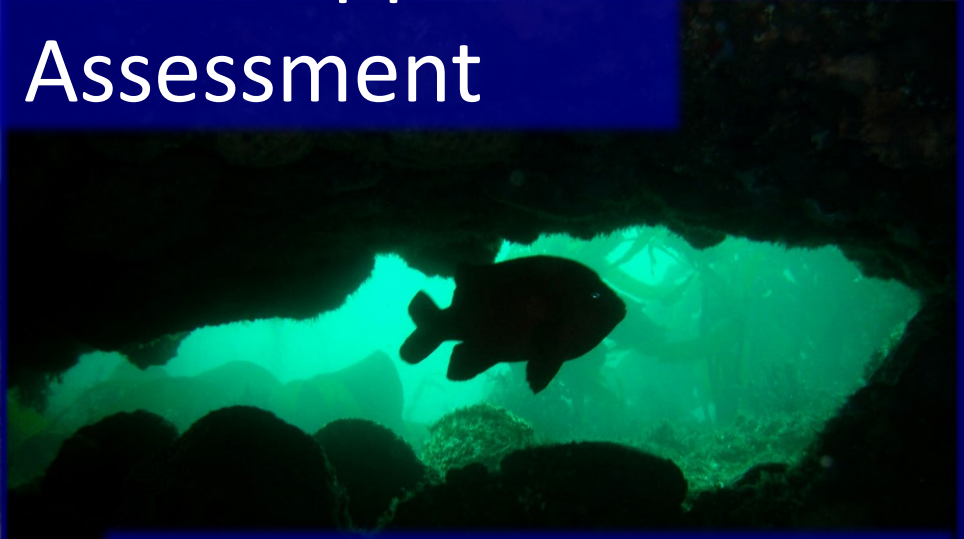



CTAG Presentation: San Diego Water Board Approach to Biological Assessment

Chad Loflen
Senior Environmental Scientist
Monitoring Assessment & Research Unit

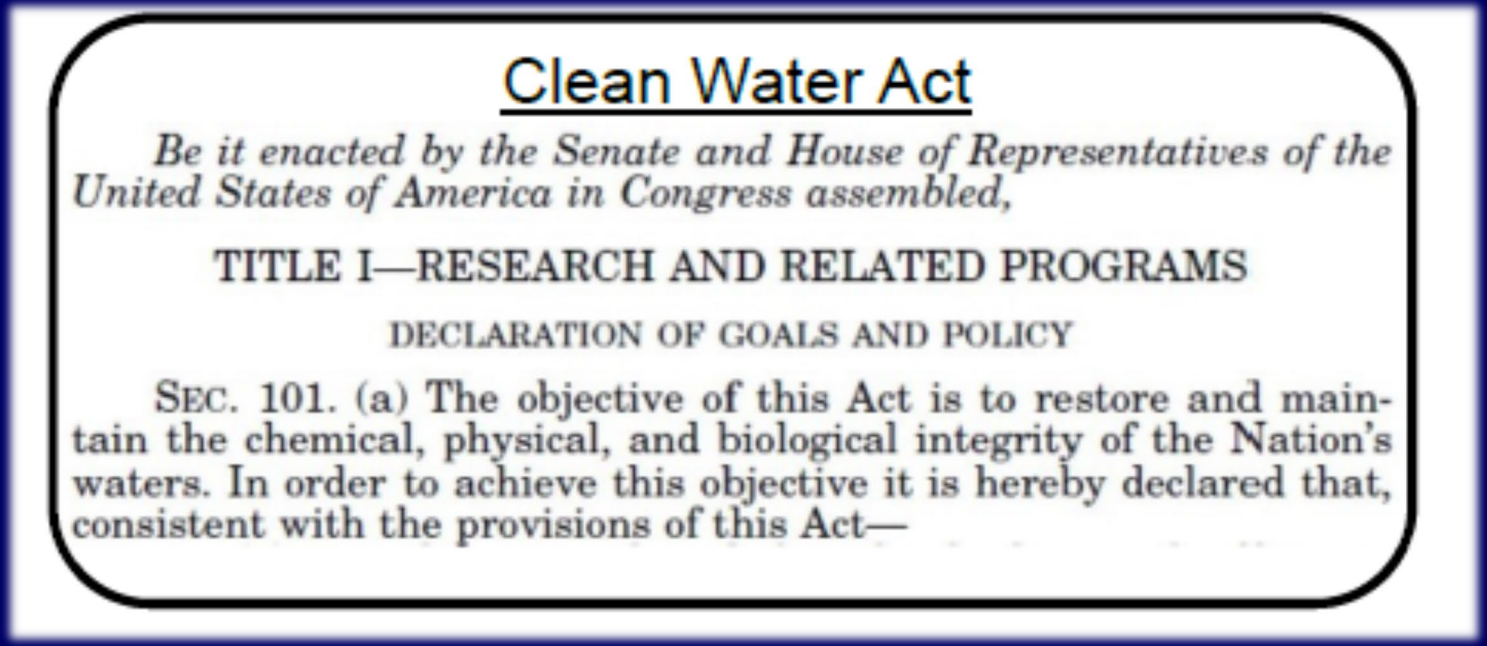
Outline

1) Bioassessment Today

2) Bioassessment Tomorrow

3) Bioassessment Long-term

