

# 10 years of bioassessment in Southern California

An update on the Stormwater Monitoring Coalition's stream survey  
Presentation to SCCWRP Commission



# The SMC survey positions us to understand potential biological objectives

- State and regional boards are moving towards policies to protect biointegrity (next talk)
- The survey makes sure that tools that underpin those policies work in our settings
- Survey gives us crucial understanding of how policies might play out

# What's the survey's biggest accomplishments?

- An unparalleled data set -> Leverage to answer our regional questions
- SoCal is the lab to develop tools with statewide (and national) importance -> Ensures our needs and concerns can be addressed
- A forum for collaboration and dialogue -> Common technical foundation for understanding regional problems

# How is the survey data used?

- Serves as SoCal portion of statewide Perennial Streams Assessment
- Key element of Integrated Report (303d/350b)
- Ensures SoCal representation in statewide science (e.g., index development, threshold science)
- Creates foundation for causal assessment
- Allows long-term, regional assessment of overall effectiveness of management plans and programs

# Outline

- What is the SMC stream survey?
- Findings from our first two surveys
- Sharing our data: The SQI and the SMC data portal
- What does the future bring? Our third survey, and beyond

# How and why did the survey start?

- The SMC was created in 2001, and began its stream survey in 2009 as a collaborative program of leading stormwater and regulatory agencies
- Survey was renewed in 2015
- Previous efforts were not seen as effective:
  - Tons of monitoring effort spent, but little insight gained
  - No context, no comparability, no data sharing, no coordination!
- Two major sources of funding:
  - Regulated: Permit compliance
  - Regulators: Discretionary funding (SWAMP)

# Stream survey began in 2009

## Key questions:

1. What is the biological condition of streams in Southern California?
2. What stressors are associated with poor condition?
3. Are conditions changing over time?

