The webinar will begin in a few minutes…

1:00pm – Welcome and opening remarks

1:10pm – TIME project overview

1:40pm – TIME project deliverables and scaling up

2:15pm – WRP Regional Strategy Update

2:55pm – Next steps and closing remarks

3:00pm – Adjourn

TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Wetlands Recovery Project Stakeholder Update Webinar

May 5, 2015

TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

Welcome

Kristen Goodrich
Tijuana River National Estuarine Research Reserve
Coastal Training Program Coordinator

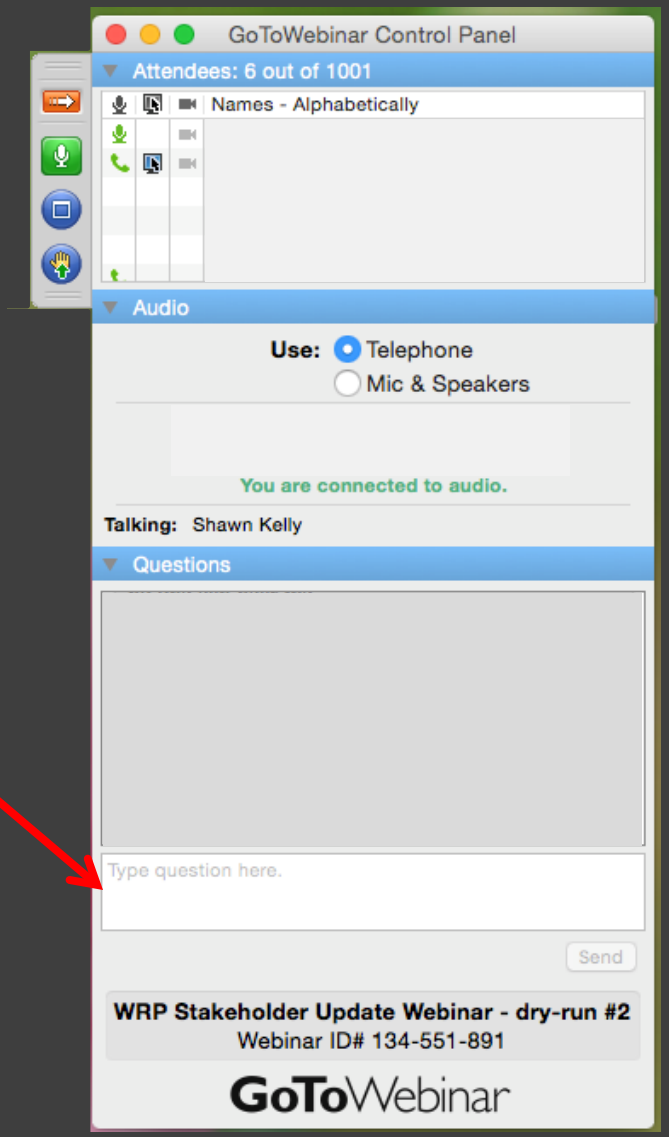
TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

Moderator

Dr. Dorian Fougeres
California State University, Sacramento
Center for Collaborative Policy
Southern California Office Director

Webinar functionality

- You are automatically muted in the webinar.
- If you have a question/comment, please **type the comment/question** in the webinar control.
- We will answer questions during transitions in the webinar.



TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

Introductions to the team

Project Coordinator: Kristen Goodrich

Collaboration Lead: Dr. Dorian Fougeres

Applied Science Investigator: Dr. Jeff Crooks

Collaborators:

Dr. Eric Stein & Dr. Steve Steinberg (SCCWRP)

Greg Gauthier (California Coastal Conservancy)

Robin Grossinger & Erin Beller (San Francisco Estuary Institute)

