Building Capacity for Assessing Wetland Recovery Efforts in Supporting Regional Wetland Health and Resiliency

Katie Nichols
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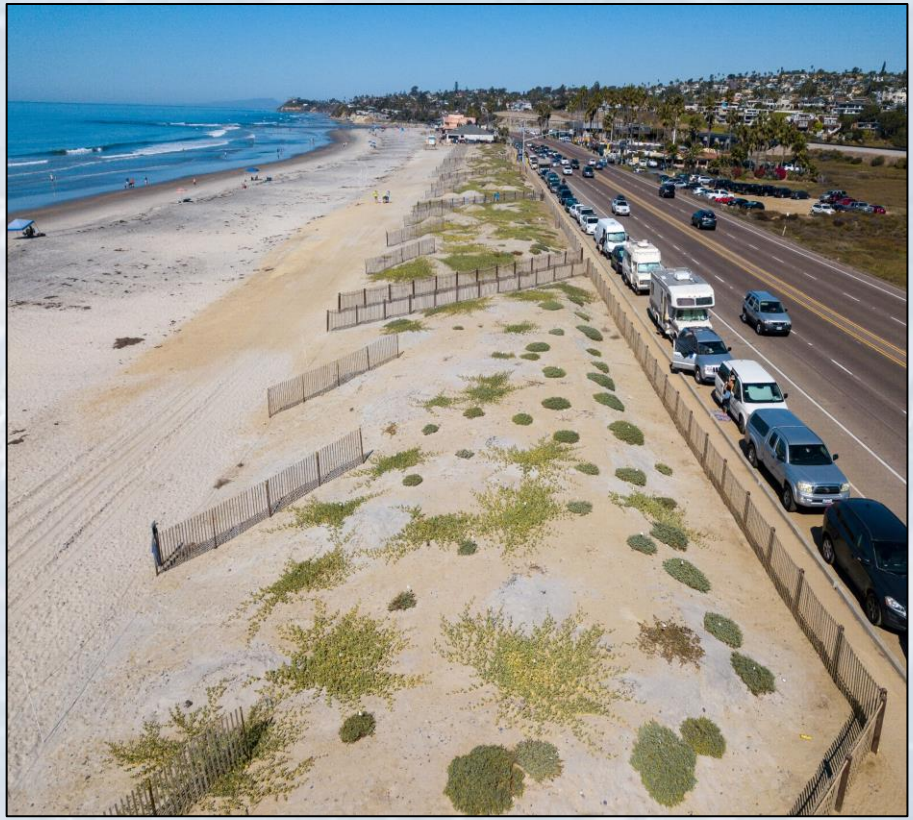
Coastal Conservancy
STATE of CALIFORNIA

The State Coastal Conservancy's vision is of a beautiful, restored, and accessible coast for current and future generations of Californians.

***We act with others** to protect and restore, and increase public access to, California's coast, ocean, coastal watersheds, and the San Francisco Bay Area.*



Project Team

Outline

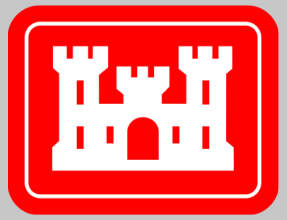
FIDDLER CRAB AT NEWPORT BAY • PHOTO BY TRACIE HALL, COURTESY OF CREATIVE COMMONS

- Overview of the Wetlands Recovery Project (WRP)
- Need for a Regional Monitoring Program
- Goals of the Regional Monitoring Program
- Where we are today/products developed


SANTA BARBARA
Subregion
VENTURA
Subregion
SANTA MONICA
Subregion
SAN PEDRO
Subregion
SAN DIEGO
Subregion
SOUTHERN CALIFORNIA
WETLANDS
RECOVERY
PROJECT
WETLANDS ACROSS THE WRP SUBREGIONS
Coastal Wetlands
Non-tidal Wetlands


