

# San Diego Creek Causal Assessment

## Interactive Workshop #1

February 3, 2015



# Outcomes of Last Meeting

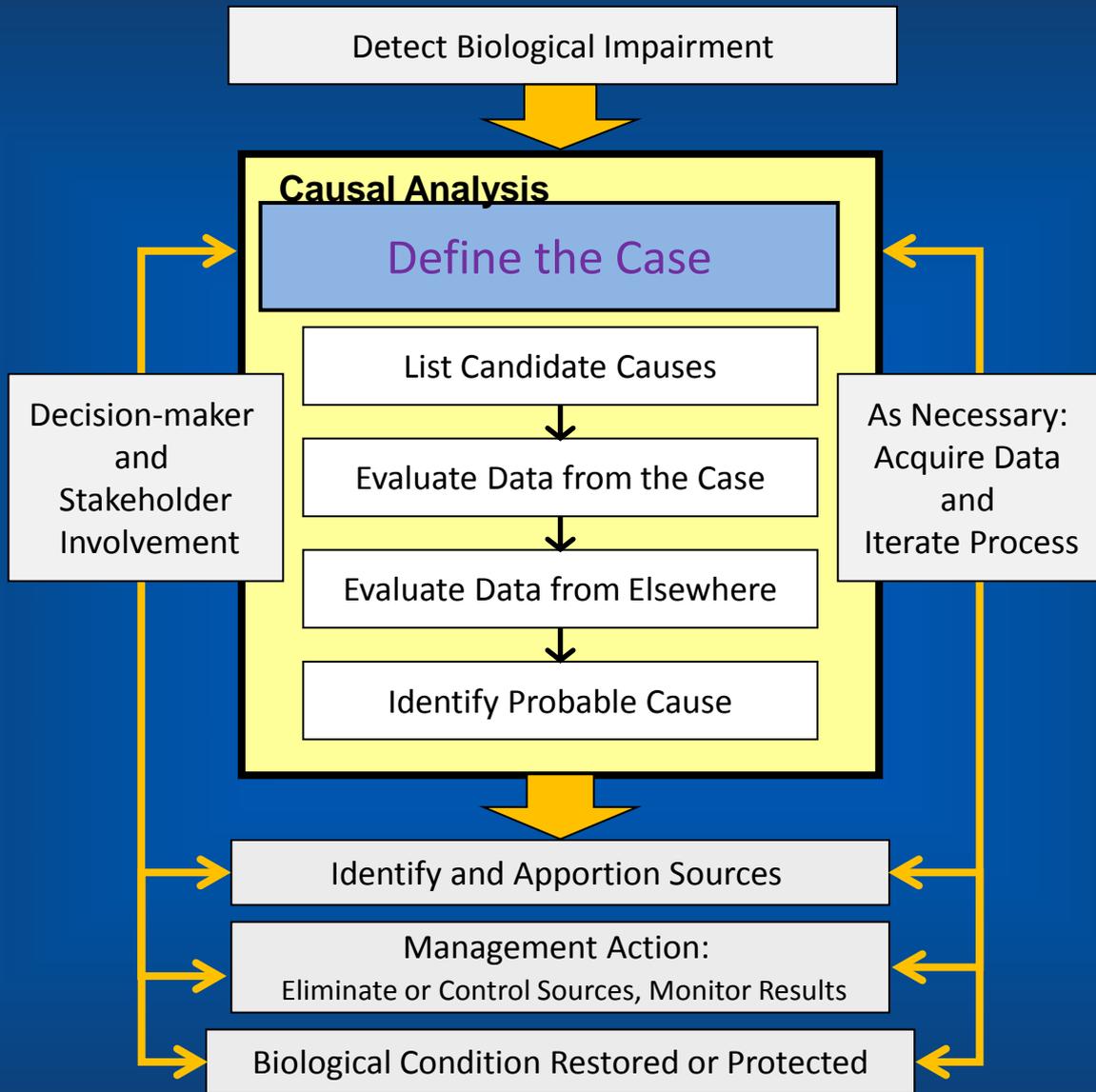
- Defining the case
  - Spatial constraints
    - San Diego Creek between Jeffery and Culver avenues
  - Temporal constraints
    - Consider a multi-year period (2006 - 13)
  - Biological endpoints
    - CSCI, O/E Taxa, pMMI metrics H2O algal index, and algal metrics