SCCWRP Established 1969

SFEI

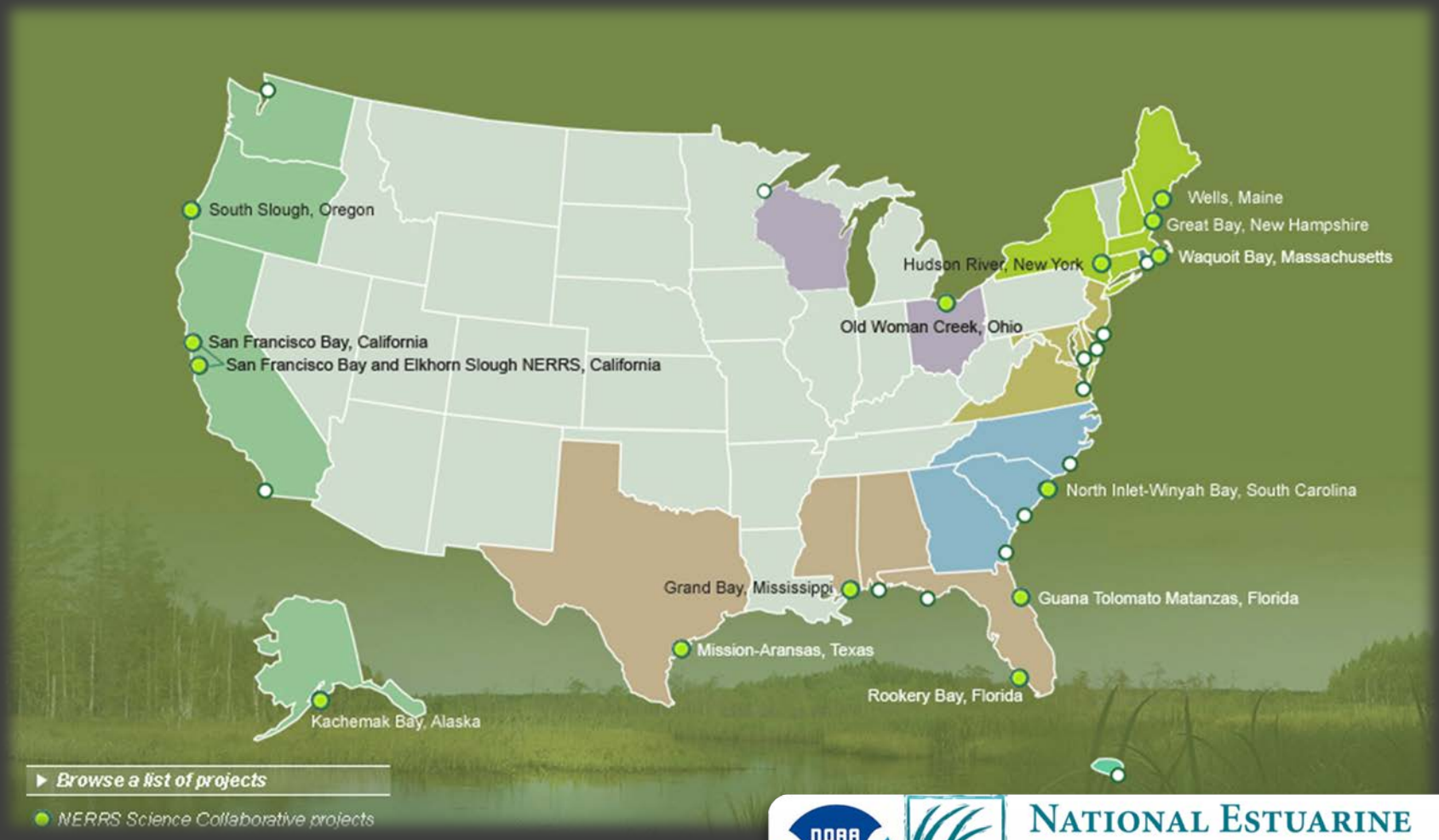
Southern California Wetlands Recovery Project

Tijuana River National Estuarine Research Reserve

State of California Coastal Conservancy

Sacramento State Center for Collaborative Policy

NERRS Science Collaborative



NOAA

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM SCIENCE COLLABORATIVE

Involving intended users throughout the research process **from problem definition to results** will increase the likelihood that science will be applied

TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

Next presenter

Dr. Jeff Crooks
Tijuana River National Estuarine Research Reserve
Research Coordinator

Local: Tijuana River Valley

Historical Ecology

Past

Research & Mapping

Present

Climate Change

CURRV

Future

Ecosystem Services:
Typology, Tradeoffs, & Visualization

Lessons learned

"how to use temporal information to steer wetland recovery"