SOUTHERN CALIFORNIA
WETLANDS
RECOVERY
PROJECT


U.S.
FISH & WILDLIFE
SERVICE
DEPARTMENT OF THE INTERIOR




NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE


UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY


CALIFORNIA
DEPARTMENT OF
FISH &
WILDLIFE


Coastal
Conservancy


CALIFORNIA
COASTAL
COMMISSION


San Gabriel & Lower Los Angeles
RIVERS AND
MOUNTAINS
CONSERVANCY


WCB
State of California
Wildlife Conservation Board


CALIFORNIA STATE LANDS COMMISSION
STATE OF CALIFORNIA


CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

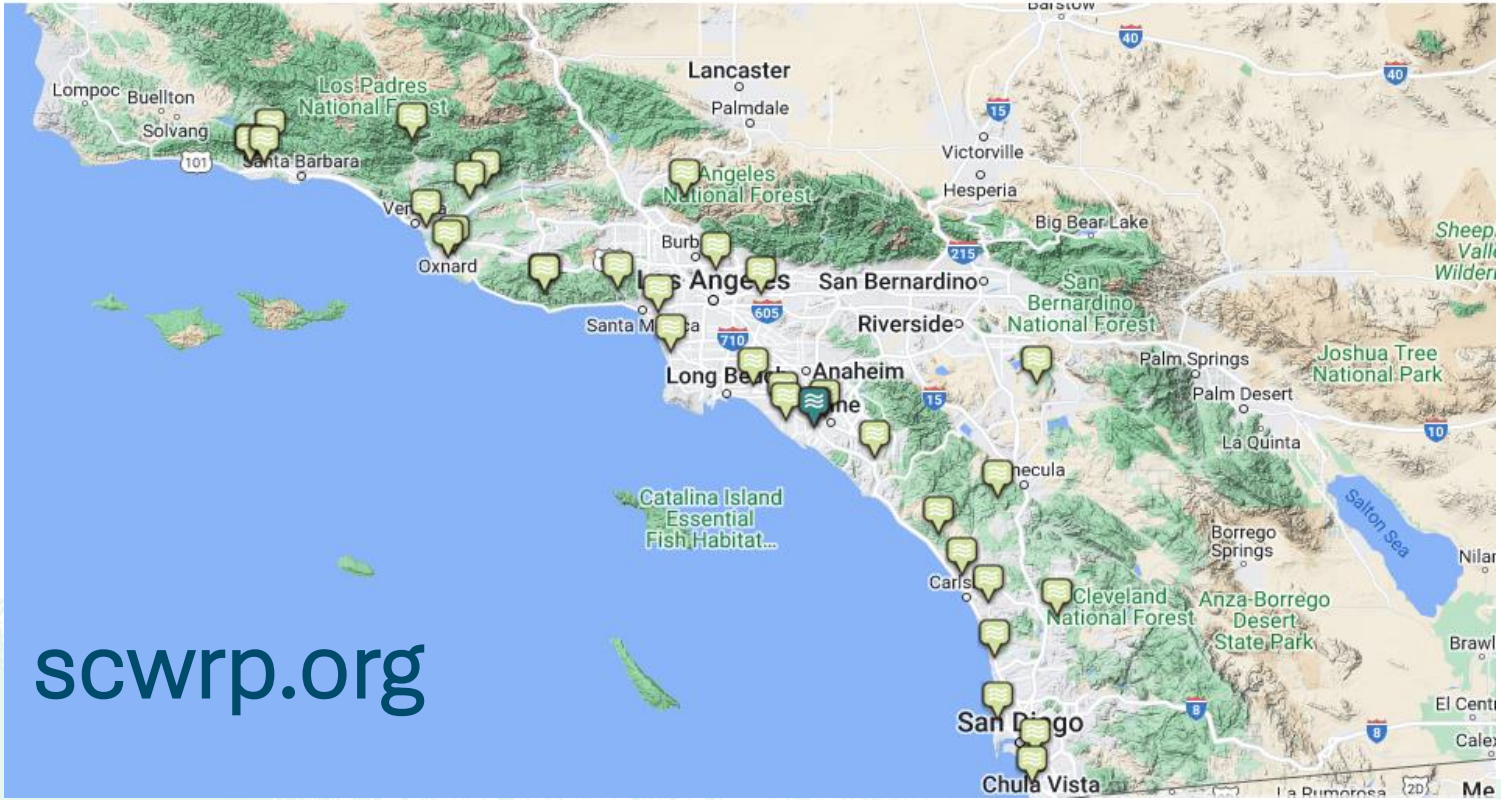

CALIFORNIA
STATE PARKS
SINCE 1864


CALIFORNIA
natural
resources
AGENCY

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

CWRGP | WORK PLAN

CURRENT PROJECTS | COMPLETED PROJECTS



scwrp.org

WETLANDS ON THE EDGE

The Future of Southern California's Wetlands

REGIONAL STRATEGY 2018

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

VISION

Restored and protected wetlands and rivers along the Southern California Coast benefitting wildlife and people

MISSION

The Southern California Wetlands Recovery Project aims to expand, restore and protect wetlands in Southern California's coastal watersheds.

GUIDING PRINCIPLES (17)

GOAL 1
Preserve and restore resilient coastal tidal wetlands and associated marine and terrestrial habitats.

