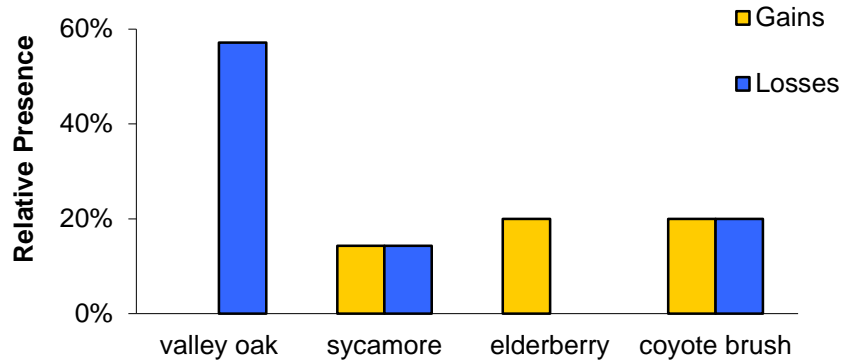
Density and Habitat Structure



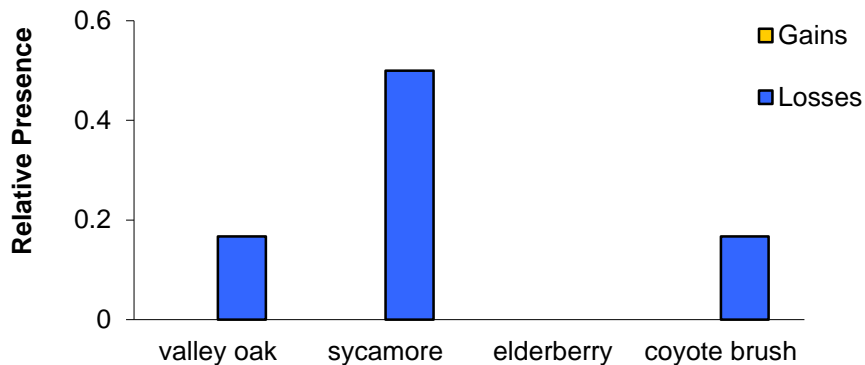
Results:

Species Diversity

8 year old sites



15 year old sites



Results:

Community Composition

Species	Importance Value Rank	
	8 year old	15 year old
arroyo willow	2	1
black willow	6	7
box elder	1	3
buttonbush	11	10
cottonwood	8	2
coyote brush	3	6
blue elderberry	4	5
Oregon ash	9	9
sandbar willow	10	11
sycamore	5	8
valley oak	7	4



Creating wildlife habitat for the benefit of people and the environment.

Results:

Community Composition

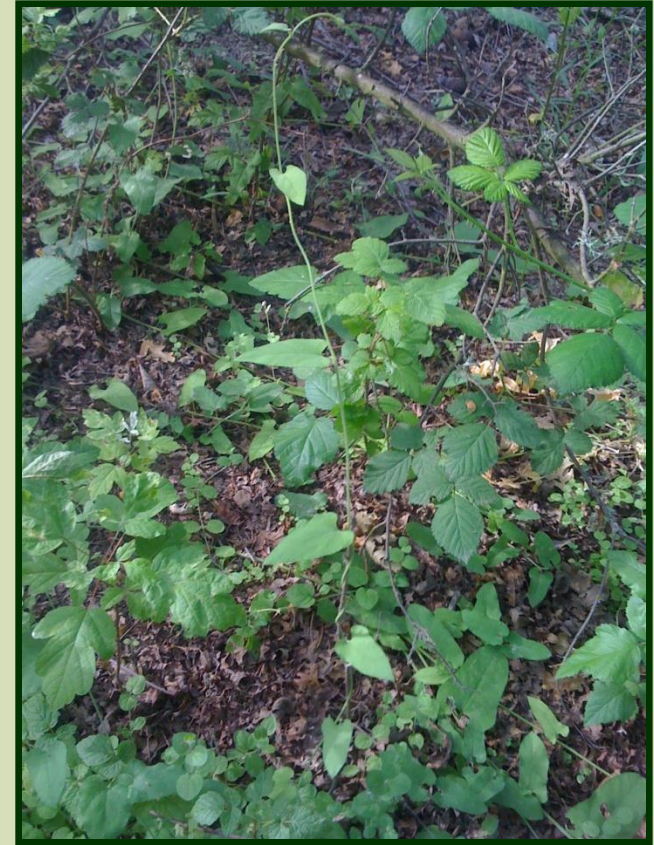
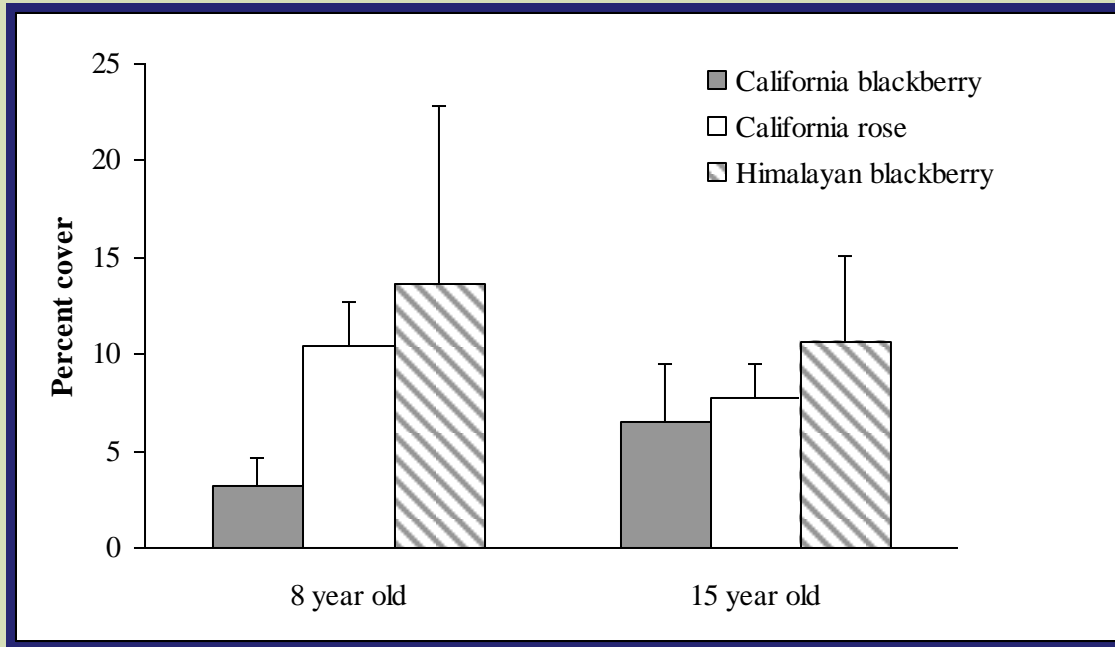
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Creating wildlife habitat for the benefit of people and the environment.

Results

Vine cover



**Other species occurred at <5% in both sampling categories include:
Dutchman's pipevine, poison oak, wild grape, clematis**

Conclusions

- Succession!
- Dynamic forests
- Abiotic influences
- Informative monitoring
- Wildlife response
- Herbaceous and Woody

