The Riparian Habitat Joint Venture

Voting Members:
PRBO Conservation Science
River Partners
The Trust for Public Land
Xerxes Society
Environmental Defense Fund

Non-Voting Members:
US Bureau of Land Management
US Bureau of Reclamation
USDA Natural Resources Conservation Service
US Geological Survey
US Forest Service
California Dept. of Fish and Game
California Dept. of Water Resources
California Natural Resources Agency
California State Lands Commission
California Wildlife Conservation Board

Using science and collaboration to manage, protect, and restore riparian lands in California

California Riparian Habitat Joint Venture
C/O The California Department of Water Resources/FESSRO
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PO Box 942836
Sacramento, California 94236-0001
www.rhjv.org

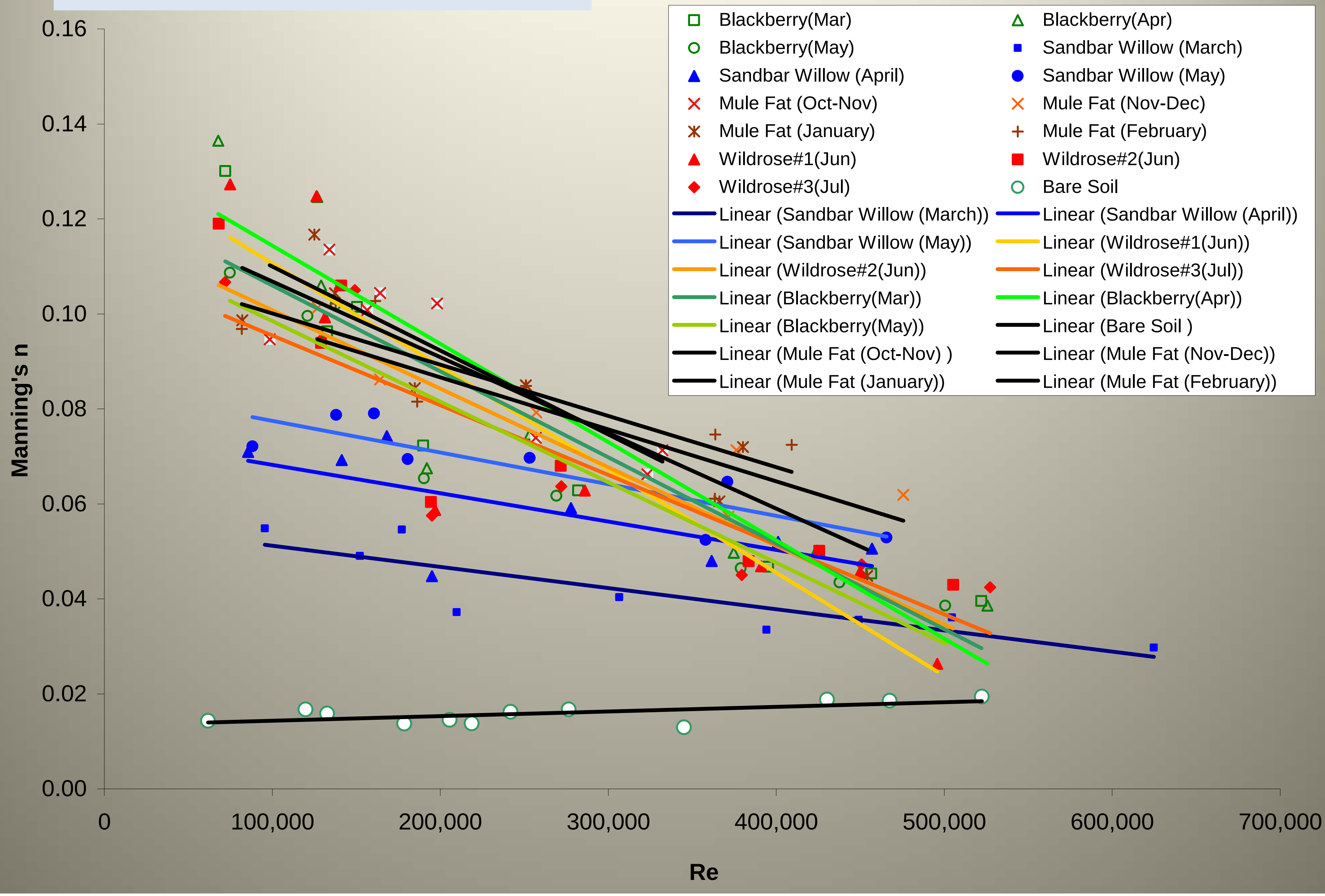
Science

- Focal Species
  - Plants
  - Birds
  - Fish
  - Mammals
- Riparian Communities
  - Characterizations
  - Map
  - Model
  - Floodplains


