

# **Setting Goals and Defining Watershed and Stream “Health” to Better Integrate Policies, Programs, and Projects**

Rainer Hoenicke and Josh Collins  
San Francisco Estuary Institute,  
Aquatic Science Center


The background of the slide is a scenic landscape photograph. In the foreground, there is a grassy hill with dry, yellowish-brown grass. In the middle ground, a calm body of water, likely a bay or lake, is visible, surrounded by lush green trees and vegetation. In the background, there are rolling green hills and mountains under a bright blue sky with scattered white clouds.

# Why Stream Goals?

## Bay Area Stream Goals Group

Mitch Avalon, Jim Fiedler, Richard McMurtry, Paul Amato, Trish Mulvey, Anne Draper, Josh Collins, Rainer Hoenicke, et al.





All the policies, programs, and projects for flood control, fire control, erosion control, water quality, water supply, air quality, wildlife protection, land use ...



What do they add up to?



A photograph of a misty forest landscape. In the foreground, there is a grassy hillside. The middle ground is filled with numerous evergreen trees, some of which are partially obscured by a thick mist or fog. The background shows more trees and a hazy sky. The overall tone is soft and atmospheric.

If we were to fix  
all the environmental problems,  
obey all the environmental laws,  
what would the world look like?

A photograph of a suburban neighborhood. In the foreground, there is a large field of tall, dry grass and some green shrubs. A paved road curves along the bottom left. In the background, there are several houses of various colors (white, blue, yellow, orange) and styles, some with red roofs. A large, dark green tree stands out among the houses. The sky is clear and blue. The text "What *should* it look like?" is overlaid in blue at the top.

What *should* it look like?

How much of what kinds  
of habitats are needed  
where, and why?




to account for all the  
resources spent ...

on watershed planning,  
protection, and restoration ...







The whole of government  
and society  
needs the same set  
of stream goals

to assure that the various policies,  
programs, and projects are  
adequately coordinated to protect  
the land and life it should support.



Stream goals represent success  
against which we can measure  
progress ...





A group of people, including men and women, are standing outdoors in a line, looking towards the right. They are wearing various hats and casual clothing. In the background, there is a large white structure, possibly a lighthouse or a monument, and a body of water. The sky is clear and blue.

The product is not a plan,  
*it's a process.*

*Ecosystem management is  
public debate based on enough  
scientific information  
to manage uncertainty  
and make hard decisions.*



# Rationale for a Watershed Perspective

- Water and Sediment Flow Downhill
- Landscape Alterations Affect Runoff Magnitude and Duration
- Flow Alterations Affect Bank Erosion and Channel Incision
- Mobilized Sediment Is Deposited in the Lowlands



# What Does A Healthy Watershed Look like?

- Functions are intact
- Risks to life and property are reduced to acceptable levels
- Economic and community activities are supported and can be sustained



# Who Manages All This?

- Department of Public Works
- Planning Department
- Board of Supervisors, City Councils
- Clean Water Program
- Water Recyclers
- Water Districts
- Fire Departments
- Vector Abatement Districts
- Rec and Parks Departments
- Etc.

# Who Regulates the Managers?

- Water Boards - Clean Water Act, Sections 401, 402, 303(d) etc. – Porter Cologne WDR
- Department of Fish and Game - Fish and Game Code, 1600 Series, 2500 Series
- EPA, CoE – Clean Water Act, Section 404



# What Do We Need to Know?

- What does the drainage network look like?
- Where do water and sediment go?
- Where are valuable natural and recreational resources?
- What did the landscape look like prior to major alterations?
- Where are protection and restoration opportunities?

# Setting Goals

- Where do we want to go?
- What is feasible?
- What are the tradeoffs?
- How do we optimize among conflicting goals?