Bioassessment Today: Biological Integrity



Clean Water Act

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

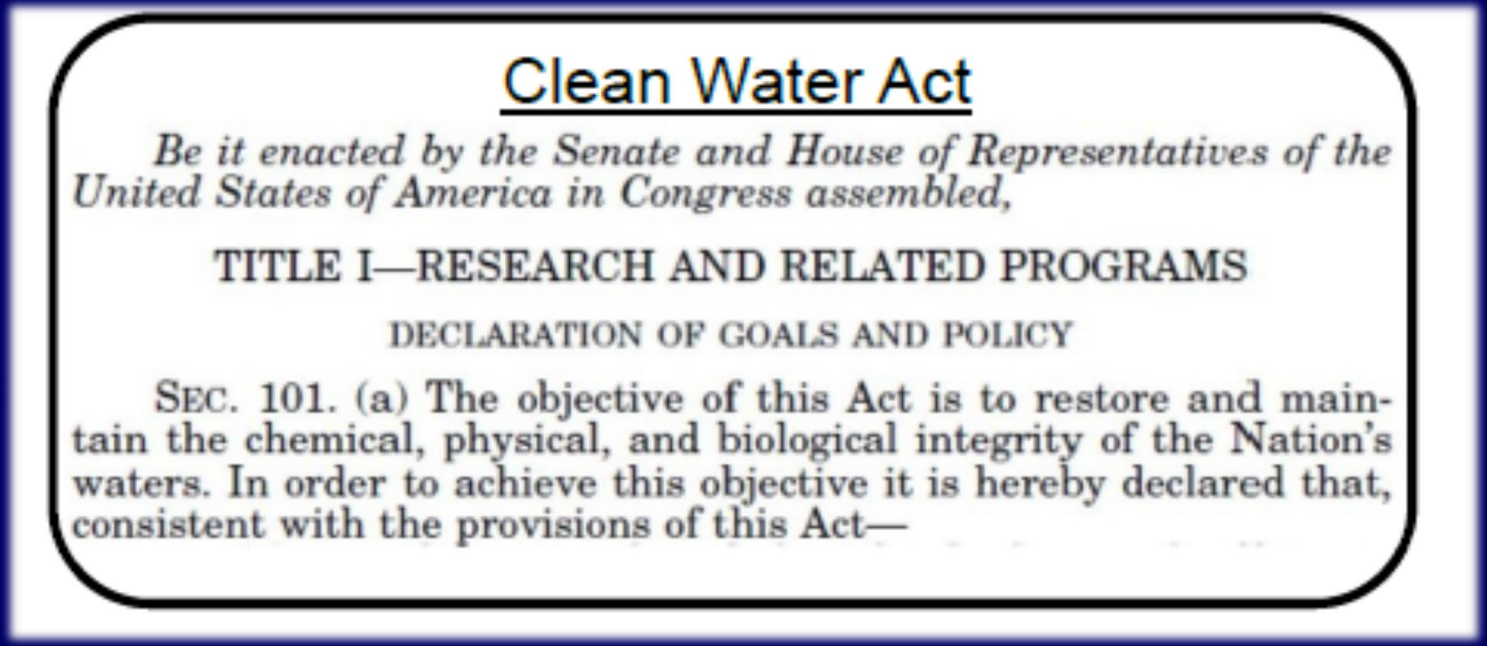
TITLE I—RESEARCH AND RELATED PROGRAMS

DECLARATION OF GOALS AND POLICY

SEC. 101. (a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—

