

# RIPARIAN HABITAT RESTORATION

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## **RIVER PARTNERS: OUR HISTORY**

*Synergy between the fields of  
ecological restoration and  
agriculture*

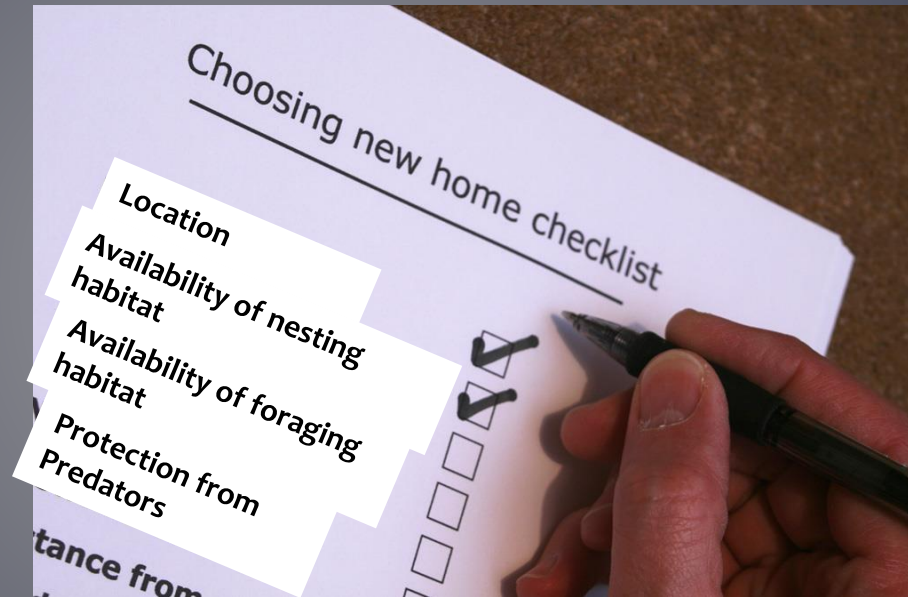


- 3 Offices: Chico, Turlock and San Diego
- Work along 13 major rivers
- Restored over 12,000 acres
- Almost 2 million trees and shrubs planted
- \$95 Million Invested in Restoration and Conservation
- Largest Acquisition: Dos Rios Ranch (2012) and Hidden Valley Ranch (2013) at Confluence of San Joaquin and Tuolumne Rivers.

*“To create wildlife habitat for the benefit of people and the environment.”*



## DESIGNING HABITAT: CREATING HOMES FOR WILDLIFE



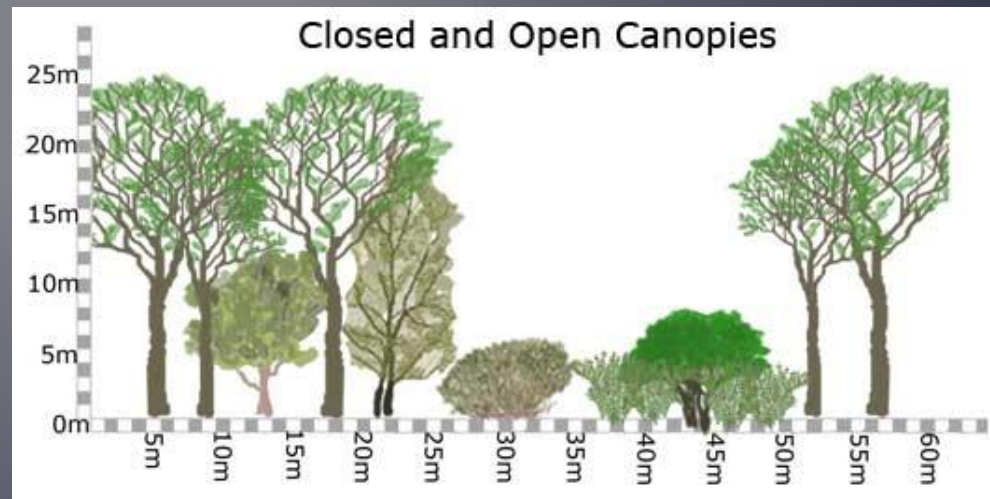
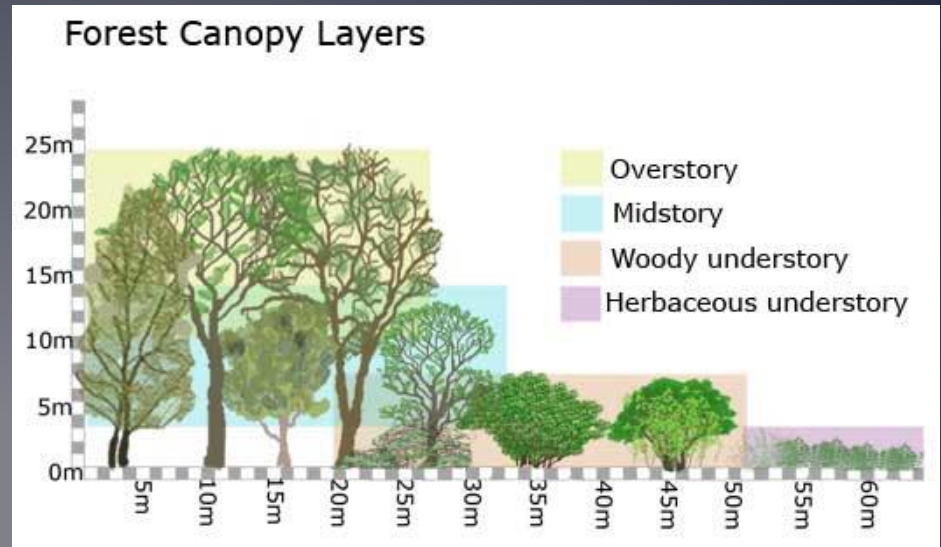
- Identify habitat structure requirements for targeted wildlife species (food, water, cover, space)