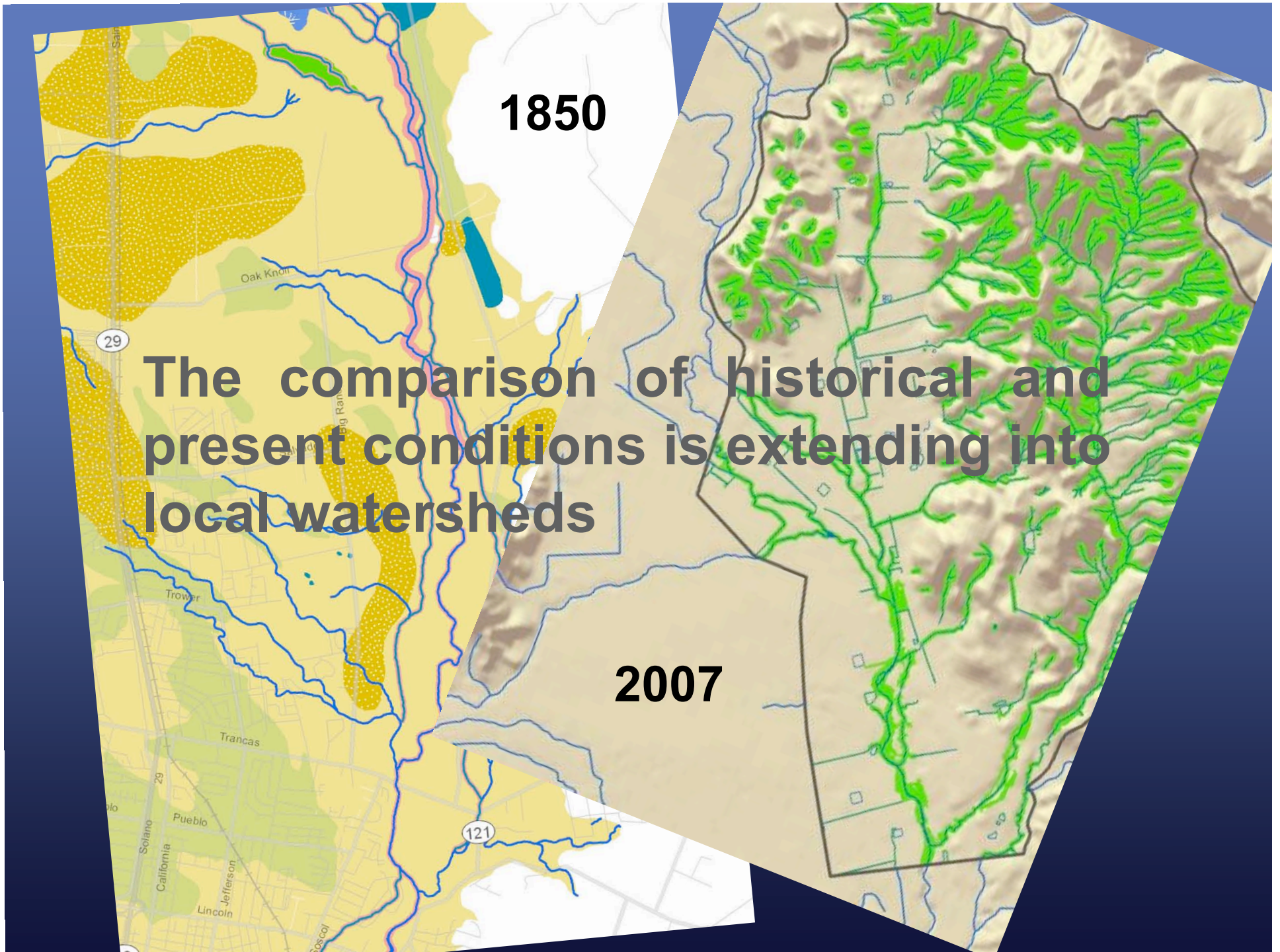
# Proven Path to Stream Goals

1. Understand the Past
2. Understand the present
3. Understand change
4. Envision the Goals
5. Turn policies, programs and projects into ways to achieve the goals
6. Monitor progress toward the goals
7. Adjust the goals for new understanding