Plant Mosaic on Floodplain
Lower Stanislaus River

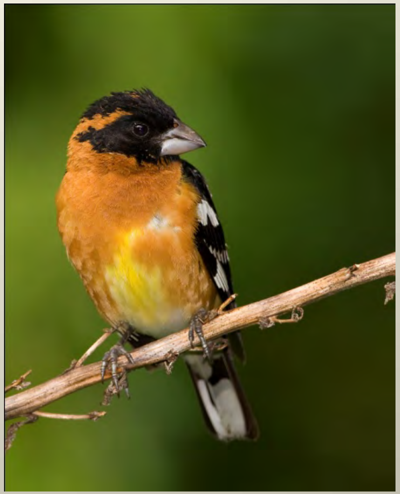

Plants
Lower Stanislaus River

Hydraulic Characteristics of Floodplain Adapted Plants



Birds

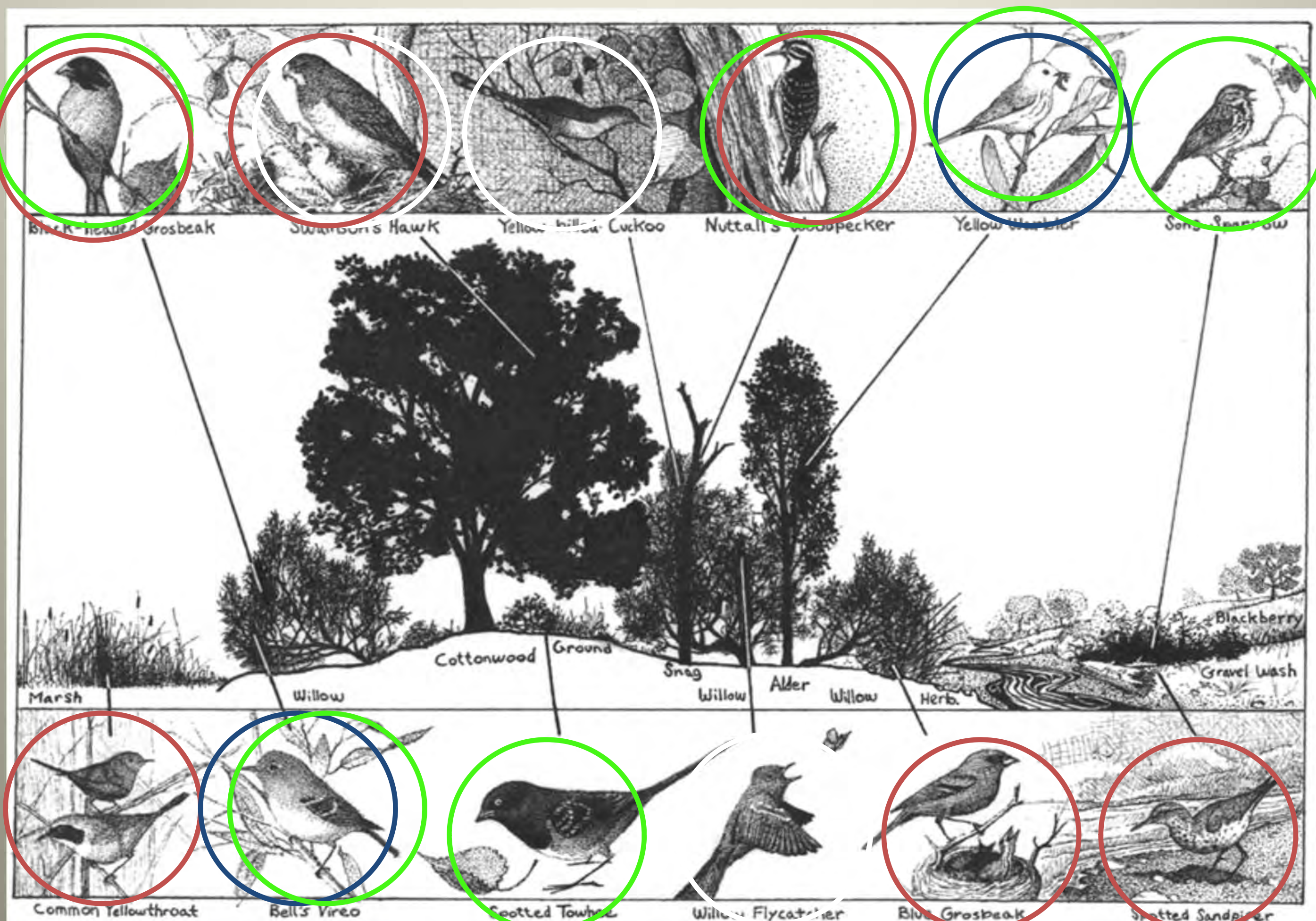
- Photos by Dave Bogener





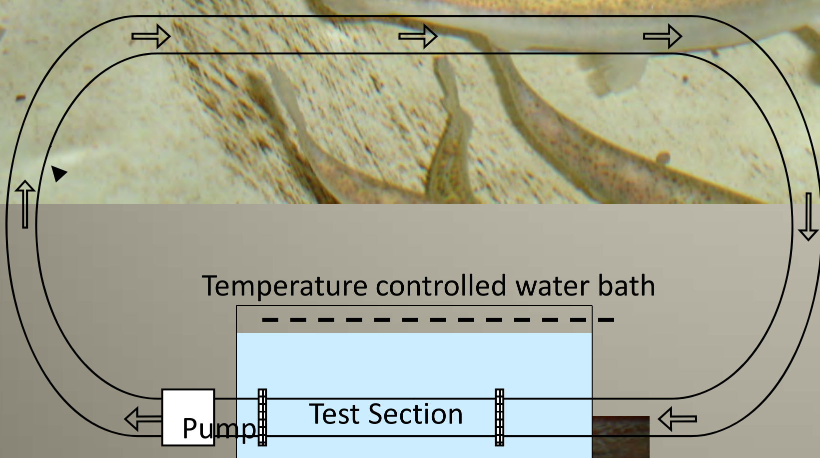
PRBO Conservation Science

<u>Focal species approach</u> (from Chase and Geupel 2005): Includes species at risk, umbrella species and easily monitored species