Chemistry alone is insufficient to protect biological integrity

Bioassessment Today: Biological Integrity



Clean Water Act

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—RESEARCH AND RELATED PROGRAMS

DECLARATION OF GOALS AND POLICY

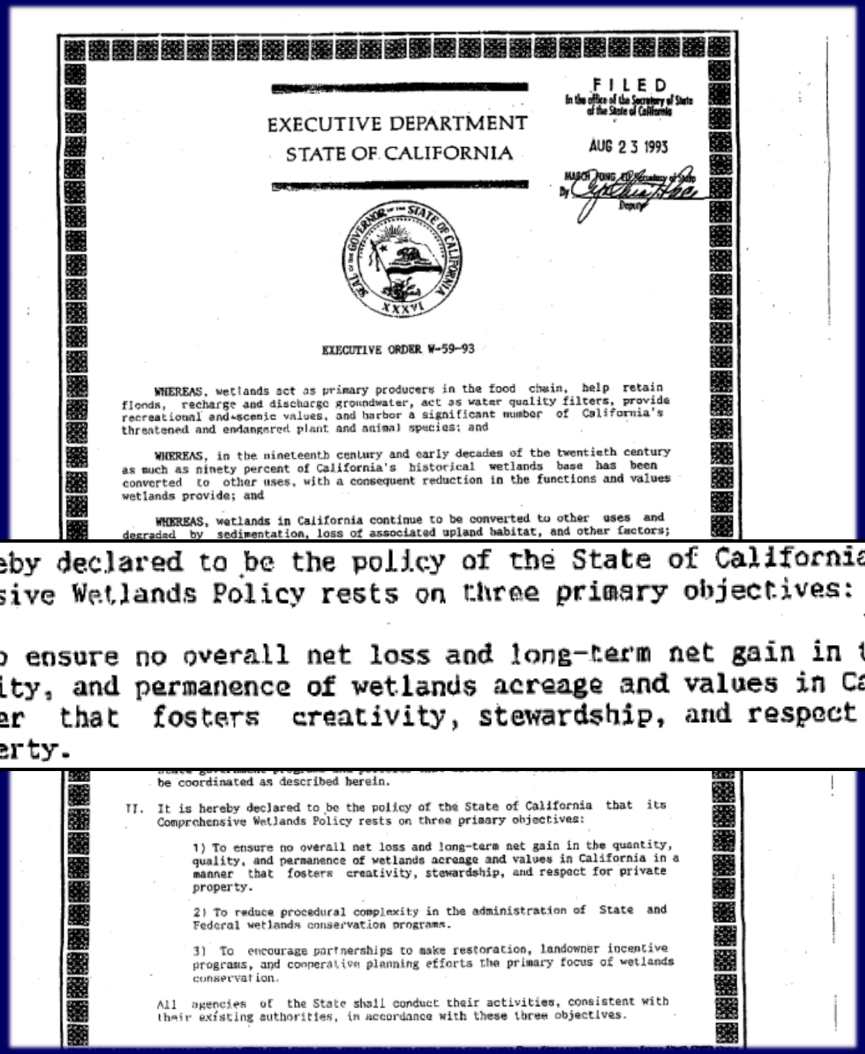
SEC. 101. (a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—