Issues Assessment
(characterization of issues associated with wetland recovery in the region)

Wetland Case Studies
(use of temporal information and ecosystem service concepts in 6 southern California systems)

Tijuana River Valley Recovery Team

TRV Recovery Strategy & Tijuana Estuary Tidal Restoration Program

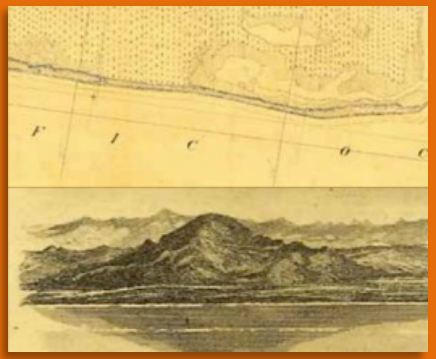
Other Wetlands & WRP Regional Strategy Update

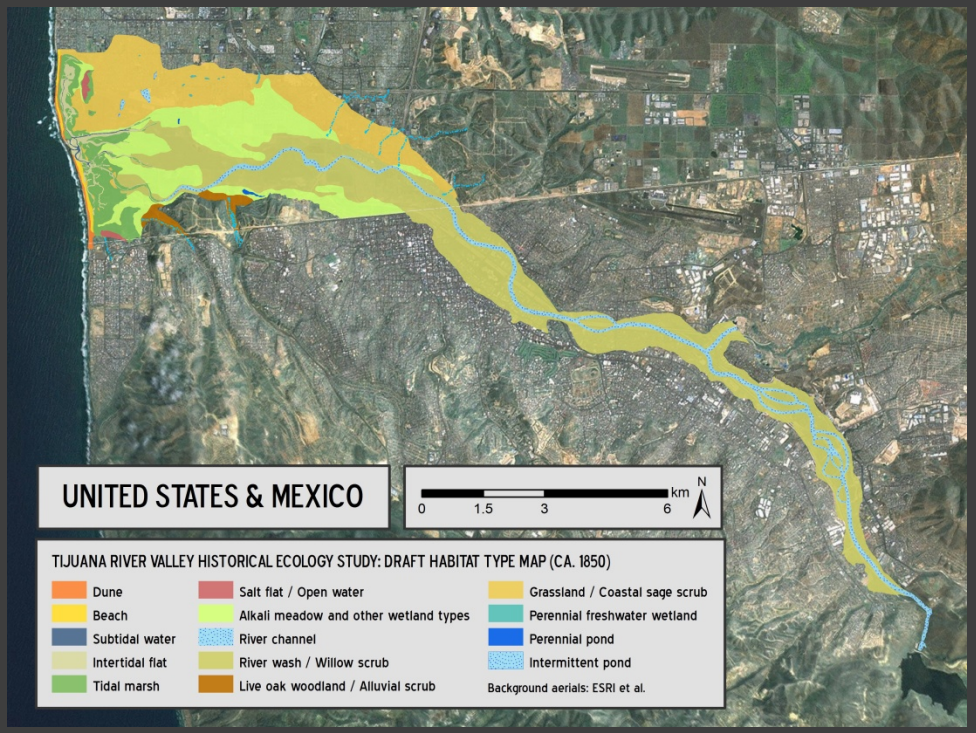
SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Regional: Southern California