Focal species that represent a range of critical ecosystem/habitat elements

Fish

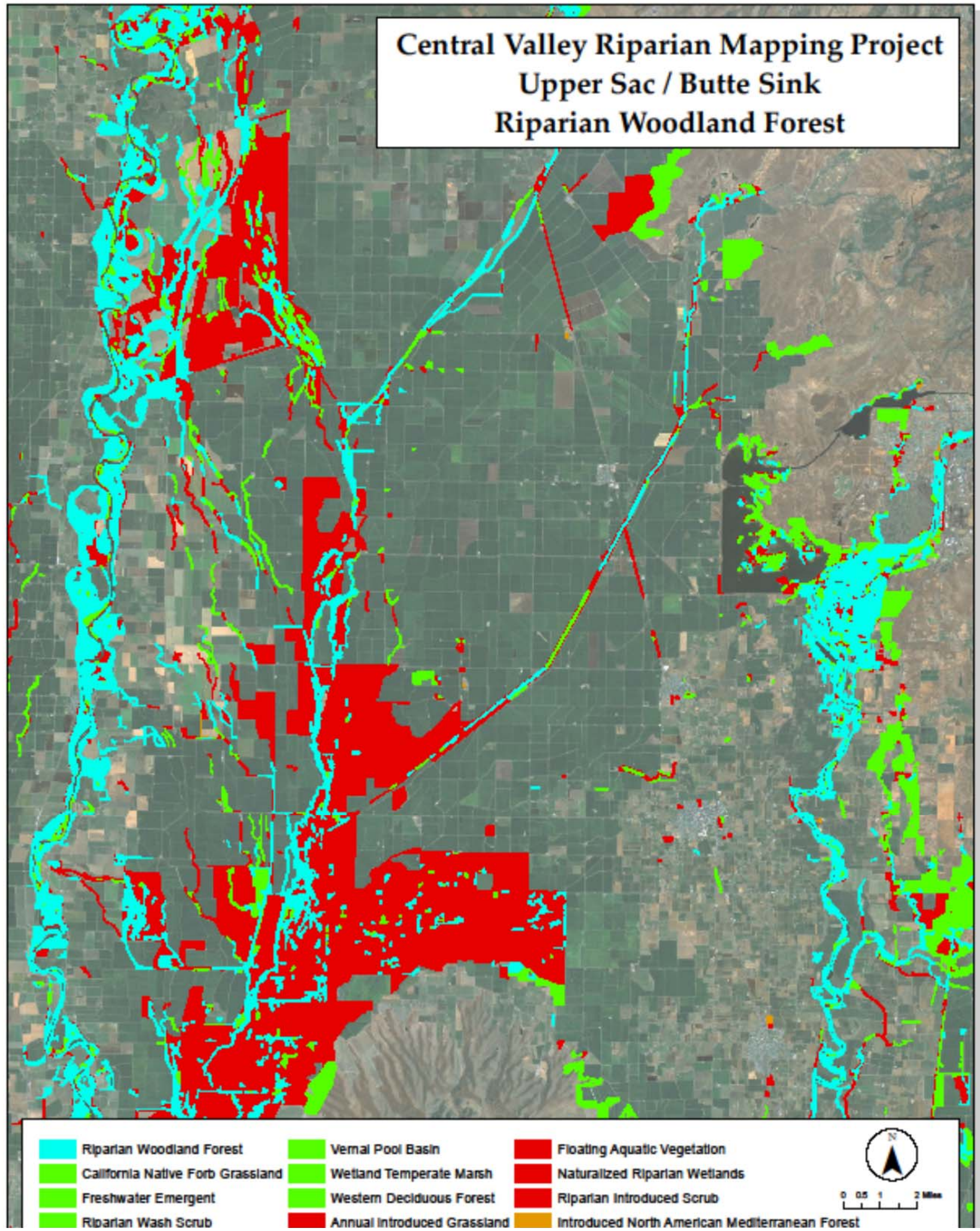


Mammals

Mammals

Riparian Community Characterization

Mapping



Central Valley Riparian Mapping Project
Upper Sac / Butte Sink
Riparian Woodland Forest
Riparian Woodland Forest
California Native Forb Grassland
Freshwater Emergent
Riparian Wash Scrub
Vernal Pool Basin
Wetland Temperate Marsh
Western Deciduous Forest
Annual Introduced Grassland
Floating Aquatic Vegetation
Naturalized Riparian Wetlands
Riparian Introduced Scrub
Introduced North American Mediterranean Forest
0 0.5 1 2 Miles

Modeling

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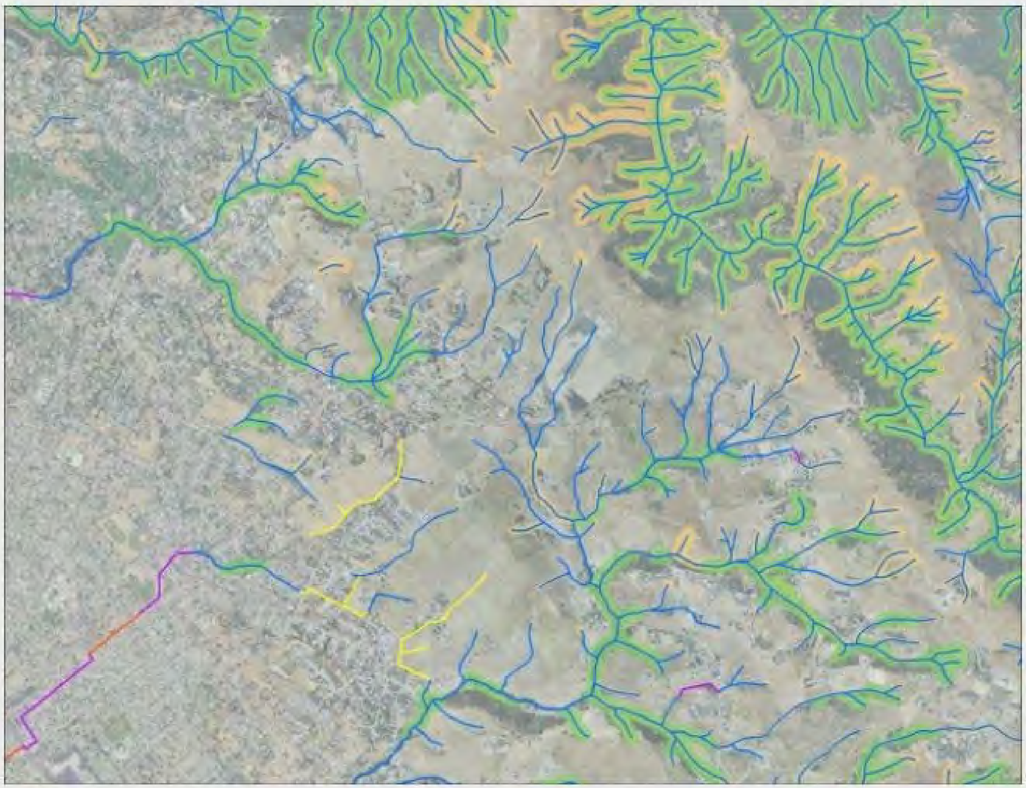
Home :: Bay Area Aquatic Resource Inventory (BAARI) :: Riparian Area Mapping Tool

Riparian Area Mapping Tool



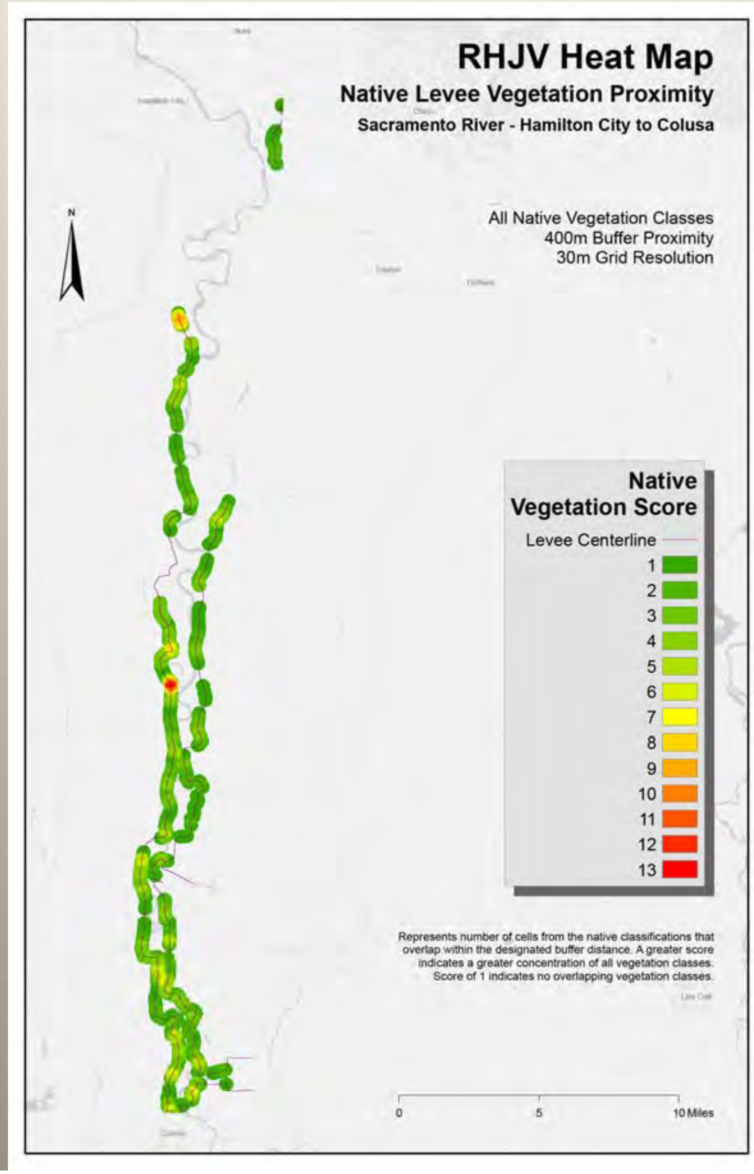
The National Resource Council (NRC) defines riparian as "areas through which surface and subsurface hydrology connect... and significantly influence exchanges of energy and matter". The riparian area mapping tool (RAMT) was developed as a cost-effective way to map riparian extent as defined by the NRC.