**1850**

**The comparison of historical and present conditions is extending into local watersheds**

**2007**





# Napa Valley circa 1800



**Tidal Marsh**



**Wet/Alkali Meadow**



**Willow Grove**



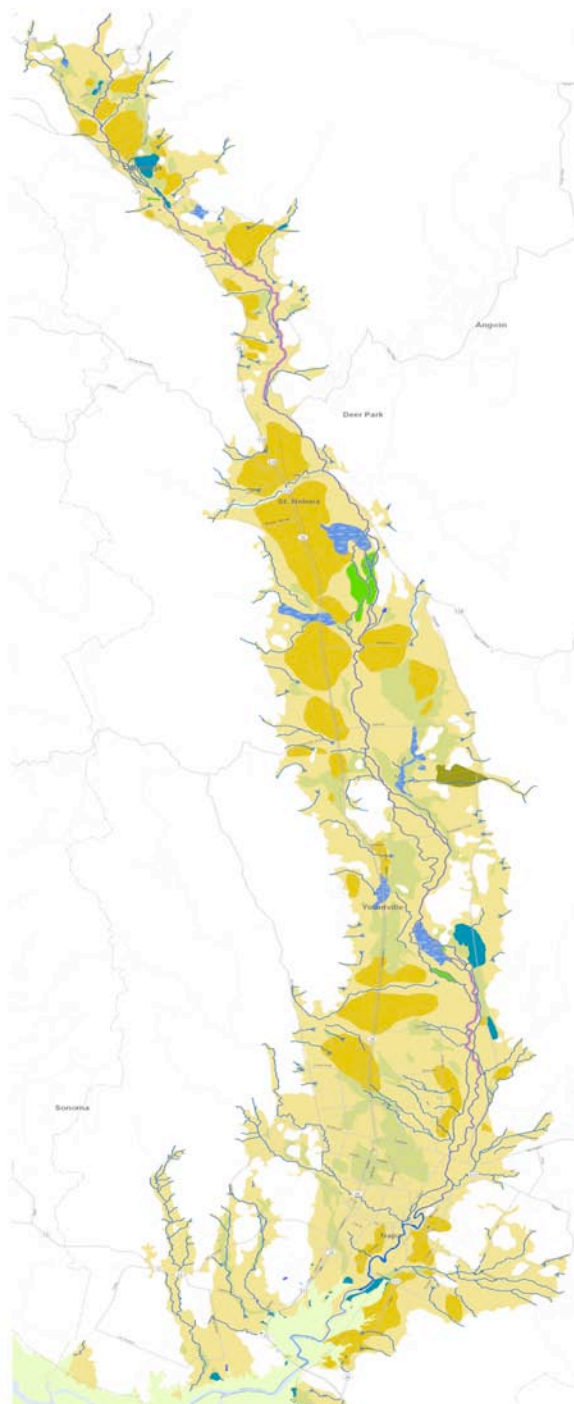
**Freshwater Marsh**

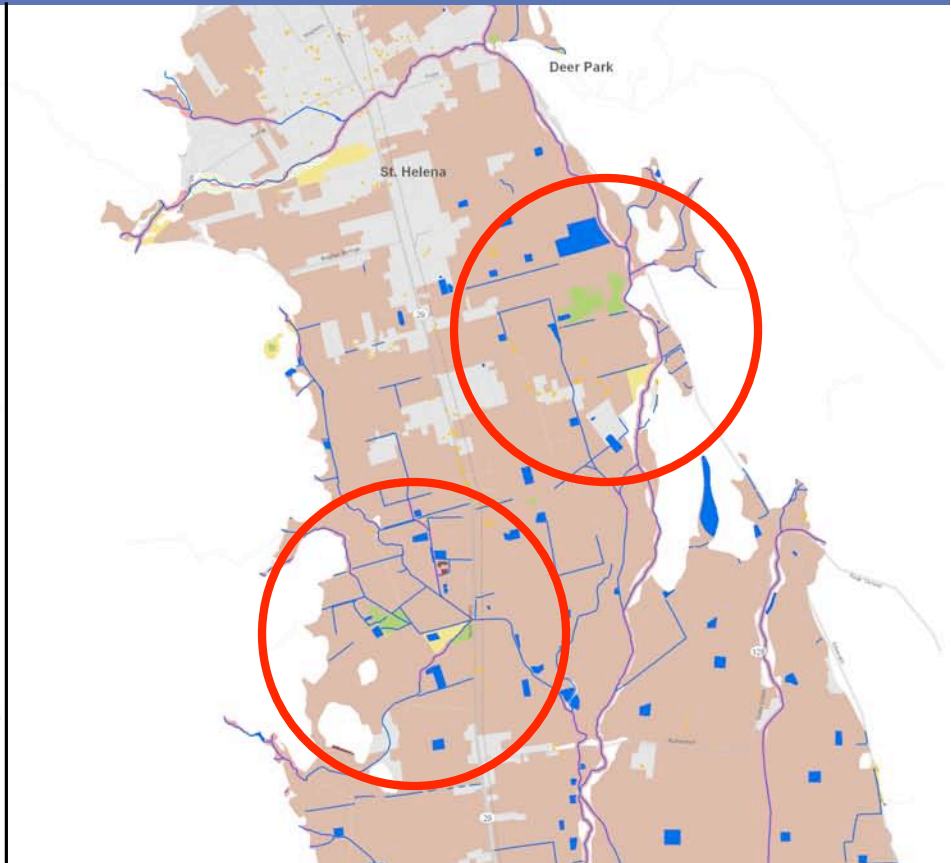
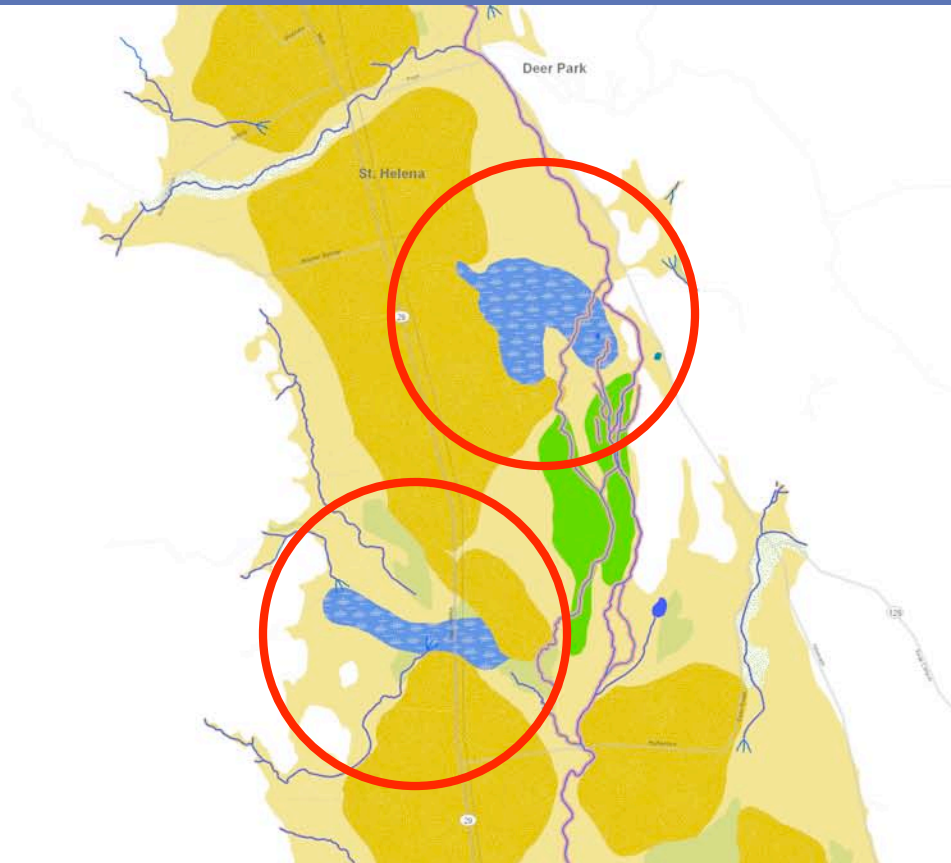
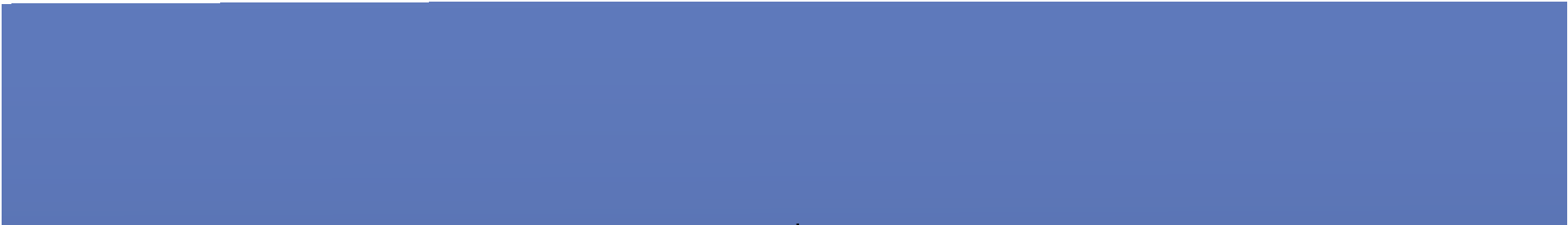