# Outcomes of Last Meeting

- Candidate Causes
  - Annual sediment accumulation
  - Channel engineering
  - Pesticides
  - Elevated nutrients
  - Habitat simplification
  - Channel operation and maintenance
  - Flow
  - Temperature
  - Conductivity

# Agenda

- **Item 1: Finalize details for case definition**
  - Investigate spatial and temporal trends at the proposed test sites to identify any potential outliers and constrain the case
  - Conduct a basic data inventory to determine at what sites we have the appropriate biological data to calculate CSCI and Algal IBI scores
  - Go through the GIS data we have to broadly characterize the landscapes of the watershed
  - Once we finalize our sites, make sure we have the right spatial data to then select comparator sites
- **Item 2: Finalize candidate causes**
  - Add or subtract potential candidate causes from our list
  - Assign proximate causes to each candidate cause
  - Hypothesize potential biological responses to each proximate stressor for the different biological endpoints
  - Build a conceptual model together
- **Item 3: Figure out homework assignments**
  - Before the next meeting we will want to have a draft of the case narrative and some draft conceptual models for the different candidate causes
  - We will have to develop a plan for exchanging drafts and providing comments



# What is the Case?

- The case defines scope of the assessment
  - Why are we doing the assessment?
  - Where is the assessment?
  - When did the impact occur?
  - Who are the biotic endpoints?
  - What comparator sites are to be used?
- Defines the objectives of the assessment

# Defining Our Case

- Why are we doing the assessment?
  - Low IBI and CSCI scores
    - Fear of not meeting the beneficial uses
- Where is the assessment?
  - San Diego Creek between Jeffery and Culver Ave
- When did the impact occur?
  - 2006 - 2013
- But can we use all these data together?

# Spatial-Temporal Extent

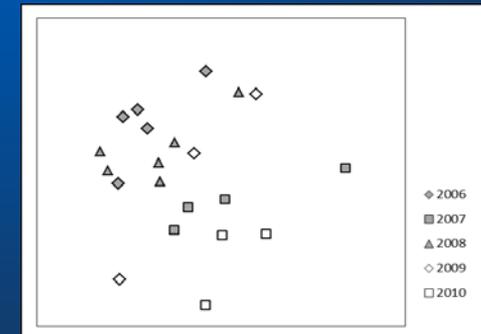
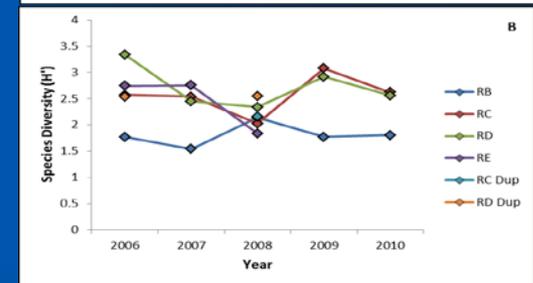
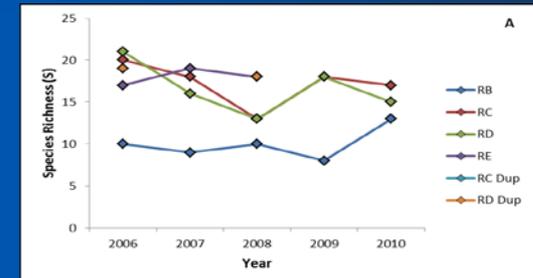
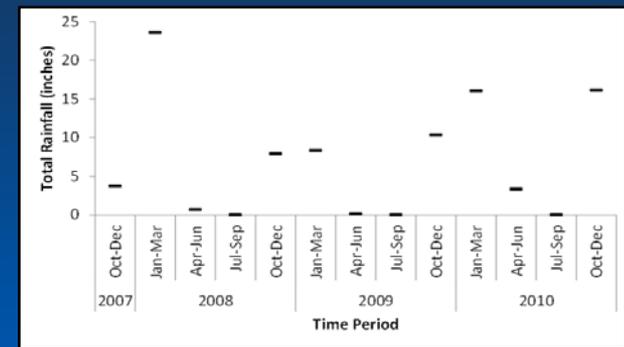
- 6 samples from 4 sites
  - SMC01923 (2011)
  - SMC13187 (2013)
  - SMCR8\_180 (2006)
  - SMCR8\_418 (2009 x2, 2011)