SEARCH

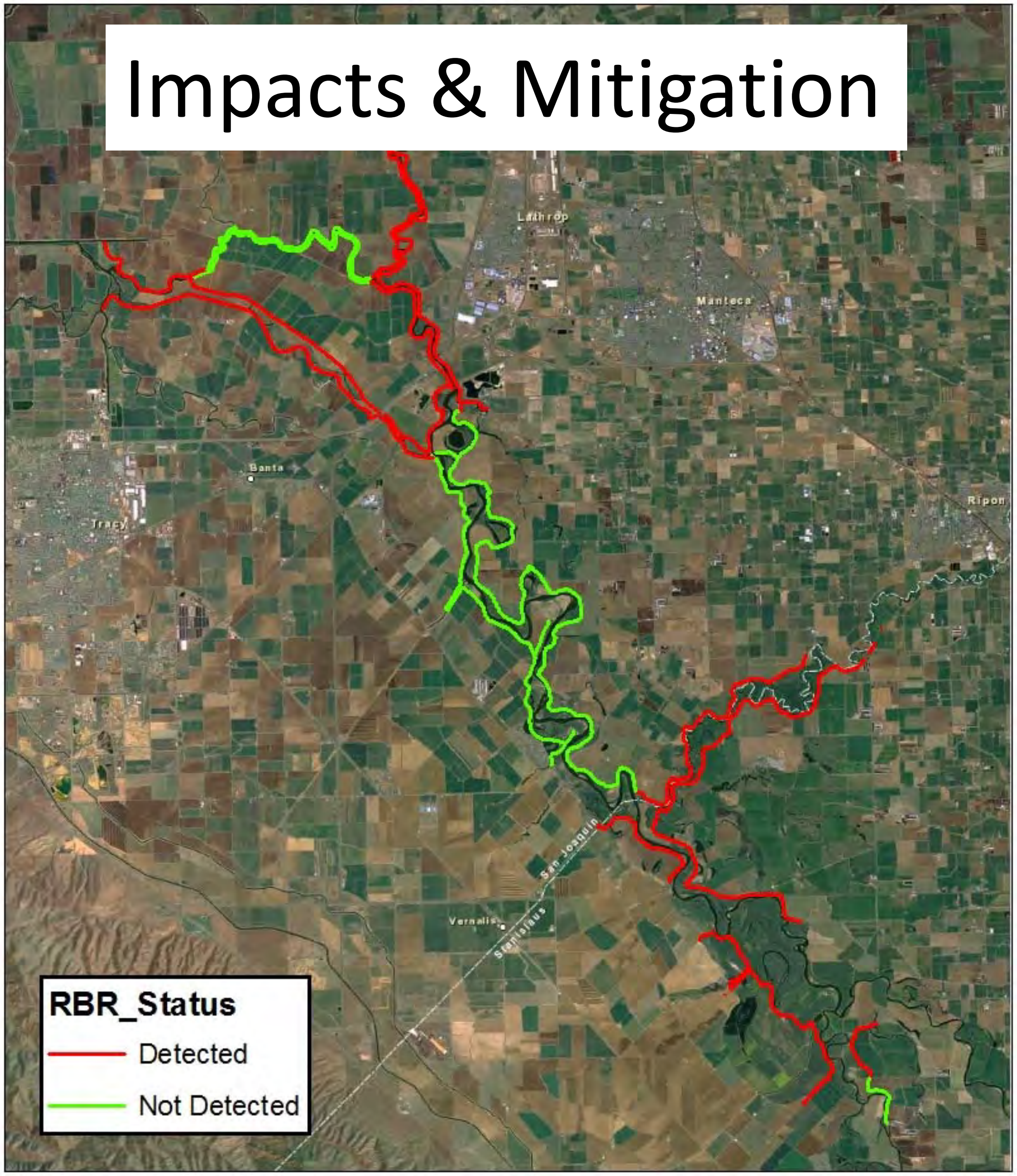
MORE INFO

- BAARI Mapping Documentation
- Riparian Area Mapping Tool

Riparian Community Value



Impacts & Mitigation



Riparian Brush Rabbit Impact Analysis - CVFPP Veg Management

Data from the CVFPP 2012.