GOAL 2
Preserve and restore streams, adjacent habitats, and other non-tidal wetland ecosystems to support healthy watersheds.

GOAL 3
Support education and compatible access related to coastal wetlands and watersheds.

GOAL 4
Advance the science of wetland restoration and management in Southern California.

Quantitative Objectives
Management Strategies

Quantitative Objectives
Management Strategies

Quantitative Objectives
Management Strategies

Quantitative Objectives
Management Strategies

Why Monitor? - Questions we want to answer through estuary monitoring

How healthy are California's estuaries?

Is health improving over time?

What are the key stressors impacting our estuaries?

How resilient are estuaries over time?

How effective are our management actions?

Restoration, mitigation, regulatory protection?

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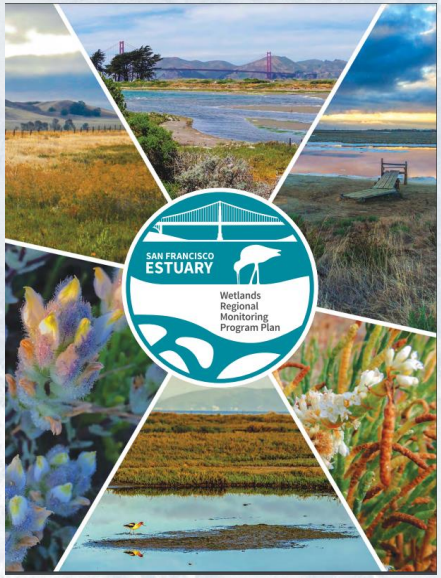
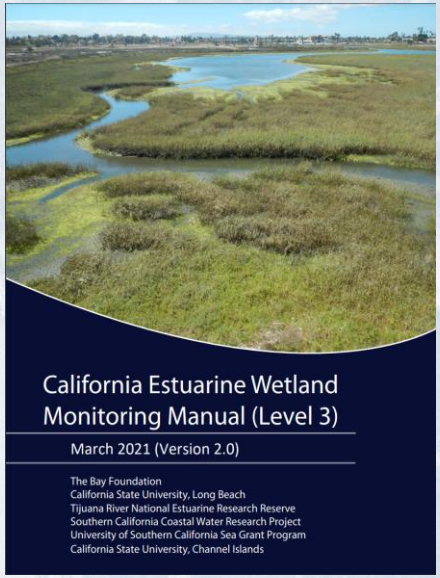
Building upon Existing Data/Previous Work





Regional Monitoring Program Goals

Monitoring and Assessment:

- Assess progress toward the WRP's Regional Strategy objectives
- Provide technical and policy input and support to integrate wetland assessment tools and data into regulatory and grant programs

Voluntary Restoration and Protection:

- Support sea level rise vulnerability assessment and adaptive management/restoration planning for coastal wetlands
- Continue to lead the WRP in advancing wetland science, as well as restoring, protecting, and enhancing wetlands throughout southern California

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Benefits of a Regional Monitoring Program

- Streamline Process
- Leverage existing datasets
- Develop a sentinel site network
- Provide suggested monitoring protocols that are comparable across sites, projects and agencies
- Make regional data available to decision makers
- Gain a regional understanding of wetland health and resiliency
- Prioritize funding and effort

Bolsa Chica

Elements of the Regional Monitoring Program

Sentinel site network – provide consistent frame of reference for projects

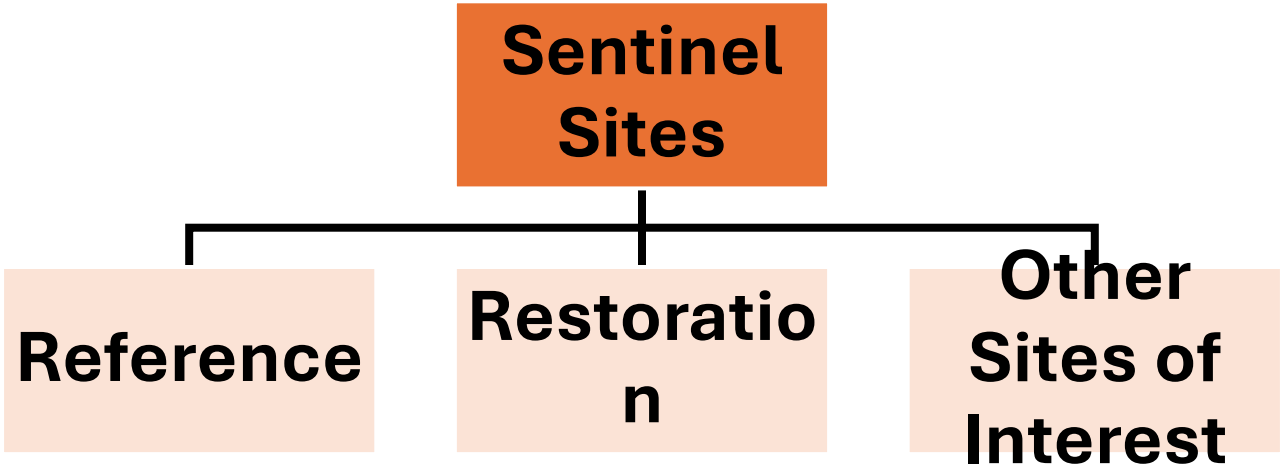
Monitoring plan – approach for answering regional questions

Agency guidelines - suggestions for how to incorporate RMP elements

Implementation strategy - recommendations for long-term support

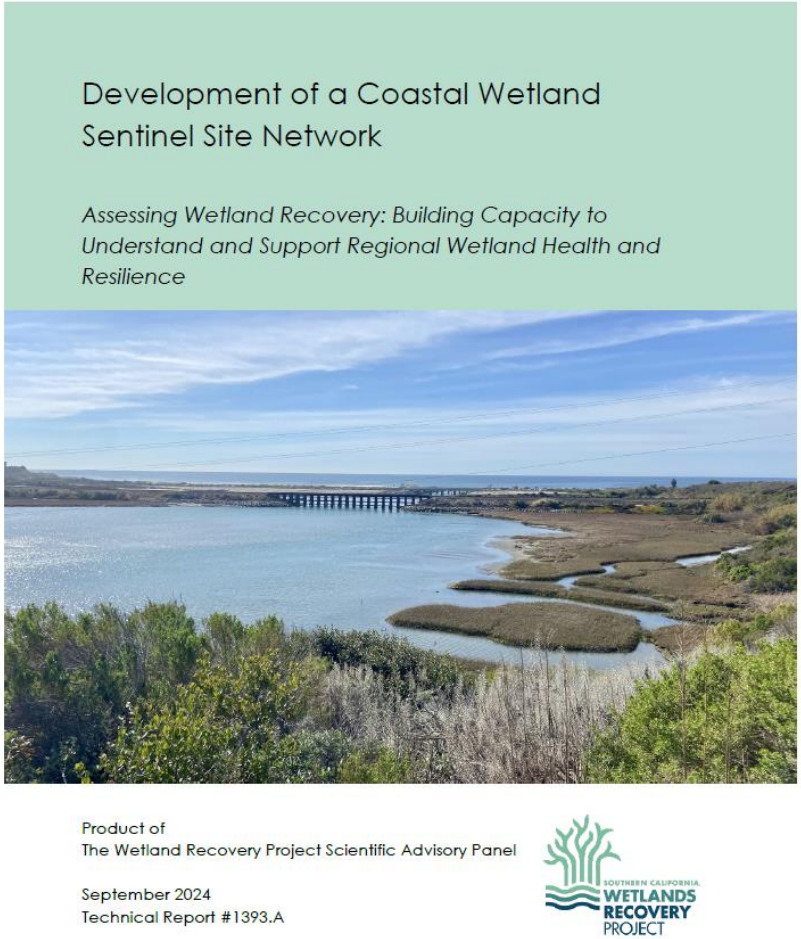
What is a Sentinel Site?