# DESIGNING HABITAT: CREATING HOMES FOR WILDLIFE

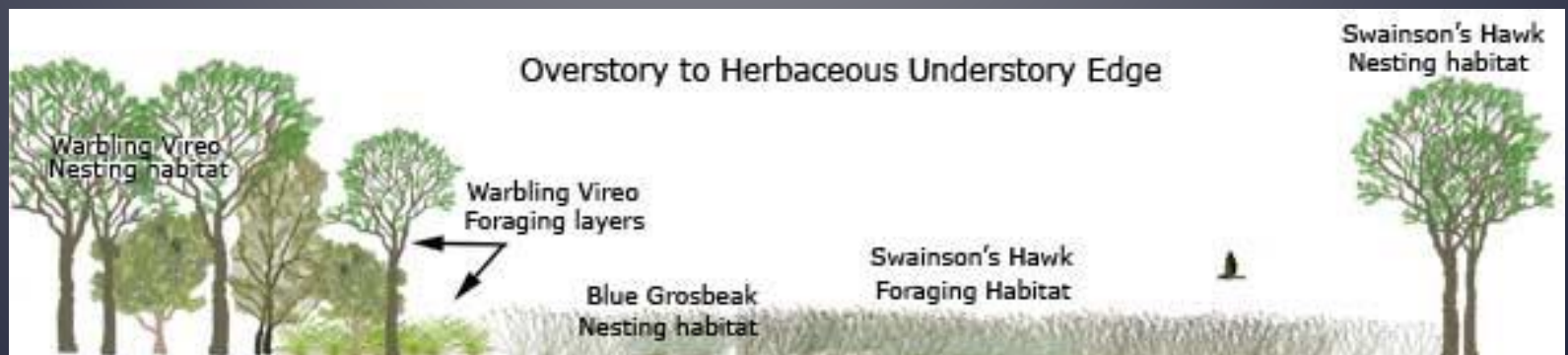
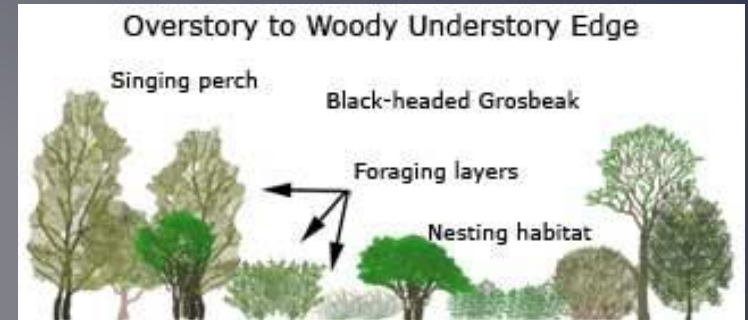
- Understand how vertical structure is important to targeted wildlife species (*How do vegetation layers of a forest affect the presence of certain species?*)
- Determine patch sizes required by species (*Are species sensitive to narrow habitat corridors?*)
- Identify habitat features (*snags, cavities*) that species need