Draft Map - For Discussion Purposes Only

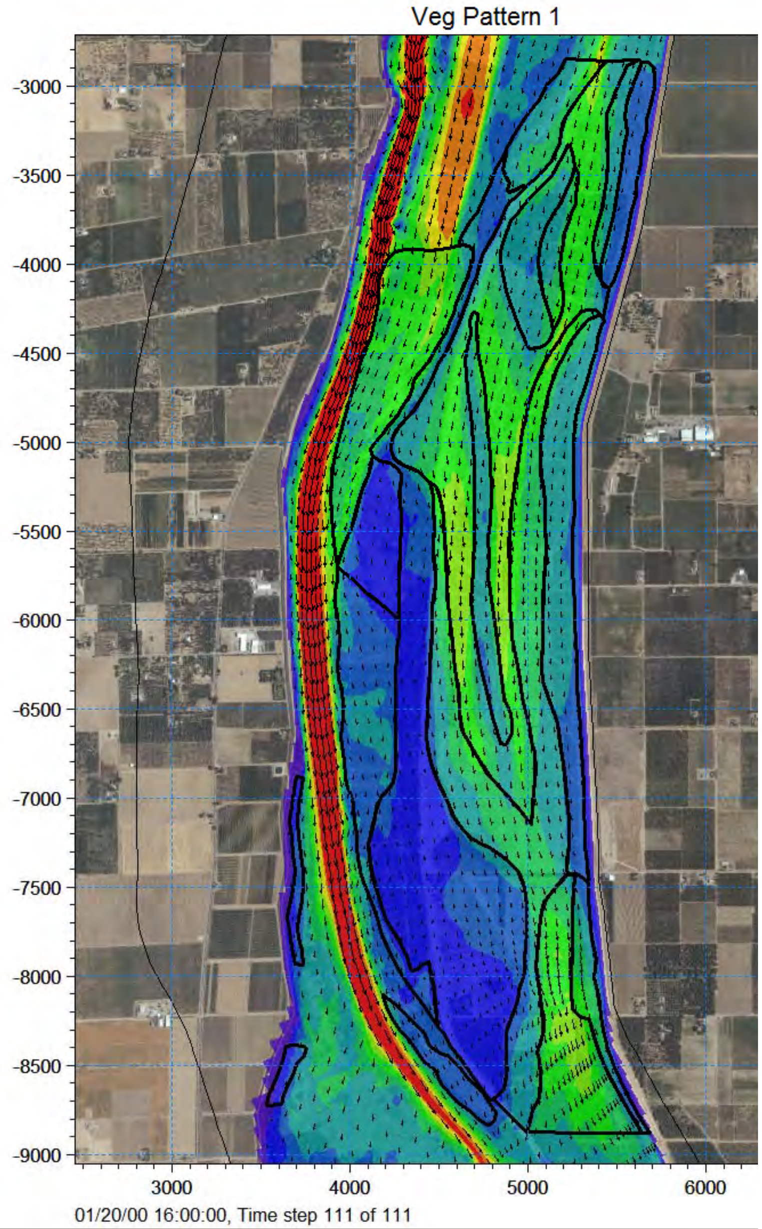
Map created March 2012; R. Melcer

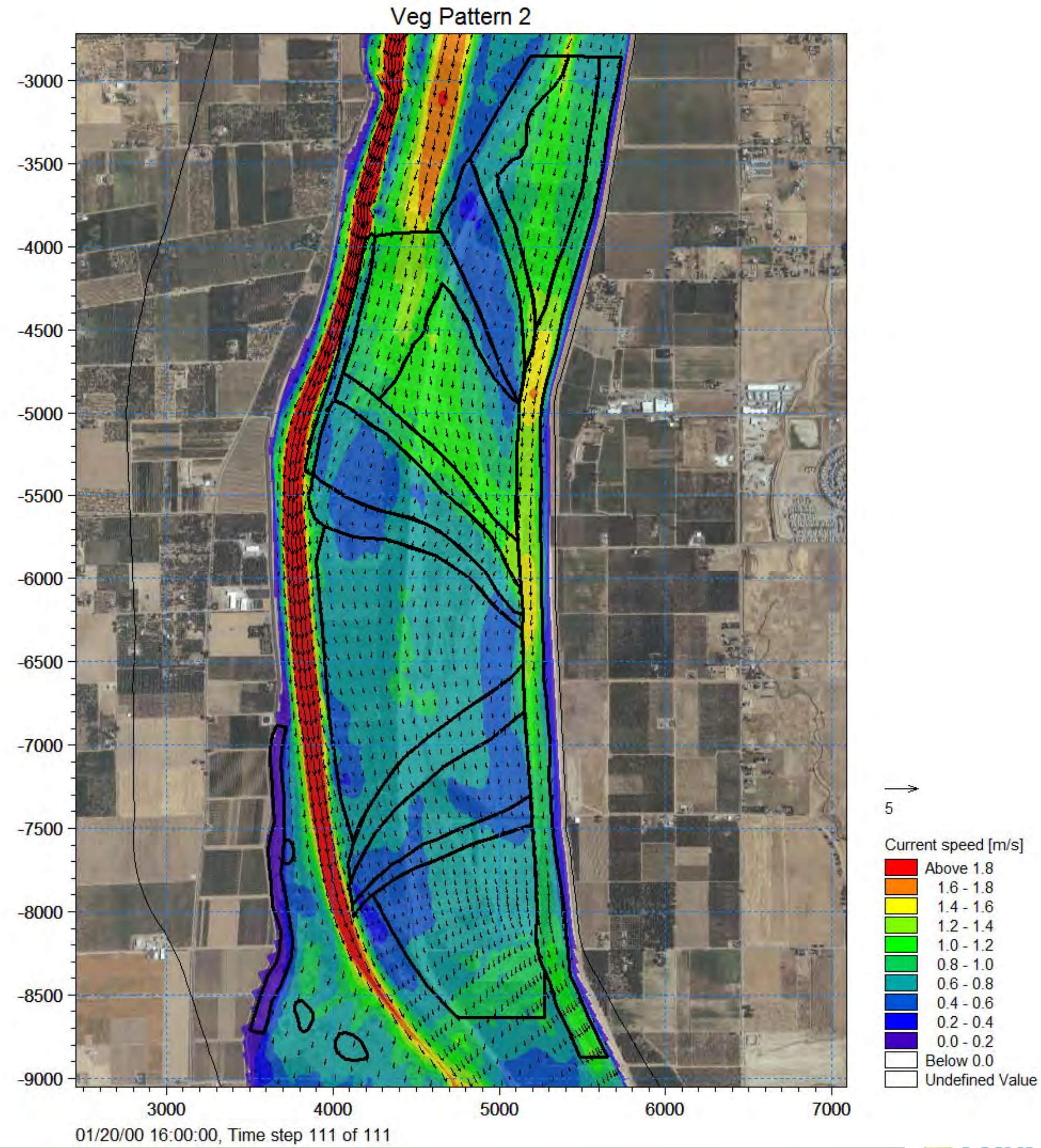
0 1 2 4 6 8

Kilometers

NAIP 2010 Summer Imagery

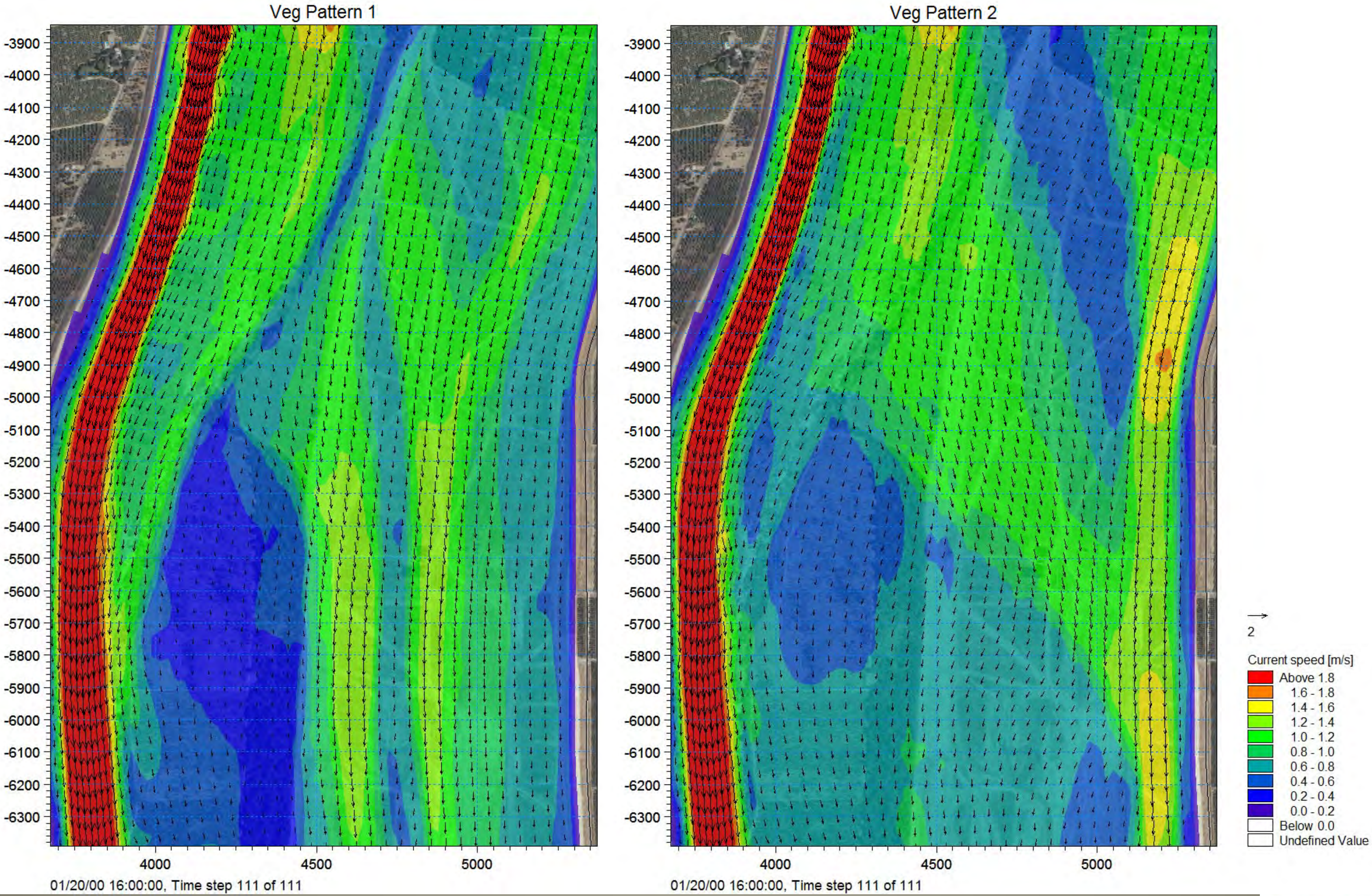
Floodplain & Bypass Design





cbec eco engineering

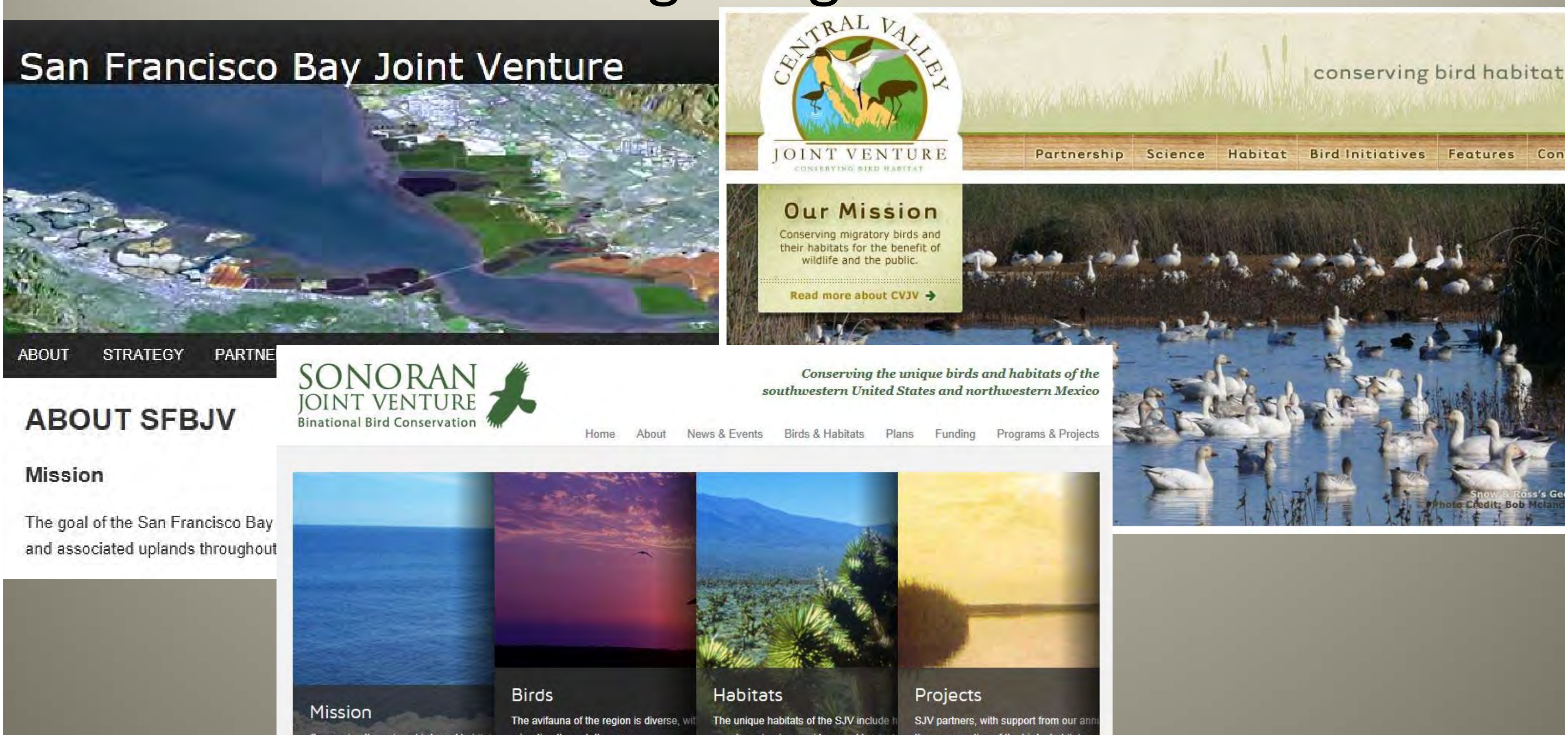
200-Yr Event Velocities

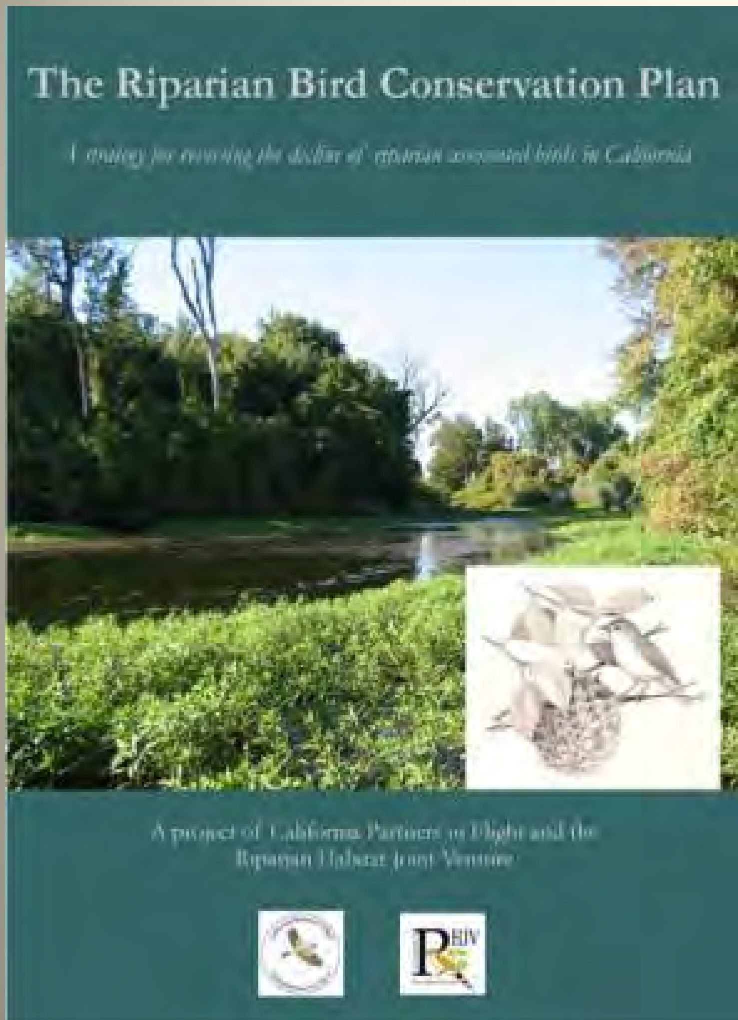


Collaboration

Improving the outcomes by sharing the work

Credit enough to go around

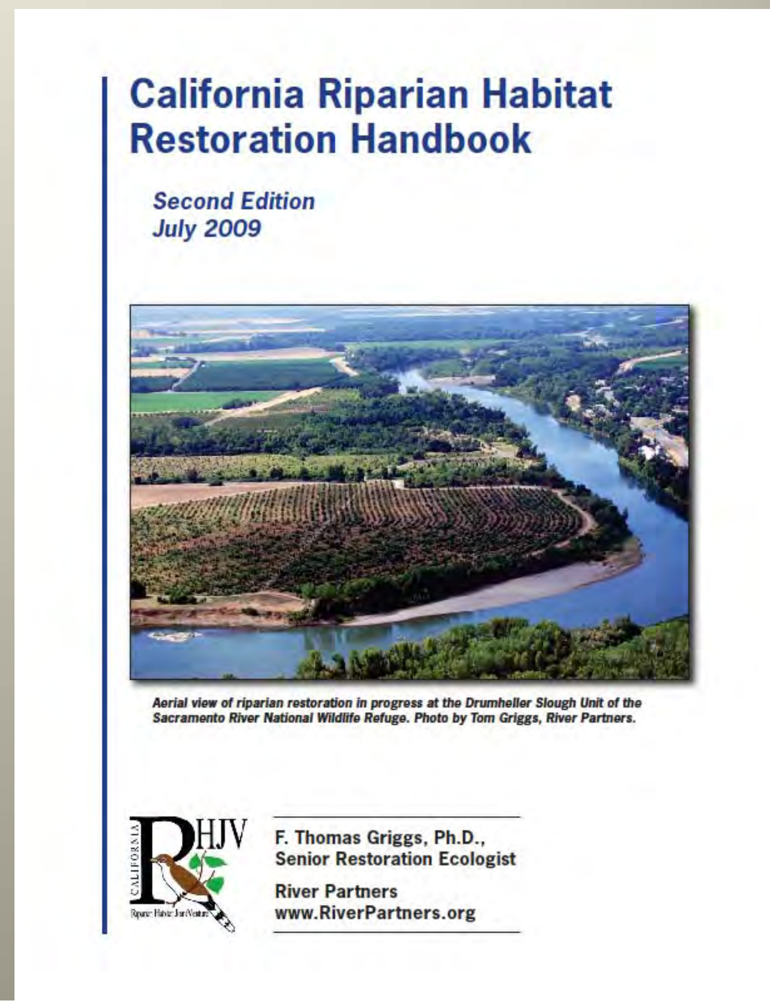




The Riparian Bird Conservation Plan

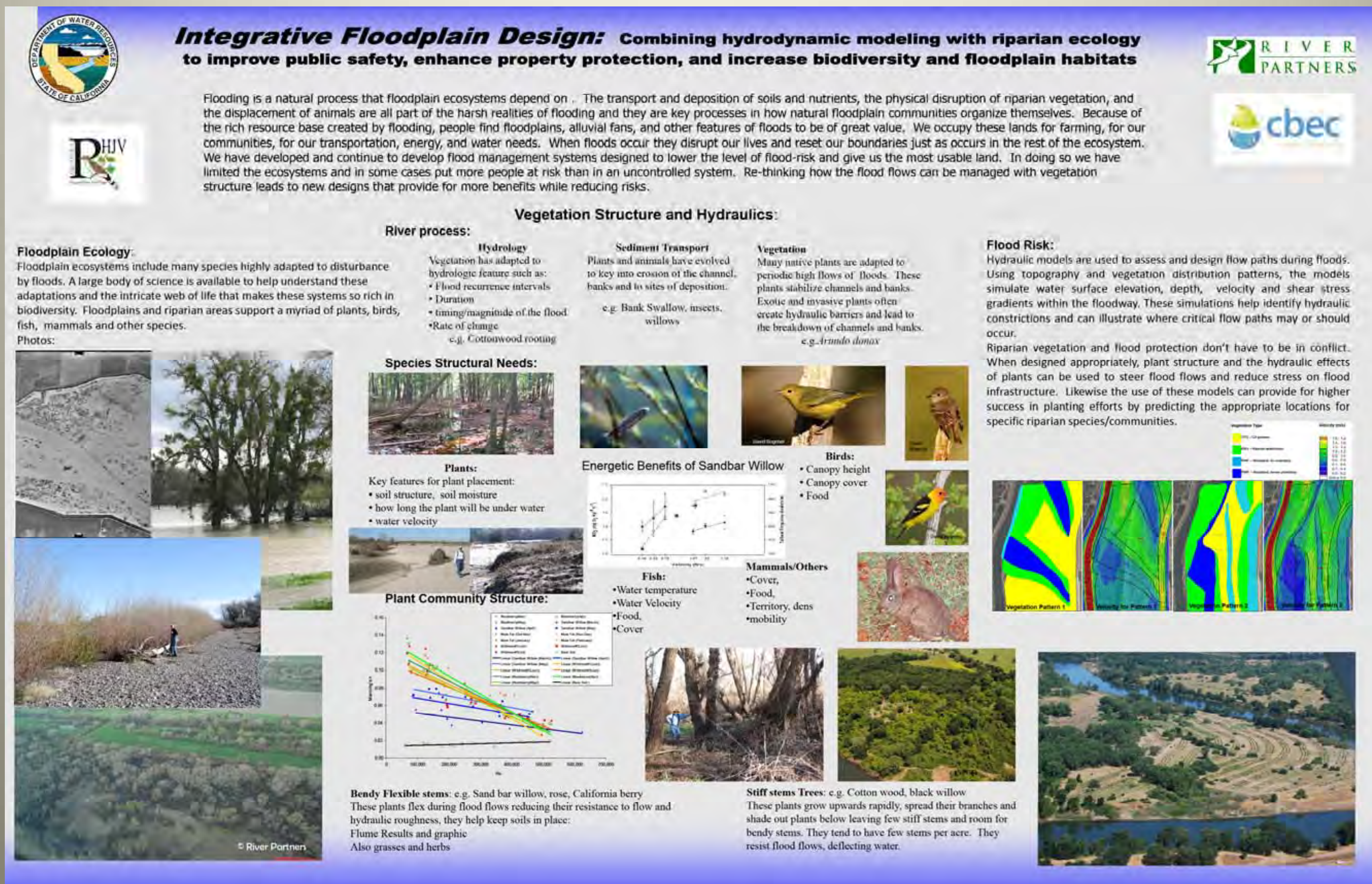
A strategy for reversing the decline of riparian associated birds in California

A project of California Partners in Flight and the Riparian Habitat Joint Venture



Collaboration: Venus for Sharing and learning

What is Next?


Integrative Floodplain Design: Combining hydrodynamic modeling with riparian ecology
to improve public safety, enhance property protection, and increase biodiversity and floodplain habitats
RIVER PARTNERS
cbec