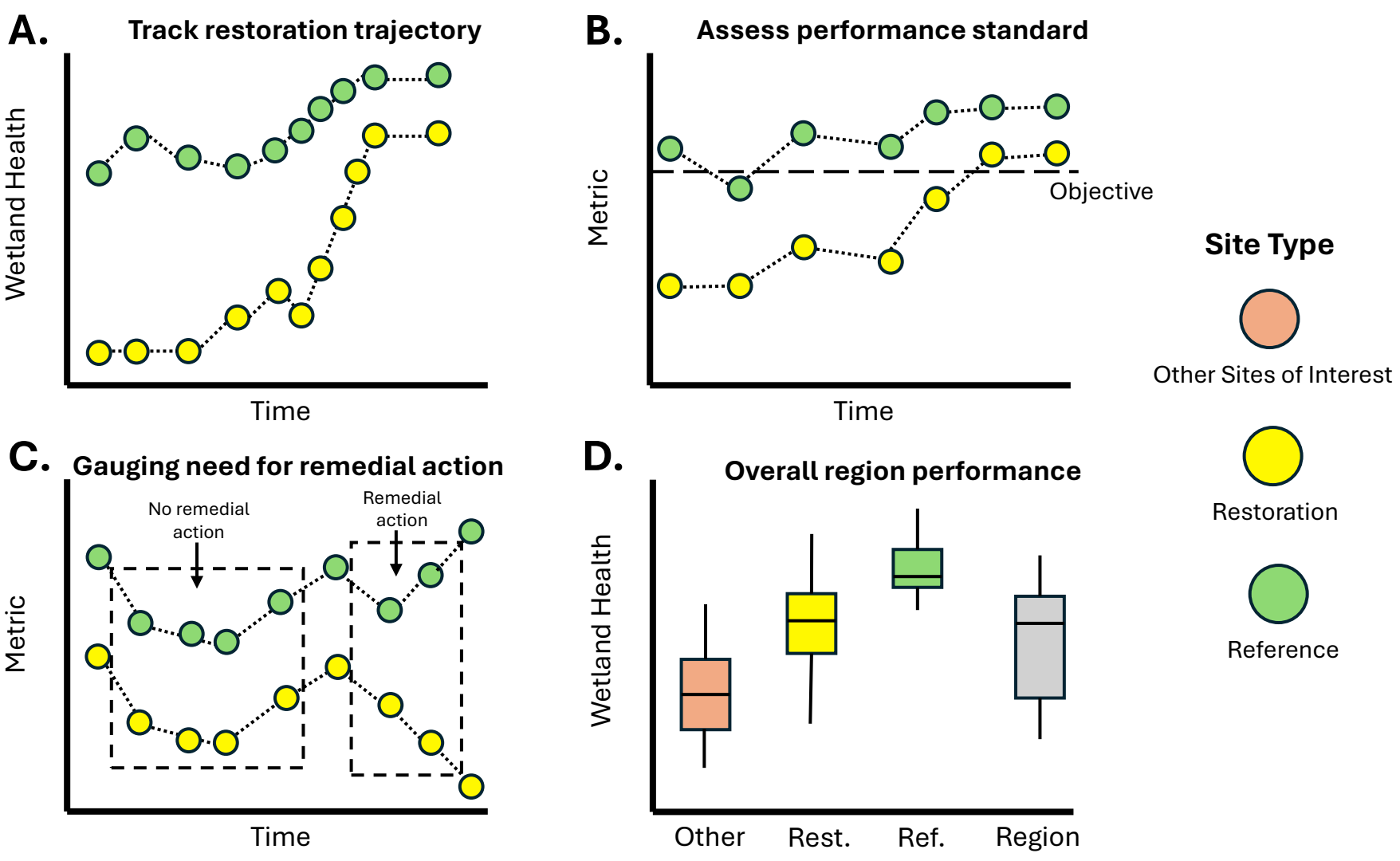
Sentinel site: Wetlands that are designated for long-term monitoring to track ecological condition through time, evaluate the effect of regional trends in external conditions/stressors, and provide a basis of comparison (context) for restoration or mitigation sites



