# Special Session on Multiindicator Integration:

## CABW 2014: Session Overview

ERIC STEIN

**BIOLOGY DEPARTMENT** 

SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT



## **Key Questions**

How healthy are our . . . .

- Streams
- Wetlands
- Watersheds

What are the most critical water quality challenges?

What areas should be priorities for restoration or management?

### **Core Condition Indicators**



Algae

Benthic Invertebrates Physical Habitat

CRAM

### **Need for Integration**



### **Need for Integration**

- Ability to integrate multiple indicators into an overall assessment of condition
- Retain ability to look at component parts
  - Different sensitivities of specific areas
  - Different response to stressors



### **Examples of Past Efforts**

#### 2005-2006

San Diego River Water	rshed		Water C	Juality Rep	Data	abutr	ocrit	eria	2005-2006 A	asessment
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FAIR FOOR NA	£ <b>~</b>				ALL W		2	<u>.</u>		101
SEGMENT	80,007	CHEMISTRY	NUTRIENTS	TORICS	SED WENTS	FLOW	HABITAT	BACTERIA	AESTHETICS.	FISH TISSUE
San Diego River				-						
Cedar Creek		- 34		E Fa	ir to g	000	NA	NA	NA	NA.
выягсня 🤇	Fair	Good	Tair	2	_		NA	NA	Doelert	NA.
San Vicente HA					11111					
San Vicente Creek	Poor	Poor	Payr	) NA	Wild	hrer 🛛	NA	NA.	Excelent	NA.
El Capitan HA	_		_							
Conejos Creek	Fair	Fair	NA,	NA	NA	NA	NA	NA.	NA	NA.
Chocolate Greek	NA	Poor	Page	NA	NA	NA	NA	NA	NA	NA.
Lower San Diego HA	-									
Los Coohes Creek	NA	Por	Park	NA	NA	NA	NA	NA	Dottert	NA.
San Diego River TWAS 3	A	NA	NA	NA	NA	NA	NA	NA	NA	NA.
Forrester Creek	/ NA	Poor	Poor	104	NA	NA	NA	NA	Excelent	NA.
San Diego River TWKS 2	NA	NA	NA.	Ap.	NA	NA	NA	NA	NA	NA.
San Dego River Padre Dan 1	NA	Por	Por	N	NA	NA	NA	NA	NA	NA.
San Diego River Padre Dem I	NA	Poor	Poor	NA.	NA	NA	NA	NA	NA	NA.
San Diego River Mission Trail	NA	NA	NA	NA		NA	NA	NA	NA	NA.
San Diego River Masion Trail E	Poor	NA	NA.	NA	🗋 рос		NA	NA	NA	NA.
San Dego River TWAS 1	NA	NA	NA.	NA.		NA	NA	NA	NA	NA.
Alvarado Creek	Poor	Poor	Poor	N	NA	NA	NA	NA	Ecolert	NA.
San Diego River Fashion V.	Poor	NA	Poor	yk.	NA	NA	NA	Poor	NA	NA.
San Diego River Mass Load	1 Part	Poor	Puer	AA	NA	NA	NA	NA	Excelent	NA.
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001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA.

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#### mpaired

Aquatic biota Riparian vegetation Fire Effects

### 2.1

#### Functioning

Great water quality Aquatic habitat Low threat invasive weeds

#### At Risk

Water quality Road density Soils Forest Cover Forest Health

### **Challenges to Integration**



#### **Journal of Applied Ecology**

Journal of Applied Ecology 2009, 46, 175-186

doi: 10.1111/j.1365-2664.2008.01583.x

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### Response of taxonomic groups in streams to gradients in resource and habitat characteristics

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> Lack of concordance between four taxonomic groups

### **Critical Issues**



- Component metrics
- Data standardization
- Combination rules
- Weighting
- Thresholds
- Others . . .

### **Goals for This Session**

Explore critical issues associated with integration of condition indicators

Examples and lessons learned

Discuss future directions for integrated indicator development

MAYBE = 
$$\frac{\text{YES}}{\text{NO}} + \frac{\text{NO}}{\text{YES}}$$

### **Session Overview**

- Challenges of developing integrated assessments
- Lessons learned (& pitfalls) from past experiences
- Statewide integration through healthy watersheds assessment
- Examples from regional programs
  - Central coast
  - Southern California
- Moving toward assessing beneficial uses
- Discussions
- Optional special workshop (before happy hour)
  - 4:00 5:30: Developing a Tool for Interpreting Beneficial Use Attainment