Flooding is a natural process that floodplain ecosystems depend on . The transport and deposition of soils and nutrients, the physical disruption of riparian vegetation, and the displacement of animals are all part of the harsh realities of flooding and they are key processes in how natural floodplain communities organize themselves. Because of the rich resource base created by flooding, people find floodplains, alluvial fans, and other features of floods to be of great value. We occupy these lands for farming, for our communities, for our transportation, energy, and water needs. When floods occur they disrupt our lives and reset our boundaries just as occurs in the rest of the ecosystem. We have developed and continue to develop flood management systems designed to lower the level of flood-risk and give us the most usable land. In doing so we have limited the ecosystems and in some cases put more people at risk than in an uncontrolled system. Re-thinking how the flood flows can be managed with vegetation structure leads to new designs that provide for more benefits while reducing risks.
Vegetation Structure and Hydraulics:
River process:
Floodplain Ecology:
Floodplain ecosystems include many species highly adapted to disturbance by floods. A large body of science is available to help understand these adaptations and the intricate web of life that makes these systems so rich in biodiversity. Floodplains and riparian areas support a myriad of plants, birds, fish, mammals and other species.
Photos:
Hydrology
Vegetation has adapted to hydrologic feature such as:
• Flood recurrence intervals
• Duration
• timing/magnitude of the flood
•Rate of change
e.g. Cottonwood rooting
Sediment Transport
Plants and animals have evolved to key into erosion of the channel, banks and to sites of deposition.
e.g. Bank Swallow, insects, willows
Vegetation
Many native plants are adapted to periodic high flows of floods. These plants stabilize channels and banks. Exotic and invasive plants often create hydraulic barriers and lead to the breakdown of channels and banks.
e.g. Arundo donax
Flood Risk:
Hydraulic models are used to assess and design flow paths during floods. Using topography and vegetation distribution patterns, the models simulate water surface elevation, depth, velocity and shear stress gradients within the floodway. These simulations help identify hydraulic constrictions and can illustrate where critical flow paths may or should occur.