Sentinel Site Network

- Process developed by SAP
- Applicable statewide
- Applied to select sentinel sites for the WRP region
- Published technical report and manuscript




A.
Track restoration trajectory
Wetland Health
Time
B.
Assess performance standard
Metric
Objective
Time
Site Type
Other Sites of Interest
Restoration
Reference
C.
Gauging need for remedial action
No remedial action
Remedial action
Metric
Time
D.
Overall region performance
Wetland Health
Other
Rest.
Ref.
Region

RESTORATION ECOLOGY
The Journal of the Society for Ecological Restoration

SER SOCIETY FOR ECOLOGICAL RESTORATION

RESEARCH ARTICLE

Sentinel site networks as a mechanism to evaluate progress toward meeting restoration goals in altered and unaltered landscapes

Janet B. Walker[1,2], Kevin O'Connor[3], Kerstin Wasson[4], Caitlin Crain[5], Karina K. Johnston[6], Richard F. Ambrose[7], Christine R. Whitcraft[8], Jeffrey A. Crooks[9], Kathryn Beheshti[10], Megan Hall[11], Katie Nichols[12], Maravilla Clemens[13], Eric D. Stein[1]

Establishing appropriate restoration targets, tracking progress toward those targets, and determining appropriate adaptive intervention are some of the greatest challenges to successful ecosystem restoration. Addressing these challenges is often informed by the use of "reference sites" that represent relatively unaltered or historical conditions and conceptually can be used to provide context and comparison for restoration projects. In reality, contemporary "unaltered" sites have often been manipulated by centuries of cultural practices and "pristine" conditions cannot be defined. Moreover, in highly altered landscapes or where stressors are continuing to rapidly reshape ecosystem structure, few or no sites may be unaltered enough to serve as pristine or aspirational reference standard sites for restoration. To address this challenge, we adapted the concept of "reference sites" to a framework for developing sentinel site networks, which consist of sites along a gradient of condition. These sites are selected for long-term monitoring to track ecological conditions through time, to evaluate the effect of regional trends in external conditions or stressors, and to document progress toward site-specific goals and regional objectives. Developing a sentinel site network involves screening sites based on condition, stressors,

Elements of the Regional Monitoring Program

Sentinel site network – provide consistent frame of reference for projects

Monitoring plan – approach for answering regional questions

Agency guidelines - suggestions for how to incorporate RMP elements

Implementation strategy - recommendations for long-term support

Monitoring Indicators

Core Indicators	Supplemental Indicators
Habitat Mapping and Elevation	Sediment Dynamics
Marsh Vegetation	Mouth Dynamics
Water Quality: Temp., DO, Salinity	Water Quality: Parameters of Concern
Hydrology	Submerged Aquatic Vegetation
Rapid Assessment	Birds
Fish: Minimum sampling	Fish: Extensive sampling
Invertebrates: Macrofauna (> 3 mm)	Invertebrates: Infauna (< 500 um)
Eutrophication: sediment nutrients	Eutrophication: algae