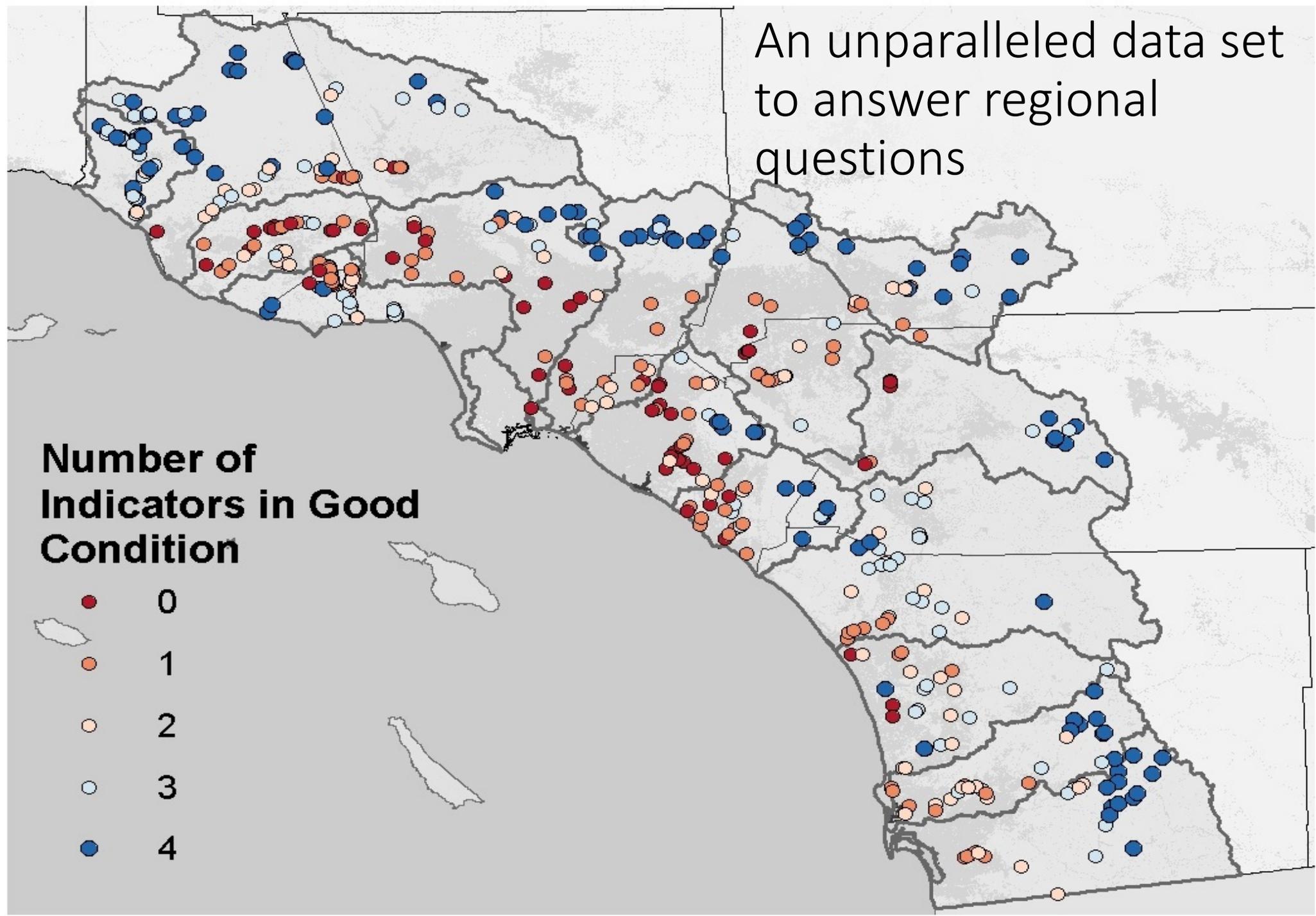
First survey: 2009 to 2013

Current survey: 2015 to 2019

An unparalleled data set  
to answer regional  
questions

**Number of  
Indicators in Good  
Condition**

- 0
- 1
- 2
- 3
- 4

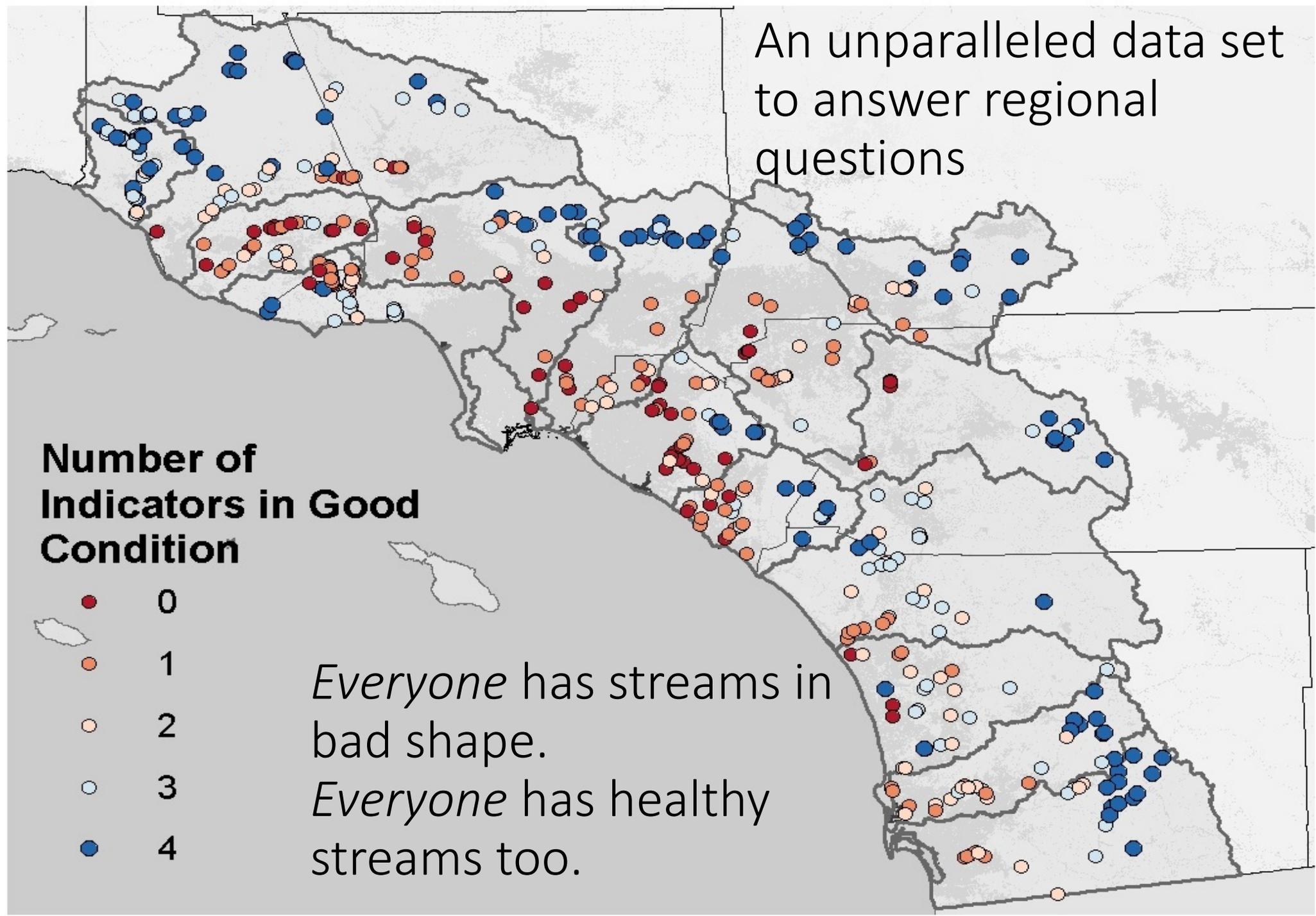