Riparian vegetation and flood protection don't have to be in conflict. When designed appropriately, plant structure and the hydraulic effects of plants can be used to steer flood flows and reduce stress on flood infrastructure. Likewise the use of these models can provide for higher success in planting efforts by predicting the appropriate locations for specific riparian species/communities.
Species Structural Needs:
Plants:
Key features for plant placement:
• soil structure, soil moisture
• how long the plant will be under water
• water velocity
Energetic Benefits of Sandbar Willow
Birds:
• Canopy height
• Canopy cover
• Food
Fish:
•Water temperature
•Water Velocity
•Food,
•Cover
Mammals/Others
•Cover,
•Food,
•Territory, dens
•mobility
Plant Community Structure:
Vegetation Pattern 1
Velocity for Pattern 1
Vegetation Pattern 2
Velocity for Pattern 2
© River Partners
Bendy Flexible stems: e.g. Sand bar willow, rose, California berry
These plants flex during flood flows reducing their resistance to flow and hydraulic roughness, they help keep soils in place:
Flume Results and graphic
Also grasses and herbs
Stiff stems Trees: e.g. Cotton wood, black willow
These plants grow upwards rapidly, spread their branches and shade out plants below leaving few stiff stems and room for bendy stems. They tend to have few stems per acre. They resist flood flows, deflecting water.