SCCWRP has played a key role in developing tools to evaluate biological integrity

Bioassessment Today: Biological Beneficial Uses

Beneficial Use	Abbreviation
Warm Freshwater Habitat	WARM
Cold Freshwater Habitat	COLD
Inland Saline Water Habitat	SAL
Estuarine Habitat	EST
Marine Habitat	MAR
Wildlife Habitat	WILD
Preservation of Biological Habitats of Special Significance	BIOL
Rare, Threatened, or Endangered Species	RARE
Migration of Aquatic Organisms	MIGR
Spawning, Reproduction, and/or Early Development	SPWN

Bioassessment Today: Requirements



EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

FILED
In the office of the Secretary of State
of the State of California
AUG 23 1993

EXECUTIVE ORDER W-59-93

WHEREAS, wetlands act as primary producers in the food chain, help retain floods, recharge and discharge groundwater, act as water quality filters, provide recreational and scenic values, and harbor a significant number of California's threatened and endangered plant and animal species; and

WHEREAS, in the nineteenth century and early decades of the twentieth century as much as ninety percent of California's historical wetlands base has been converted to other uses, with a consequent reduction in the functions and values wetlands provide; and

WHEREAS, wetlands in California continue to be converted to other uses and degraded by sedimentation, loss of associated upland habitat, and other factors;

be coordinated as described herein.

II. It is hereby declared to be the policy of the State of California that its Comprehensive Wetlands Policy rests on three primary objectives:

1) To ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.

2) To reduce procedural complexity in the administration of State and Federal wetlands conservation programs.

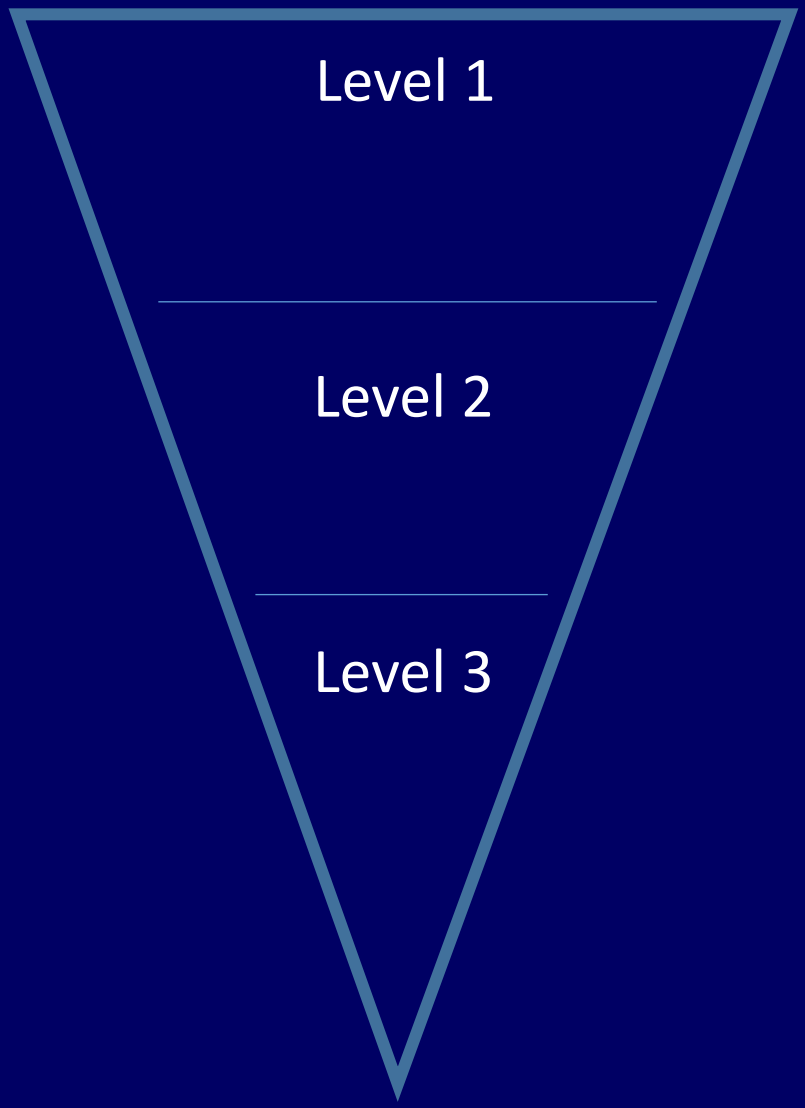
3) To encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetlands conservation.