An unparalleled data set  
to answer regional  
questions

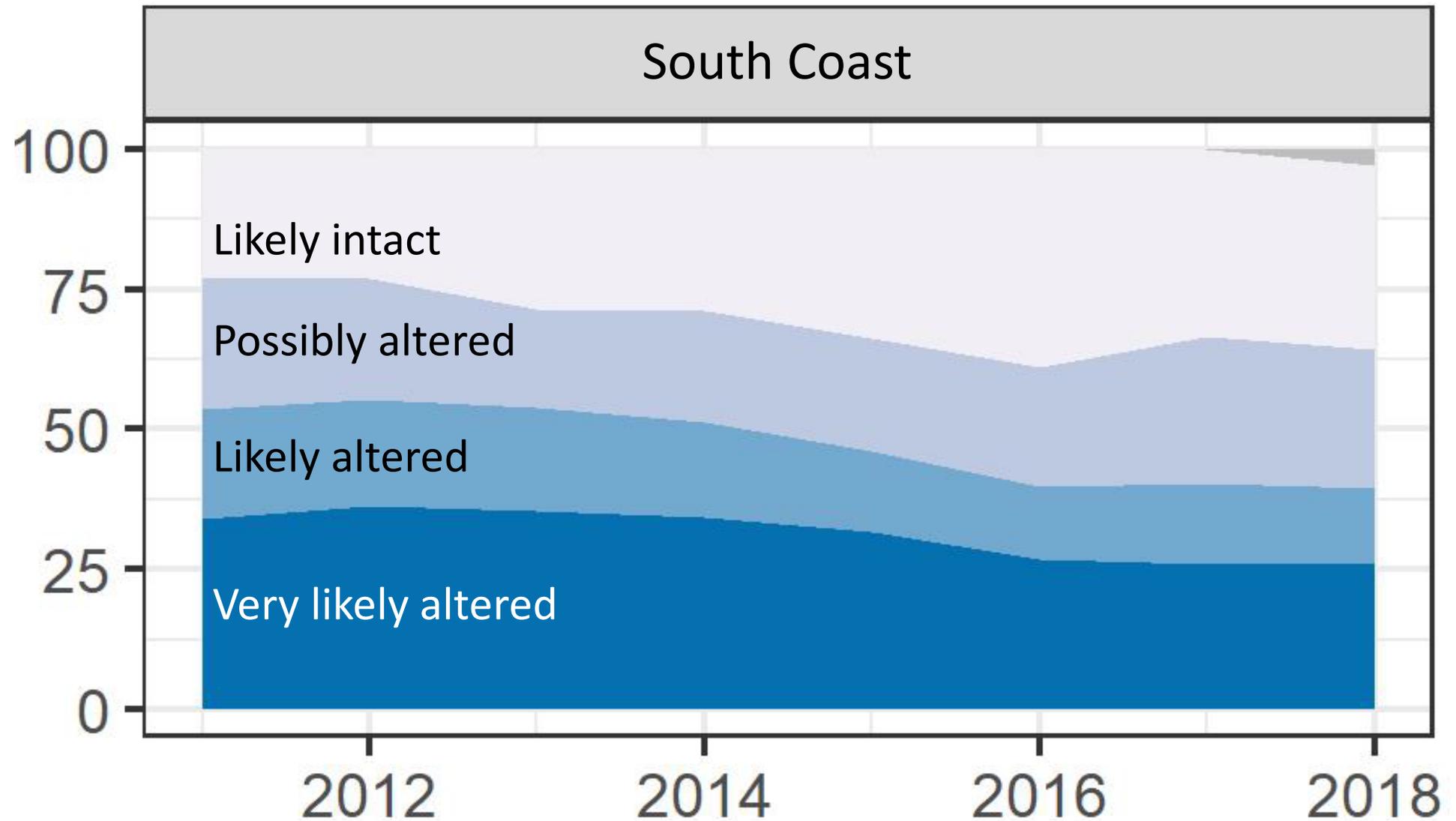
**Number of  
Indicators in Good  
Condition**

- 0
- 1
- 2
- 3
- 4

*Everyone* has streams in  
bad shape.  
*Everyone* has healthy  
streams too.