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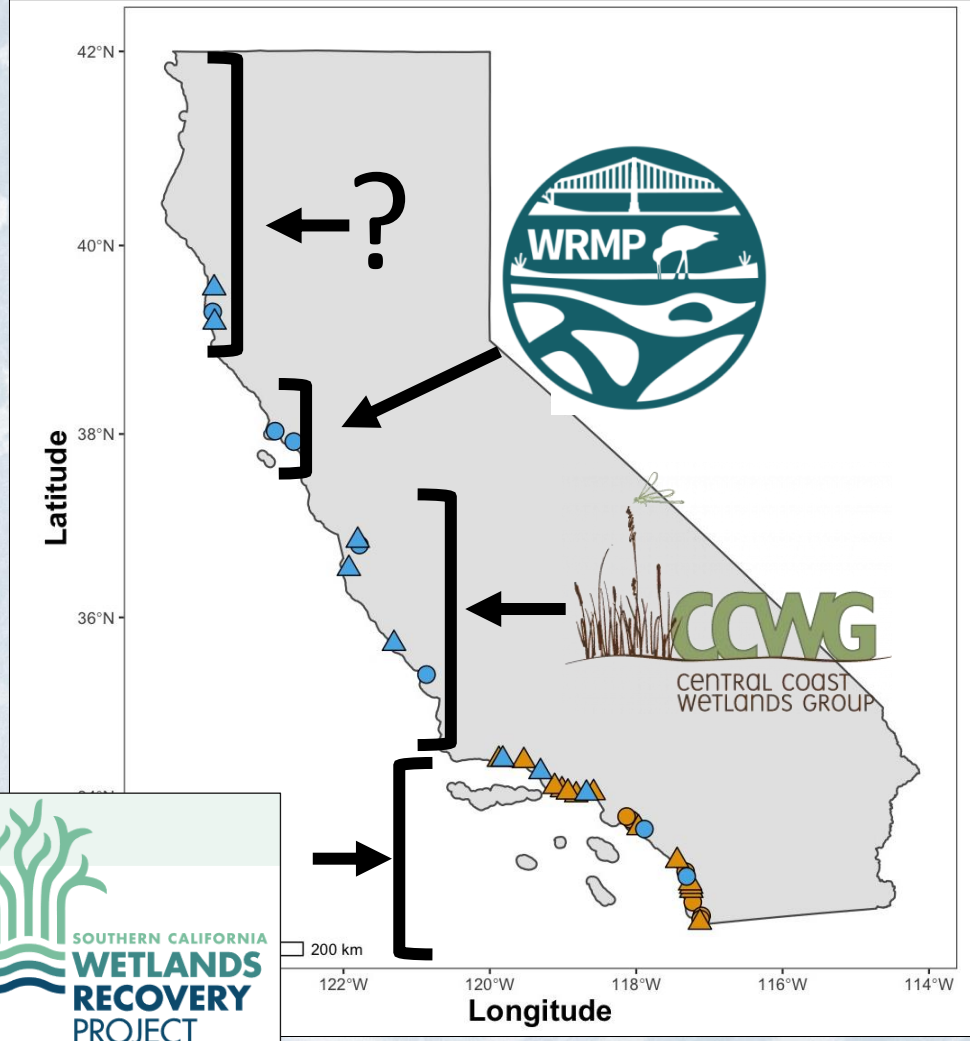
Our vision for implementation is via state-regional-local partnerships

1. State coordination via the California Estuary Monitoring Workgroup

2. Program management via a single entity (e.g., SCCWRP, SFEI, CCWG)

3. Regional science management and monitoring

4. Local implementation via project-based monitoring



SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Thank You!