# Multi-Site & Multi-Year Assessments

- Assessments integrating across multiple sites and samples/year are *probably* more appropriate for CA
  - NPS stressors plus robust monitoring programs
- Ensure comparability between sites/samples to be aggregated
  - Look for outliers in biology or natural stressors
    - Appearance of mudsnails
    - Fire/mudslide, historically abnormal rainfall/flow events, etc

# Santa Clara River

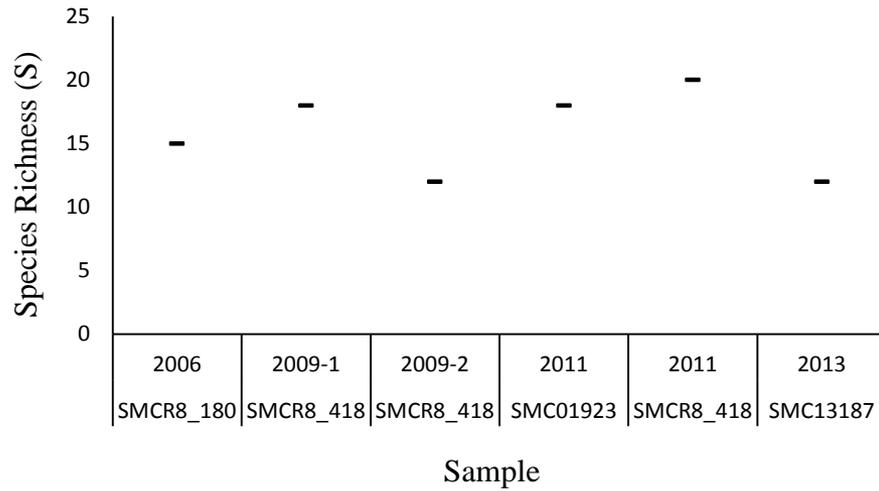
- Interest in doing multi-year assessment
- Looked at variability in rainfall and the biology at test and comparator sites
- Could use the same approach for multiple sites