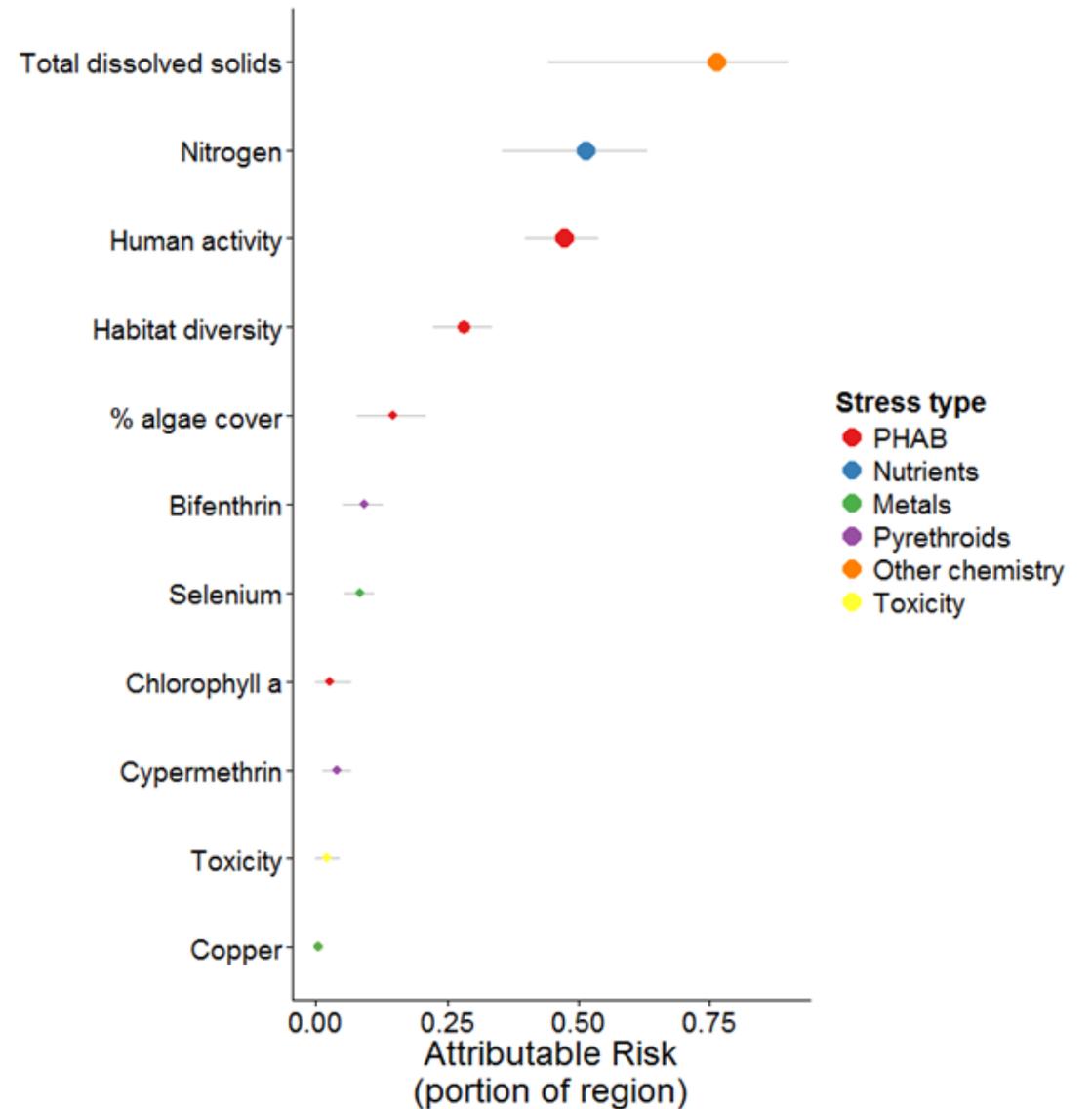
# Trends: Not much change since our survey began



# Regional prioritization of stressors

- Nutrients
- Major ions
- Degraded habit

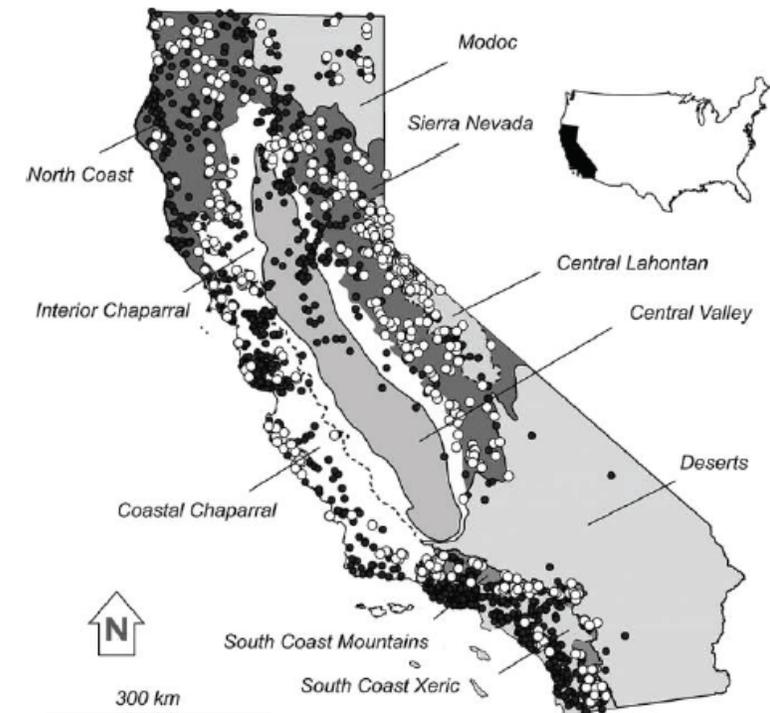
Metals, toxicity, water-column pyrethroids were limited, or weakly associated with biological condition.