All agencies of the State shall conduct their activities, consistent with their existing authorities, in accordance with these three objectives.

II. It is hereby declared to be the policy of the State of California that its Comprehensive Wetlands Policy rests on three primary objectives:

1) To ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.

Bioassessment Today: Our Framework



Level 1, "landscape assessment" relies on coarse landscape scale inventory information.

Level 2 is "rapid assessment" at the specific habitat site scale, using relatively simple, rapid protocols.

Level 3 is "intensive site assessment" and uses intensive research-derived, multi-metric indices such as Biological Assessments.

Bioassessment Today

- Sediment Quality Objectives
- Stream Bioassessment
- Wetlands Bioassessment (CRAM)
- Kelp and Eelgrass Bioassessment
- Offshore Soft-bottom Bioassessment

Bioassessment Today: Regulatory & Nonregulatory Programs

- Permits
- TMDLs/Alternatives
- Enforcement
- Inspections
- Basin Planning
- NPS Plans & Funds
- Integrated Reporting
- Grants
- Discretionary Funds

Bioassessment Tomorrow: Perennial and Seasonal Streams

Water Quality Objective for Streams

- Protect High Quality Waters
- Guide Meaningful Restoration

Bioassessment Tomorrow: Perennial and Seasonal Streams

Why is an Objective Needed?

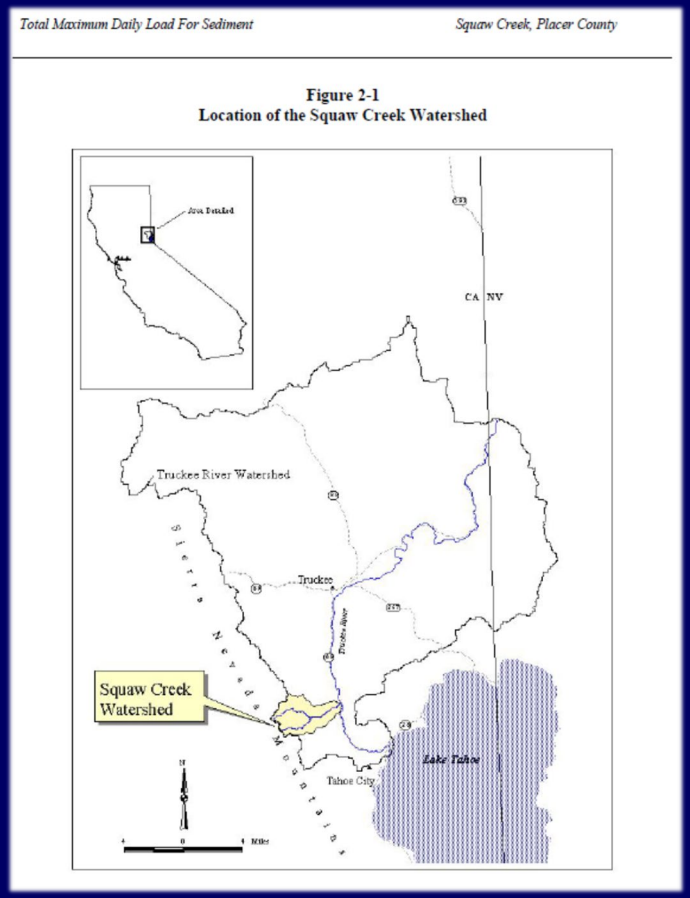
- 166 Impaired Waterbodies: for Multiple Pollutants
  - 237 New Waterbody/Pollutant Listings in 2014