# DESIGNING HABITAT: CREATING HOMES FOR WILDLIFE

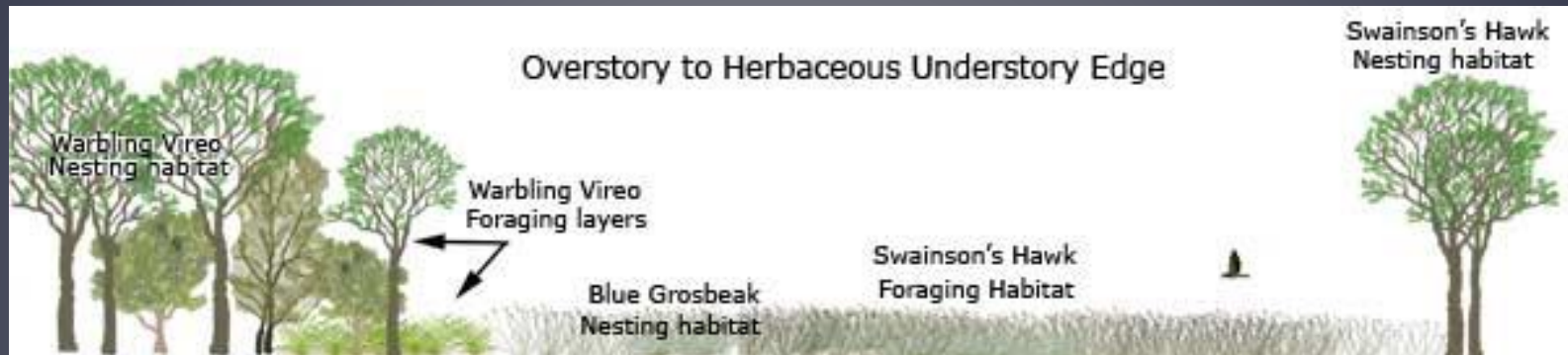


- Manipulate components of habitat across landscape to attract various targeted species
- Consider temporal changes in vegetation and wildlife composition at project area (*lack of natural riverine processes and invasive plant species can change the trajectory of succession, design for ecological resiliency*)





# DESIGNING HABITAT: WHAT'S IN OUR TOOLKIT?



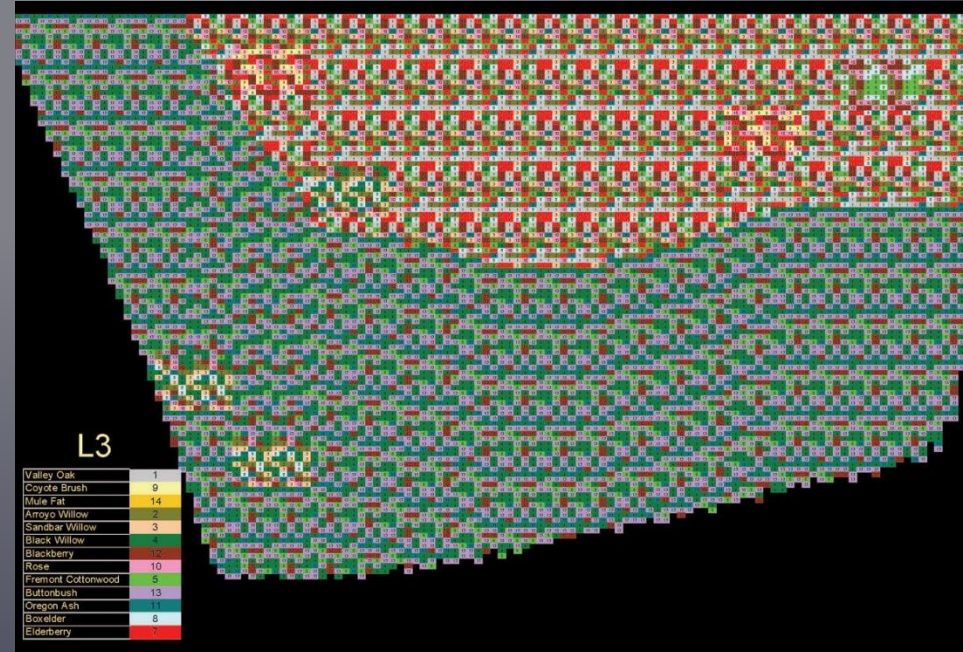
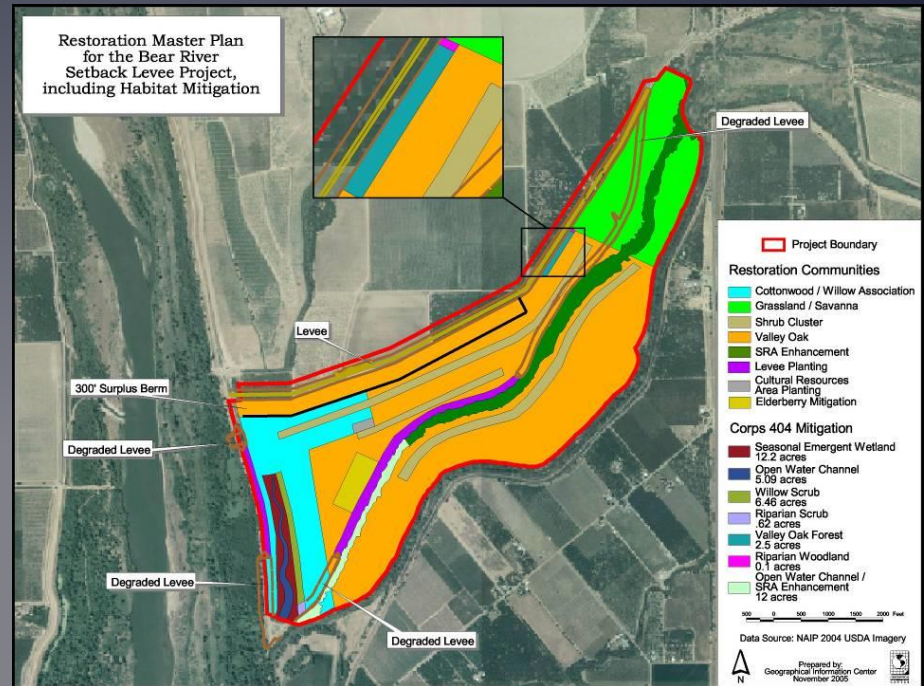
- *Vegetation characteristics (growth form of native riparian plants)*
- *Physical constraints of site (site assessment of soils, hydrology, topography)*