# SoCal is the lab for statewide tool development

SMC survey data is a key element in the development of several statewide tools:

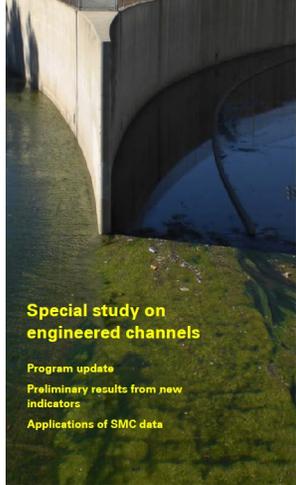
- CSCI
- ASCI
- Index of Physical-habitat Integrity
- Biostimulatory science
- Flow criteria evaluation
- Modeling constraints from landscape development



Thanks to SMC, SoCal is well represented in CSCI development data

# A forum for collaboration and dialogue

2015 Report on the Stormwater Monitoring Coalition's stream survey



Special study on engineered channels

Program update  
Preliminary results from new indicators  
Applications of SMC data

2017 Report on the SMC Regional Stream Survey

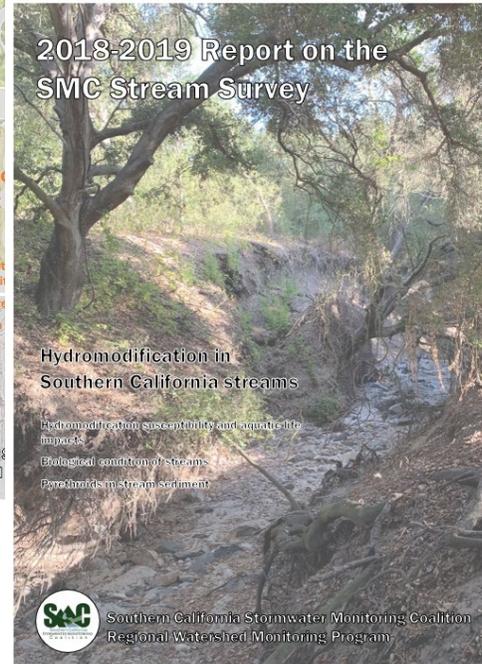


A new stream condition based on algae: What mean for the SMC?

Updates on assessments of sediment, hydromodification, and physical habitat  
Applications of SMC data to integrate identifying constrained streams with models



2018-2019 Report on the SMC Stream Survey



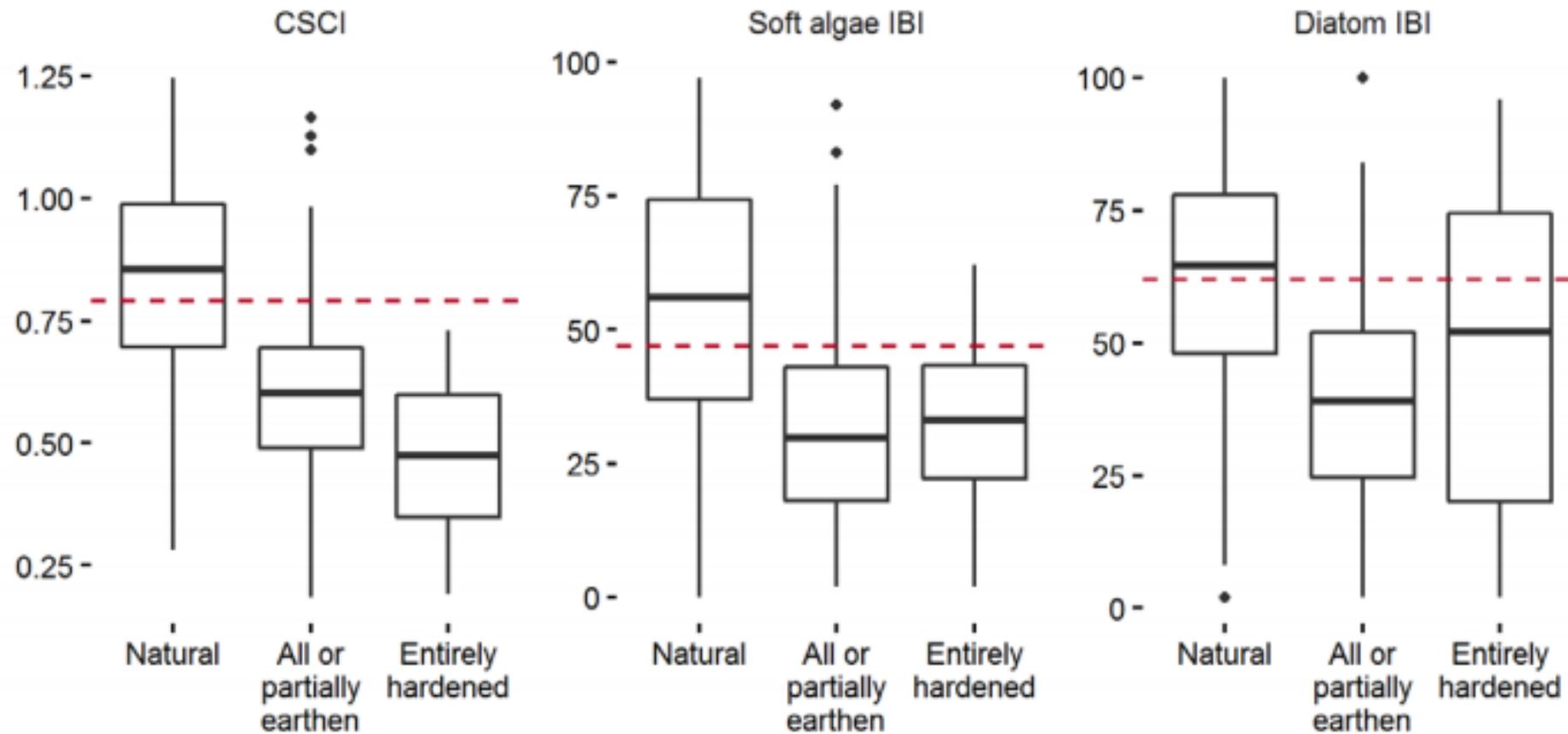
Hydromodification in Southern California streams