Historical Ecology

Past





Project trajectory

Collection

completed

Compilation

completed

Synthesis

completed draft

Analysis

beginning stages

Reporting

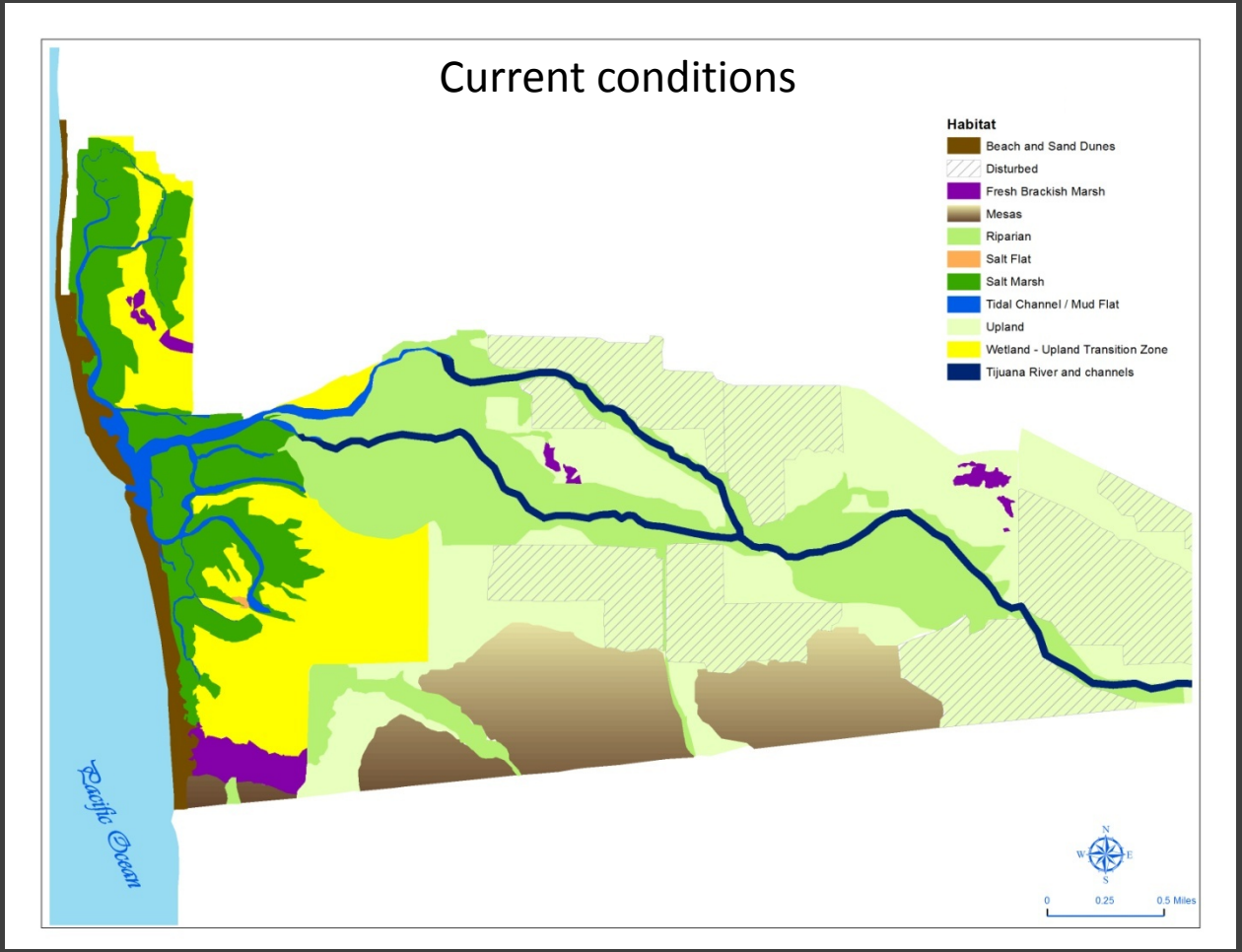
beginning stages


1850
1889
1894
1904
1921
1928
1943
1967
1980
1989
2012

Present