- Biological Objectives are key to addressing impairments
  - Foundational
  - TMDL Needed? What is the priority?
  - Chemistry needed for restoration

- Protect High Quality Waters

Bioassessment Tomorrow: Perennial and Seasonal Streams

Use of Biological Objectives



Bioassessment Tomorrow: Perennial and Seasonal Streams

Proposed Objective = California Stream Condition Index (CSCI)

2016. *Freshwater Science* 35(1): 249-271

Bioassessment in complex environments: designing an index for consistent meaning in different settings

Raphael D. Mazor[1,2,5], Andrew C. Rehn[2,6], Peter R. Ode[2,7], Mark Engeln[1,8], Kenneth C. Schiff[1,9], Eric D. Stein[1,10], David J. Gillett[1,11], David B. Herbst[3,12], and Charles P. Hawkins[4,13]

2016. *Freshwater Science* 35(1): 237-248

Evaluating the adequacy of a reference-site pool for ecological assessments in environmentally complex regions

Peter R. Ode[1,7], Andrew C. Rehn[1,8], Raphael D. Mazor[1,2,9], Kenneth C. Schiff[2,10], Eric D. Stein[2,11], Jason T. May[3,12], Larry R. Brown[3,13], David B. Herbst[4,14], David Gillett[2,15], Kevin Lunde[5,16], and Charles P. Hawkins[6,17]

Bioassessment Tomorrow: Perennial and Seasonal Streams

- Admin Draft Released for Public Comment 2018
- Released a Draft for Public Comment in February 2019
  - Public Comment closed June 01, 2019
- Public Hearing Noticed for October 14th Board Meeting
- Proposed revisions released to the public in August
  - Removed fully-lined streams from the objective
  - Provided clarity on implementation

https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/bio_objectives/

Bioassessment Long-term: Perennial and Seasonal Streams

Funding Molecular Efforts

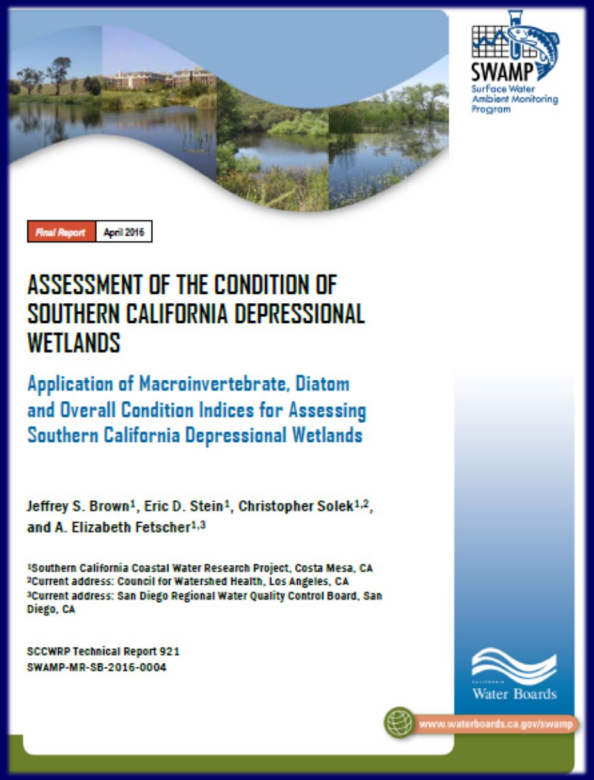
Bioassessment Long-term: Ephemeral Streams