Hydromodification susceptibility and aquatic life impacts  
Biological condition of streams  
Parasitoids in stream sediment



- Reports demonstrate regulators and permittees shared understanding of our data
- We can create a technical foundation to address contentious issues
- Example: Engineered channels!

# Channel hardening limits scores

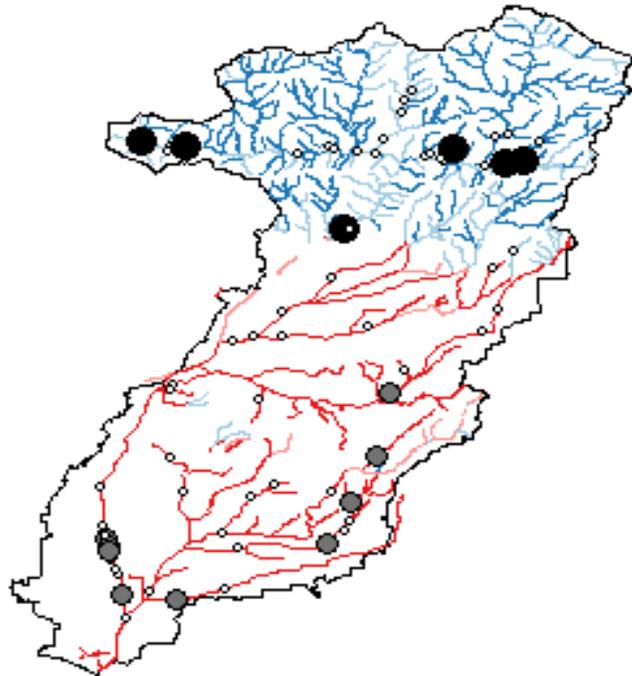


# Understanding constraints lets us set priorities

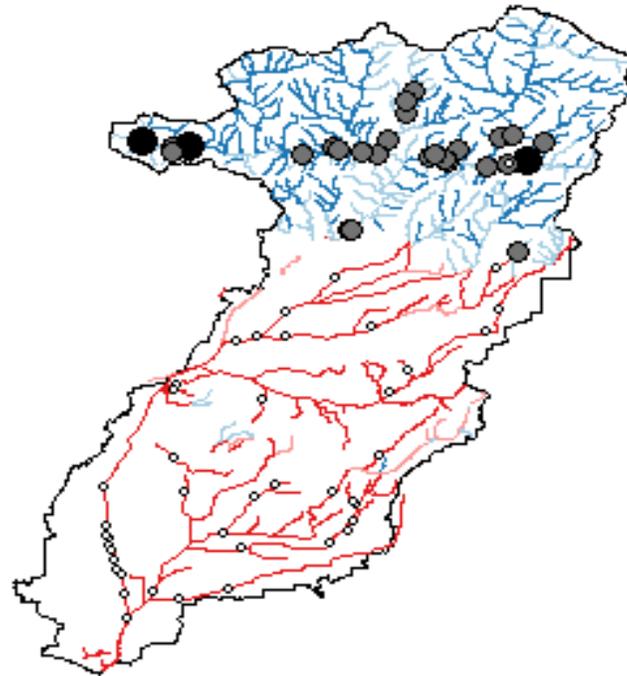
Stream segment class    — likely unconstrained    — possibly constrained  
                                  — possibly unconstrained    — likely constrained