# DESIGNING HABITAT: WHAT'S IN OUR TOOLKIT?

- Relate habitat structure to vegetation communities (e.g. valley oak woodland, mixed riparian forest)
- Develop composition of vegetation communities (plant species, densities)
- Arrange vegetation communities across the landscape





# BEAR RIVER HABITAT RESTORATION PROJECT

- *2<sup>nd</sup> largest setback levee project in California*
- *625 acres of habitat restoration*
- *Planted in 2006*





# LARGE SCALE RESTORATION: TRANSLATING DESIGN TO THE LANDSCAPE

*In essence, by combining science with precision farming technology, we have farmers, engineers, and scientists all working together toward a common goal.*





# LARGE SCALE RESTORATION: TRANSLATING DESIGN TO THE LANDSCAPE





# HOW DO WE MAINTAIN HABITAT RESTORATION PROJECTS?

## *IRRIGATION*

- *Different methods can be used, highly dependent on topography*
- *Frequency dependent on soils*
- *Control weed competition*





# HOW DO WE MAINTAIN HABITAT RESTORATION PROJECTS?

## *MOWING*

- *Keeps weeds from growing tall*
- *Keeps plants from producing a seed head*
- *Beneficial for perennial plants*



**Goal: replace weeds with 100% native cover**





# HOW DO WE MAINTAIN HABITAT RESTORATION PROJECTS?

## *HERBICIDE TREATMENT*

- *Chemicals specifically treat certain plants*
- *Different application methods available*
- *Requires careful matching of spraying objective and chemical/application method*



## **WILDLIFE RESPONSES: APPROVAL OF HABITAT**

**Valley Elderberry Longhorn Beetle**  
(*Desmocerus californicus dimorphus*) – colonized in restoration projects as young as 3 years old, found in 2 mitigation sites on the Feather River in 2006

**Least Bell's Vireo**  
(*Vireo bellii pusillus*) – believed to have been extirpated from the Central Valley, first seen in the valley in 60 years!





## WILDLIFE RESPONSES: APPROVAL OF HABITAT

### Riparian Brush Rabbit

(*Sylvilagus bachmani riparius*): radio collared rabbits are now using adjacent lands to the SJRNWR.



### Riparian Woodrat

(*Neotoma fuscipes riparia*): SJRNWR has riparian woodrats using restored habitat.





## ADDITIONAL INFORMATION

- River Partners website: [www.riverpartners.org](http://www.riverpartners.org)
- California Riparian Habitat Restoration Handbook [http://riverpartners.org/documents/Restoration\\_Handbook\\_Final\\_Dec09.pdf](http://riverpartners.org/documents/Restoration_Handbook_Final_Dec09.pdf)



Recreation



Flood Protection



Outdoor Classrooms

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