The Riparian Habitat Joint Venture

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

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
Science

Focal Species
  Plants
  Birds
  Fish
  Mammals
Riparian Communities
  Characterizations
  Map
  Model
  Floodplains
Plant Mosaic on Floodplain

Lower Stanislaus River
Hydraulic Characteristics of Floodplain Adapted Plants

![Graph showing the relationship between Manning's n and Re for different plant species and their growth periods. The graph includes data points for Blackberry (March, April, May), Sandbar Willow (March, April, May), Mule Fat (October-November, November-December, January, February), Wildrose #1 (June), Wildrose #2 (June), Wildrose #3 (July), and Bare Soil. The x-axis represents Re ranging from 0 to 700,000, and the y-axis represents Manning's n ranging from 0.00 to 0.16. The graph includes linear regressions for each plant species and growth period, showing a decrease in Manning's n as Re increases.](image-url)
Birds

• Photos by Dave Bogener
Focal species approach (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
Modeling

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.
Riparian Community Value
Impacts & Mitigation

RBR_Status
- Detected
- Not Detected

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
NAIP 2010 Summer Imagery
Floodplain & Bypass Design
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

Floods are a natural process that floodplain ecosystems depend on. The transport and deposition of sediments and nutrients, the physical alteration of riparian vegetation, and the displacement of animals are all part of the natural realities of flooding and are key processes in how natural floodplain communities organize themselves. Because of the rich resource base created by flooding, people find floodplain, alluvial floods, 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 occur 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 possible 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:**
- **Hydrology:** Vegetation has adapted to hydrodynamic influence risk
- **Sediment Transport:** Plants and animals have evolved to cope with movement of sediments, banks, and the process of deposition.
- **Rate of change:** e.g., Cottonwood rooting
- **Plants:** Biomechanical adaptations
- **Vegetation:** Many native species are adapted to maximize high flows of floods. These plants stabilize channels and banks.
- **Erosion and sediments:** These and invasive plants offer use of hydraulic barriers and help to stabilize the breakdown of channels and banks.

**Plant Community Structure:**
- **Flexible species:** e.g., Sandbar willow, willow, California box
- **Rigid species:** e.g., Cottonwood, Black willow

**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:**
  - Campy height
  - Campy cover
  - Food
- **Mammals/Others:**
  - Cover
  - Food
  - Emergency, dense
  - stability

**Flood Risk:**
- Hydrologic models are used to assess and design flood paths during floods. Using topography and vegetation connection patterns, these models simulate surface water elevation, depth, velocity, and shear stress gradients within the floodway. These simulations help identify hydraulic constraints 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.