**Valley Oak Savanna**



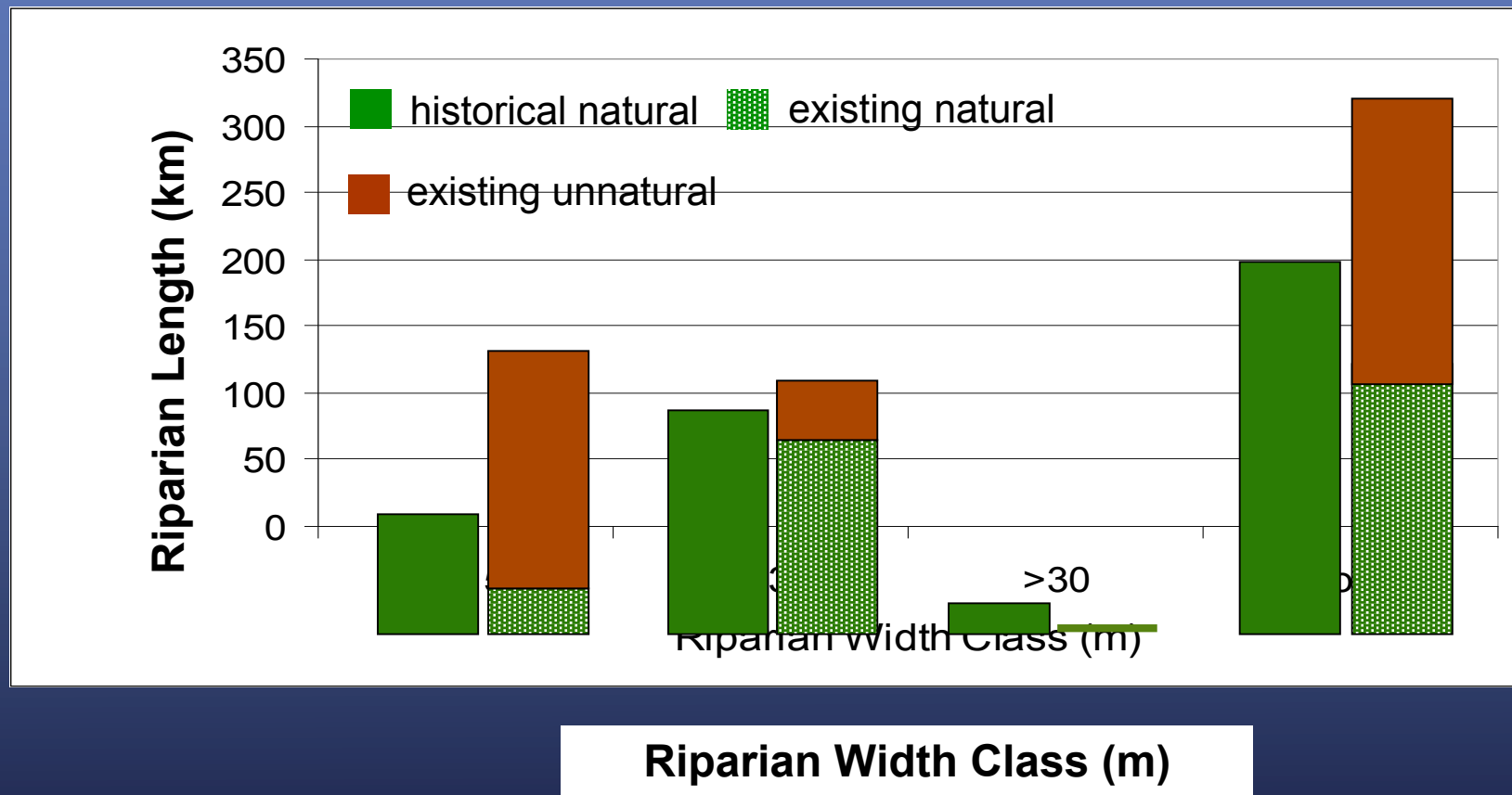
**Grassland**







# Historical Change in Riparian Extent Napa Watershed



# Different Problems at Different Scales

## Regional Examples Involve Many Streams

- Anadromous fish recovery
- Sea level rise (upstream migration of tide)
- "Landscape Resistance" to restoration
  - Regional transportation and utility corridors disrupt stream-Bay connections
  - Subsided and contaminated lands
- Regional, State and Federal coordination of policies and programs to address problems



# Different Problems at Different Scales

## Examples for Local Watersheds

- Physics
  - Chronic stream incision/sedimentation
  - Non-point source pollution
- Ecology
  - Anadromous fishery declines
  - Riparian habitat loss and invasion
- Consumptive competition for water and land
  - Flood control, irrigation, ecological service

So ...

what would stream goals look like?





## Possible Regional Goals

- Allocation of fisheries restoration efforts among watersheds;
- Baylands Goals Version 2: intertidal restoration to accommodate sea level rise;
- Coupling stream and bayland restoration to infrastructure maintenance and upgrades.



## Expected Local Goals

- Reach-specific recommended hydrograph to optimize among watershed objectives;
- Land use design recommendations to achieve chosen hydrograph
- Reach-specific restoration templates to accommodate chosen hydrograph



# Next Steps

## Stream Goals pilot projects

Napa River (2006-08)

Miller Creek (2007-08)

Coyote Creek (??)

Diablo Creek (??)

Walnut Creek(??)

Thank You