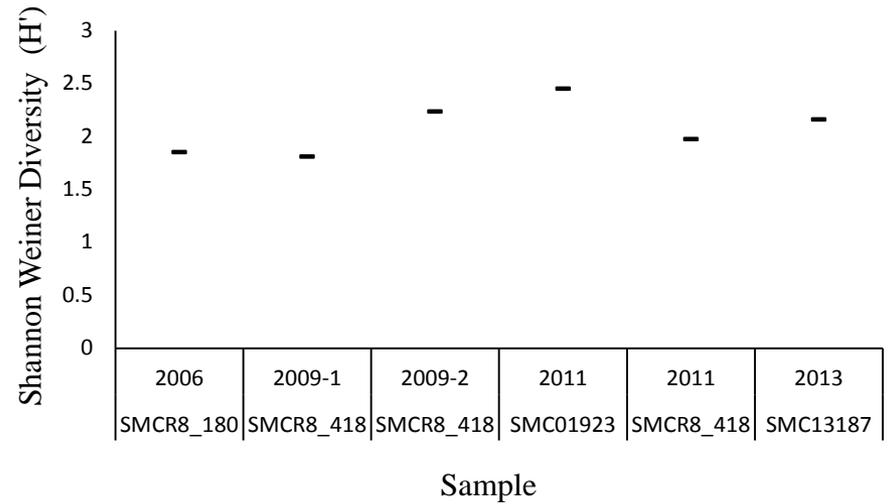
# Test Site Similarities

- Look for biological anomalies
- Look for environmental anomalies

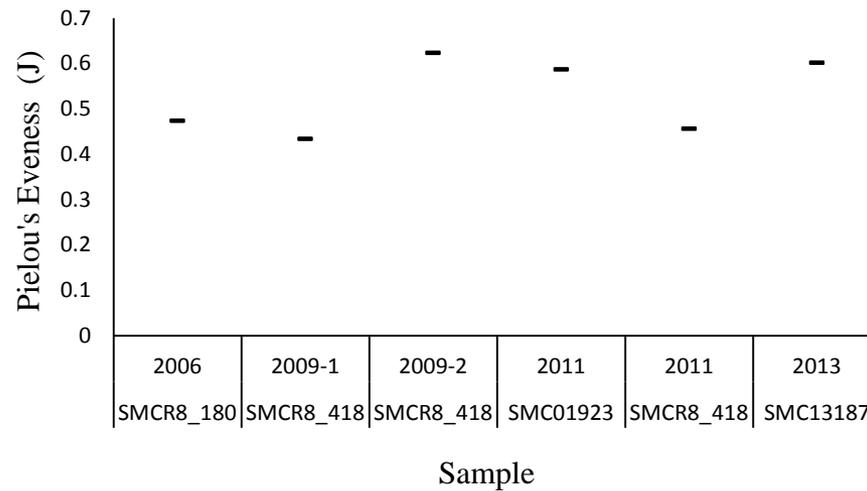
San Diego Creek Test Sites



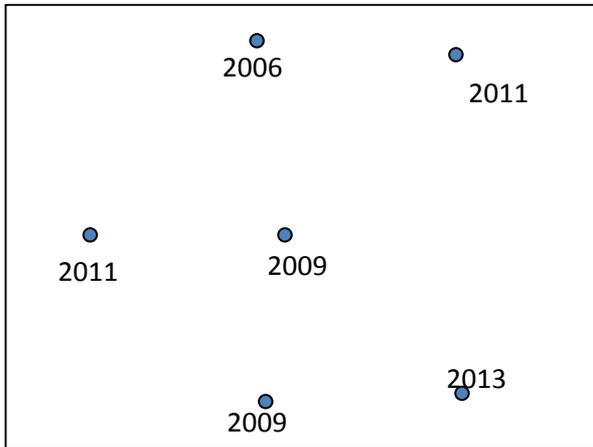
San Diego Creek Test Sites



San Diego Creek Test Sites

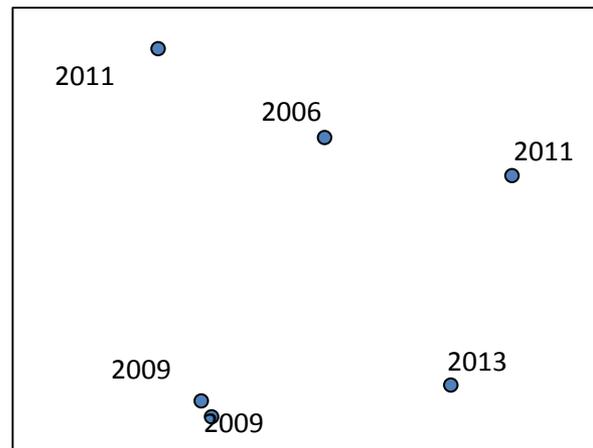


nMDS of Test Sites



Square Root  
Transformed  
Stress = 0.01

nMDS of Test Sites



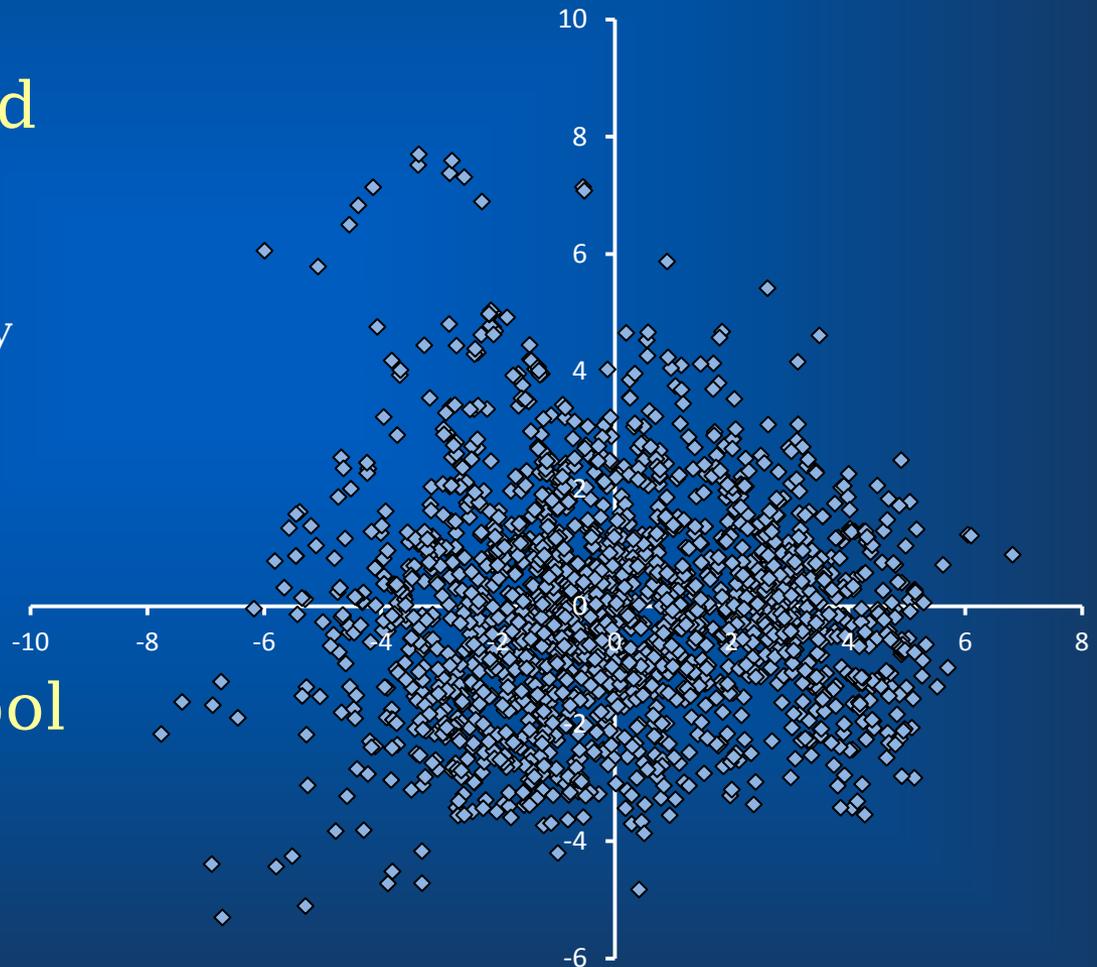
Presence  
Absence  
Transformed

# Defining Our Case ...cont.

- **What are the biological endpoints?**
  - CSCI, O/E Taxa, pMMI metrics H2O algal index, and algal metrics
- **What are the comparator site approach?**
  - Empirical selection, based upon natural gradients and geographic proximity to test sites

# Selecting Our Comparator Sites

- PCA of sites based upon natural gradients
  - Predicted conductivity
  - Underlying geology
  - Rainfall
  - Air temperature
  - Watershed area
- Then limit the pool to SoCal sites