Priority    ● High    ● Medium    ○ Low    ○ baseline

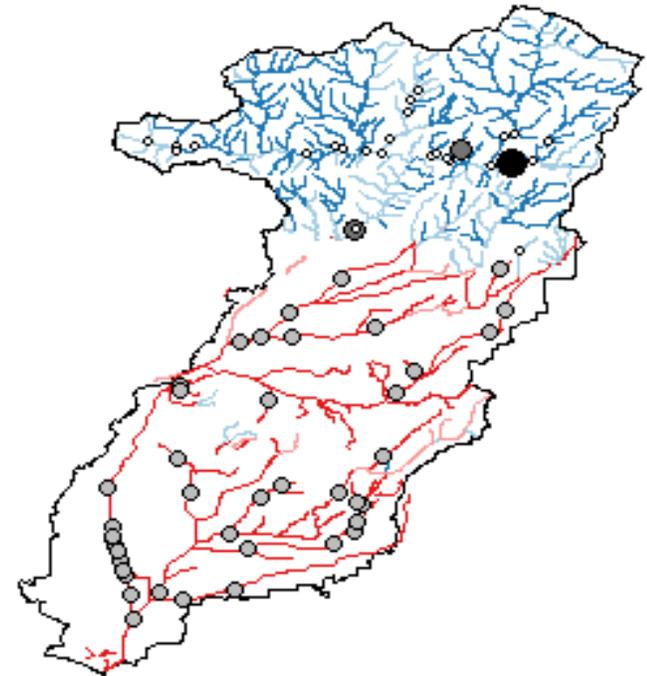
Investigate



Protect



Restore



# Sharing our data: The SMC data portal

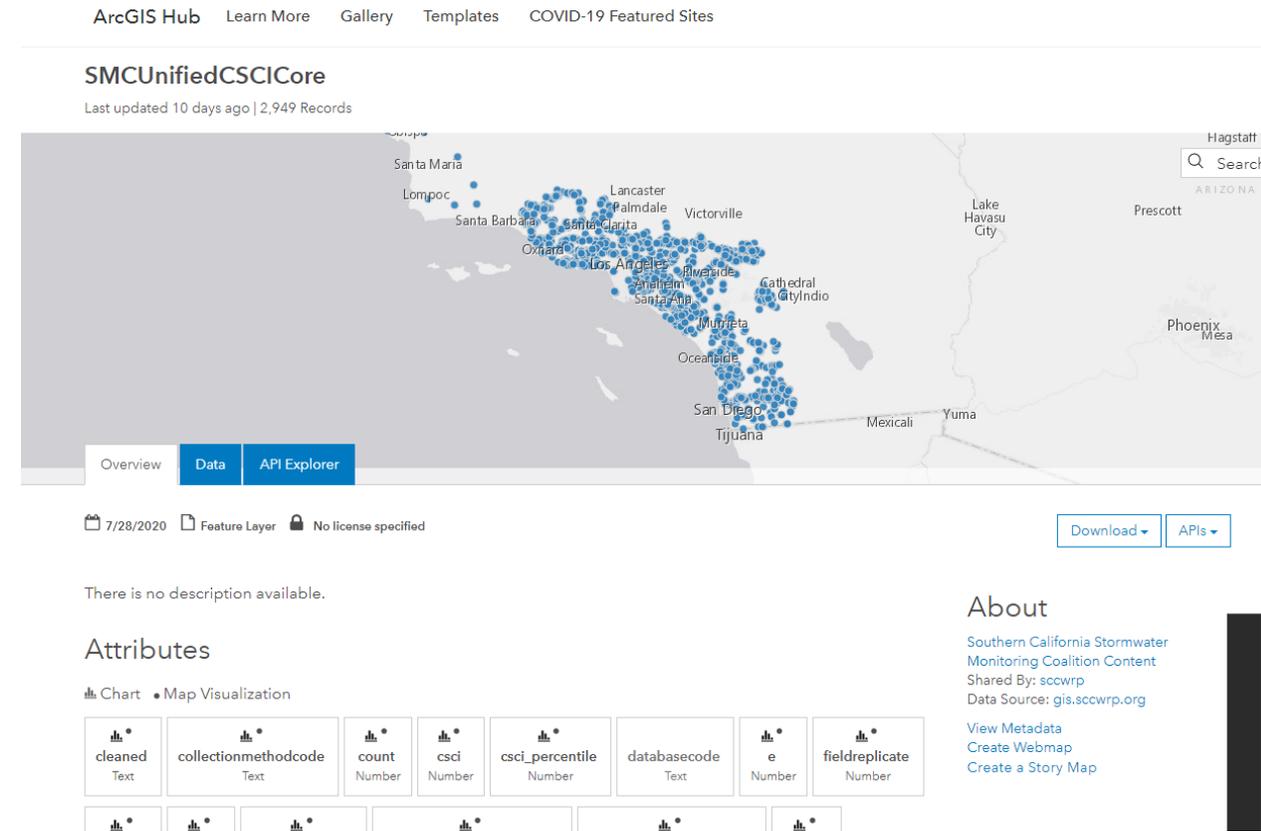
- Data portal pulls together data from multiple data sources (CEDEN, SCCWRP, eCRAM)
- Queries allow access across multiple data types
- Greatly reduces time to respond to data requests

Home **CSCI-Core** Export All

ASCI ChannelEngineering Chemistry CRAMIndexAndAttributeScores PHABIPI ToxicitySummary