Research & Monitoring

Current maps and models



Climate Change

Future

CURRV

Climate Understanding & Resilience in the River Valley

Conduct Vulnerability Assessment

Develop Climate Adaptation Strategy

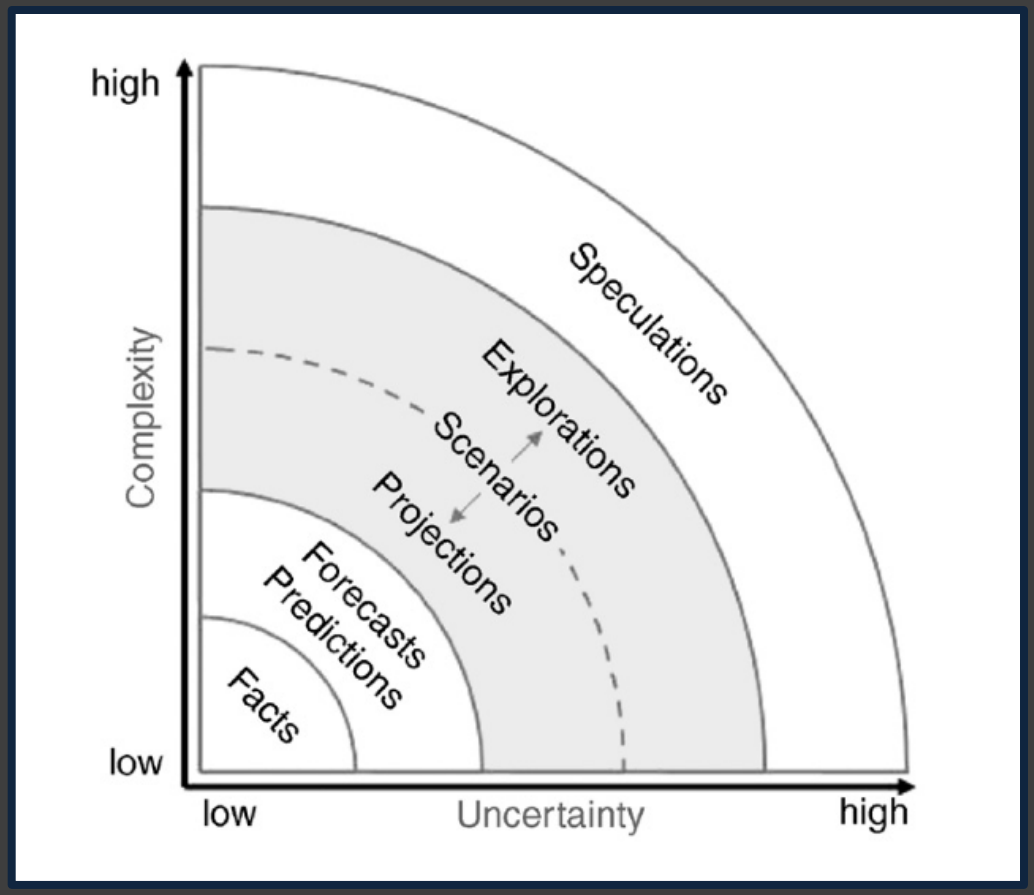
Focus on Sea Level Rise & Riverine Flooding