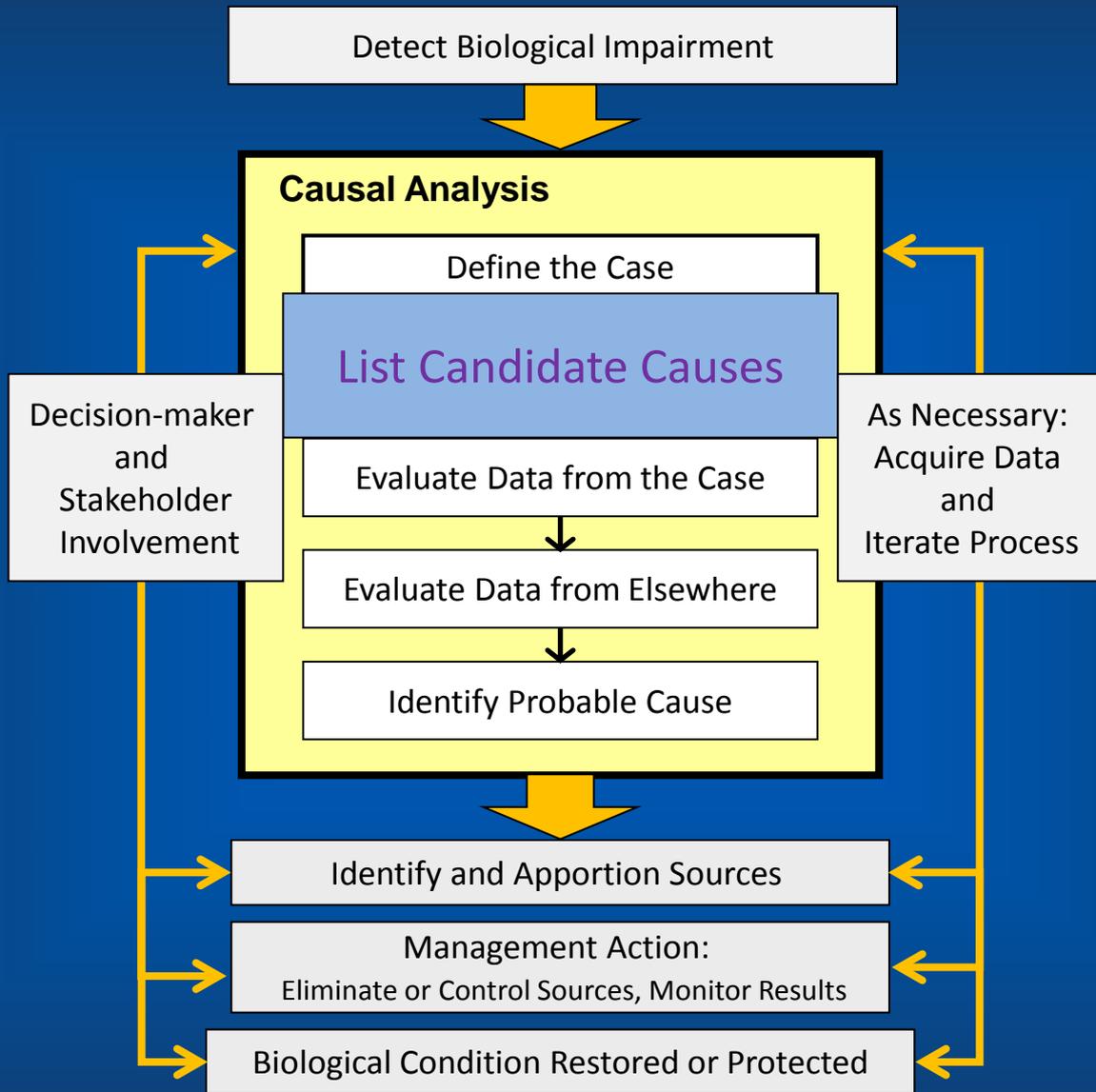


# Comparator Sites

- We have the GIS information for the test sites and the SMC & PSA sites
- Do we want to consider inclusion of targeted sites within in the watershed
  - Orange County and IRWD data
- We will need to get GIS data for any targeted sites

# Candidate Causes

- Annual sediment accumulation
- Channel engineering
- Pesticides
- Elevated nutrients
- Habitat simplification
- Channel operation and maintenance
- Flow
- Temperature
- Conductivity



# What are Candidate Causes?

- The stressors that could potentially have caused the impaired biology
- These are the basic units of the causal assessment
  - Each cause will be evaluated and scored using the different lines of evidence
- At the end, each will be assigned likely, unlikely, or indeterminate status as a cause of the impairment

# Proximate Stressors

- Each candidate cause is comprised of a series of proximate stressors
- These are what actually impact the biota
  - Channelization of the stream vs. altered food resources, loss of riffles and pools
- These are the measures that will be evaluated in the analytical steps