Index Development: Bryophytes and Arthropods

Photos: Olson Lab

Bioassessment Long-term: Wetlands

Starting a Level 1/2/3 Project for R9



Bioassessment Long-term: Enclosed Bays, Lagoons, Estuaries

In Progress: Bioassessment for Submerged Aquatic Vegetation

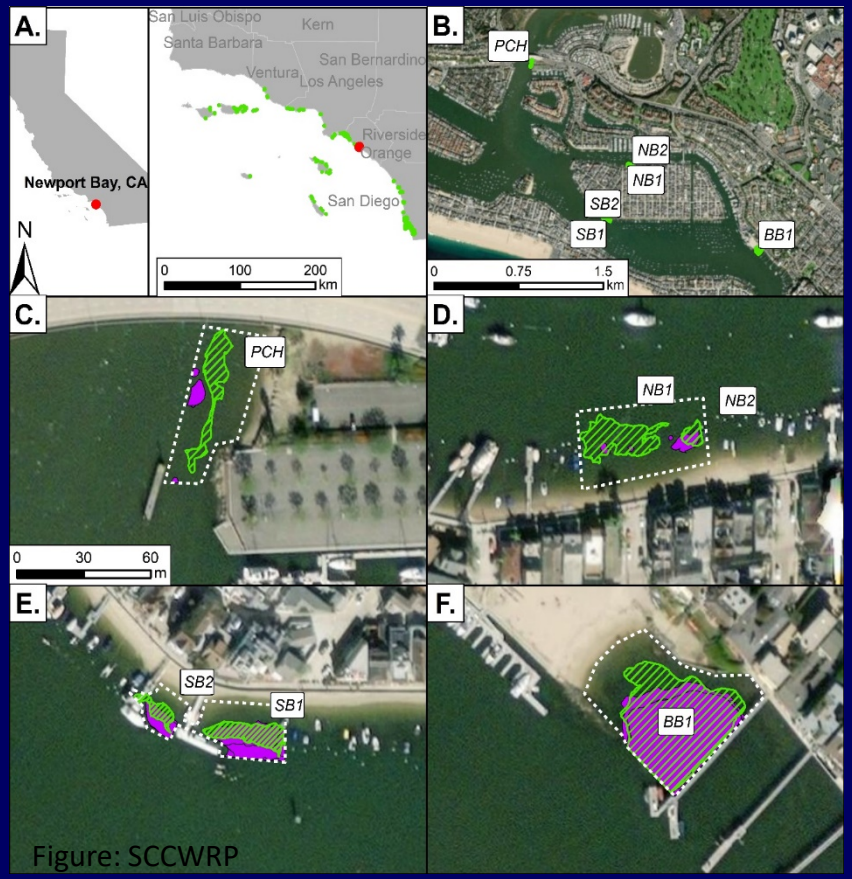


Figure: SCCWRP

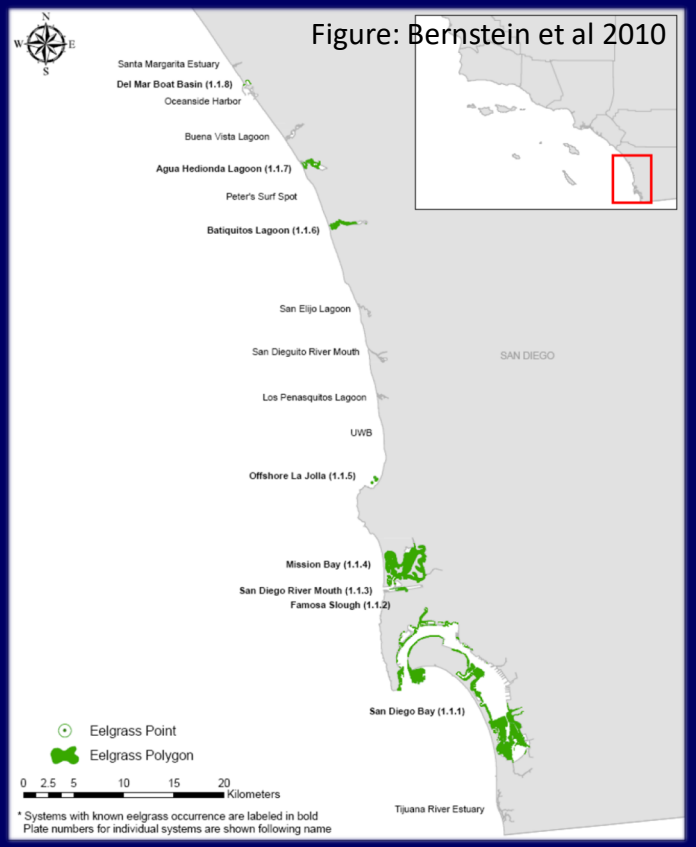
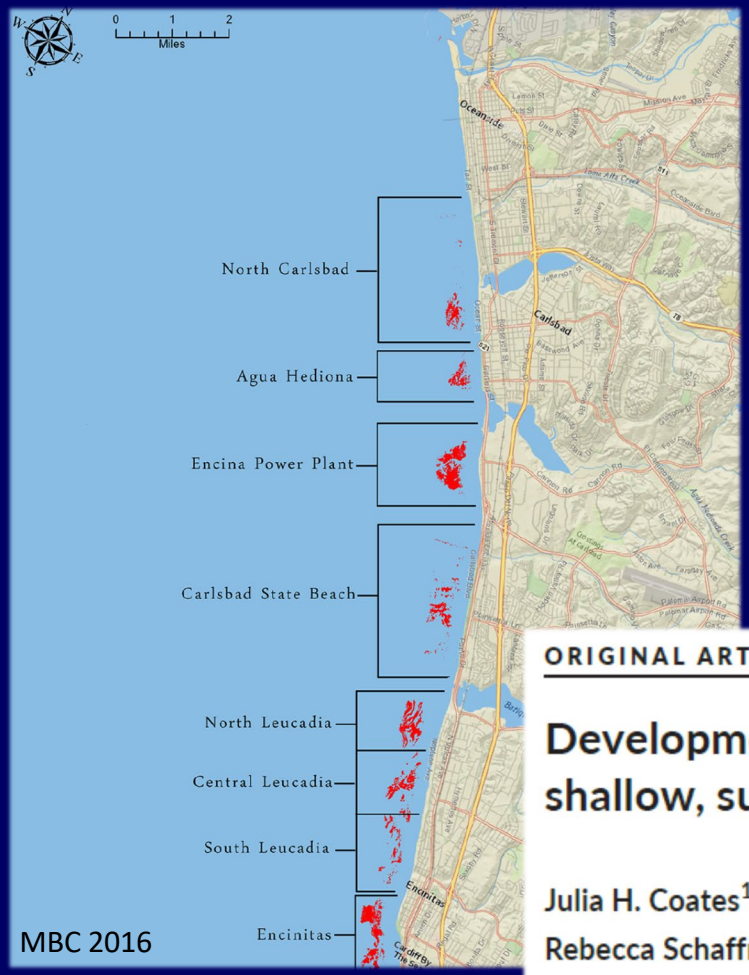


Figure: Bernstein et al 2010

Bioassessment Long-term: Ocean

Offshore (AMBI): Climate Change Inshore Reefs



MBC 2016

ORIGINAL ARTICLE

WILEY marine ecology

Development of a biological condition assessment index for shallow, subtidal rocky reefs in Southern California, USA

Julia H. Coates[1,2] | Kenneth Schiff[2] | Raphael D. Mazor[2] | Daniel J. Pondella II[3] | Rebecca Schaffner[2] | Elizabeth Whiteman[1]

Summary

Bioassessment Critical to San Diego Water Board Programs

- In wide use across programs now
- Water Quality Objective in process for streams
- Other tools in various stages of development/use
- Better way to inform the public of WQ