Considers Both Built and Natural Environments

NOAA Coastal and Ocean Climate Applications

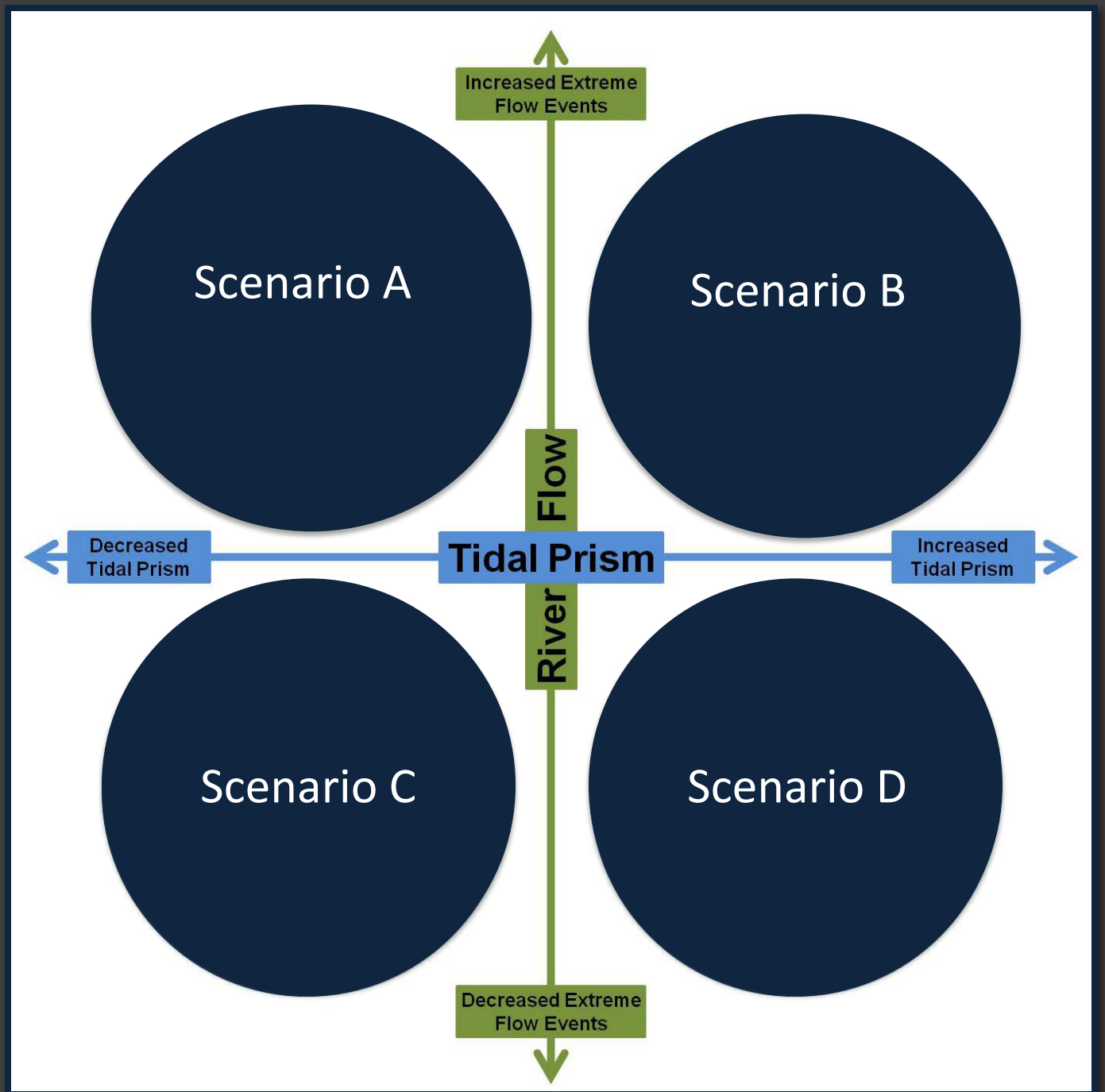
Scenario Planning

- Scenario planning embraces **uncertainty**
- Interaction of multiple, **complex** variables
- Scenarios should link the past and present with hypothetical futures. To be **plausible**, each scenario should have the future emerging from the past and present in a **seamless** way
- Scenarios should expand and **challenge** thinking, and convert alternatives into dynamic stories by adding a **credible** series of driving forces and responses