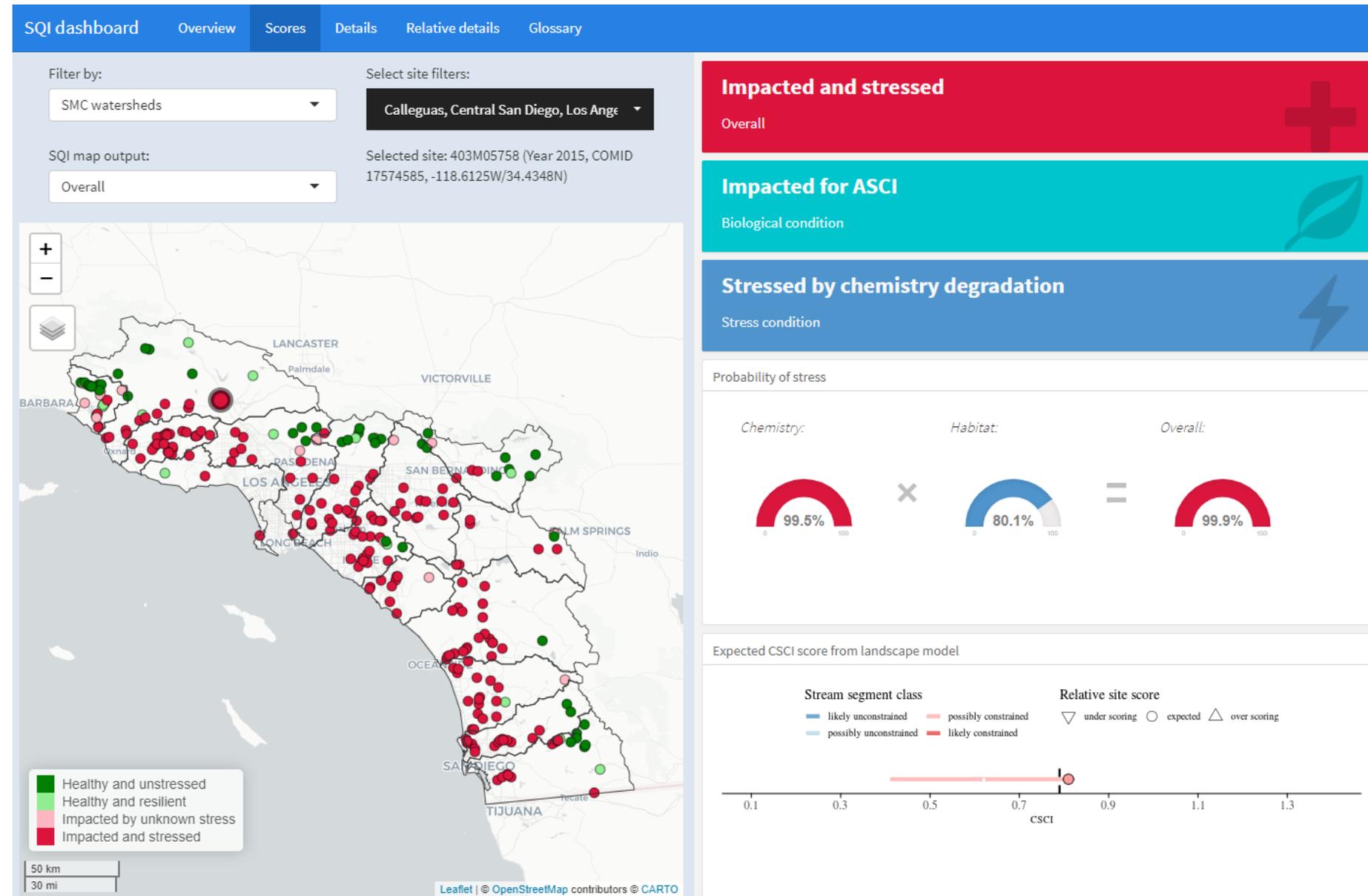
Column visibility Select Copy CSV Excel Print

stationid	county	smcshed	latitude	longitude	stationcode	sampleid
403BA0064	Los Angeles	Santa Clara	34.64435000	-118.51371000	403BA0064	403BA0064_05122008_BMI_R'
403BA0064	Los Angeles	Santa Clara	34.64435000	-118.51371000	403BA0064	403BA0064_06182014_BMI_R'
403BA0136	Los Angeles	Santa Clara	34.51202000	-118.45038000	403BA0136	403BA0136_05132008_BMI_R'



# Sharing our data: The Stream Quality Index (SQI)

- Combined bio, chem, and habitat data
- Translates to actionable categories
- First steps in causal assessment



# Plans for the next 5 years: A topic of active discussion!

- Widespread consensus that we've done a great job with initial questions—it's time to move on!
- Several topics under consideration:
  - Advancing causal assessment (e.g., to improve soft-bottom channels)
  - Targeting undersampled areas
  - Wet-dry mapping
- New workplan will facilitate interactions with outside partners
  - Highlight needed (but unfunded) survey elements

# SCCWRP's vision for the future of the SMC survey

- Comprehensive assessment of aquatic resources affected by stormwater
- Readily available and contextualized data made relevant to stormwater management decisions
- Survey data provides the central element that helps us evaluate the combined impact of our watershed management programs.