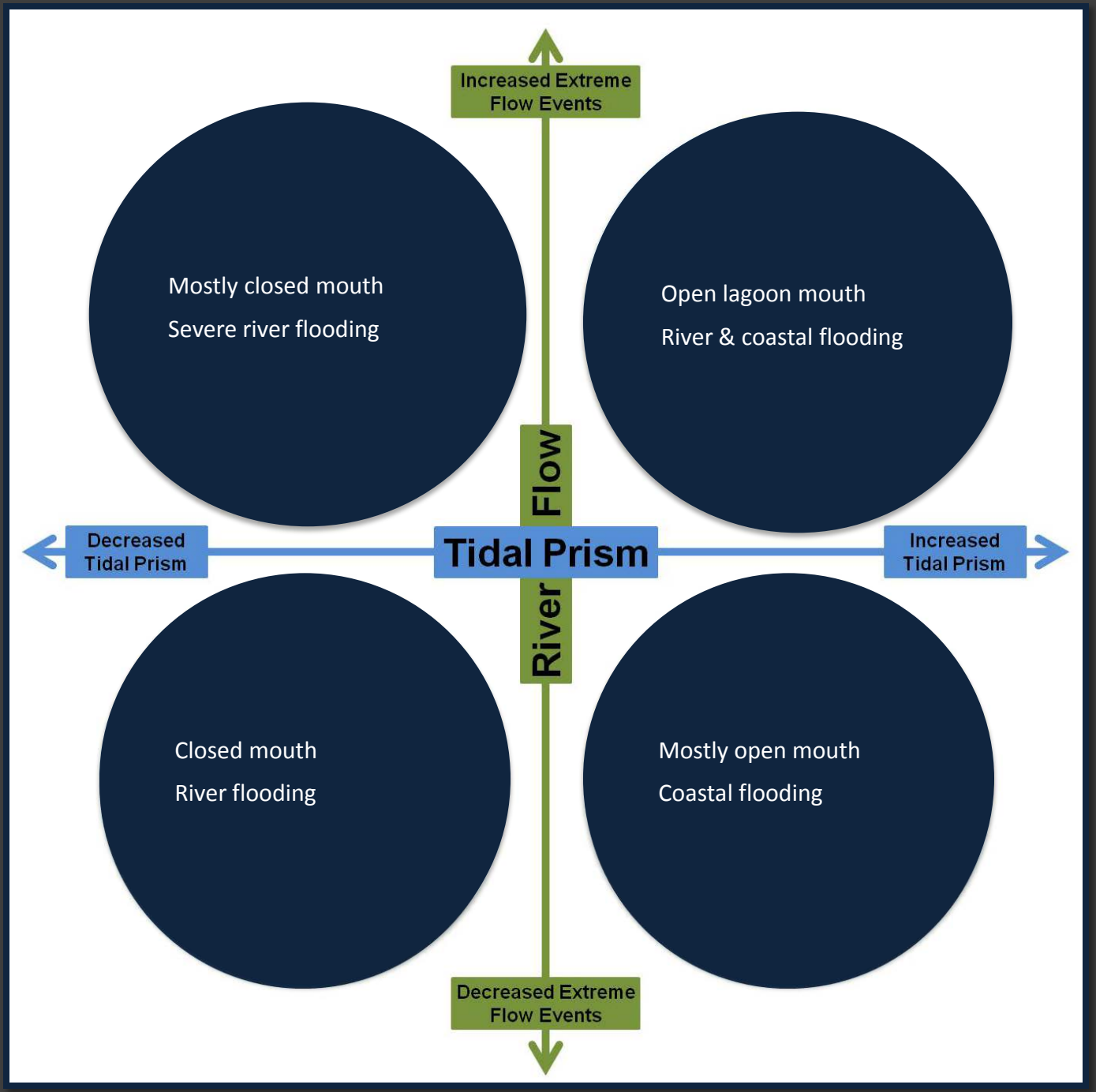
Scenario Development

- Identify Axes
- SLR in all scenarios
- Workshops on physical drivers and habitat responses

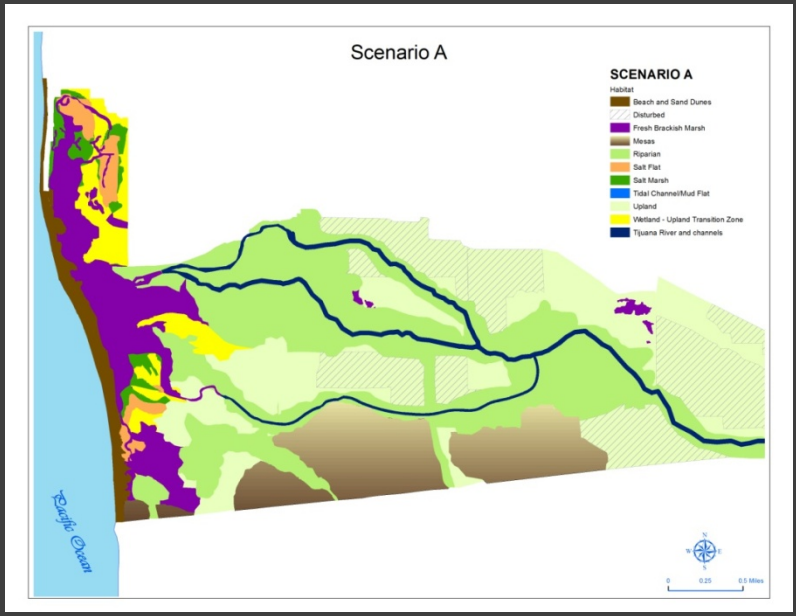


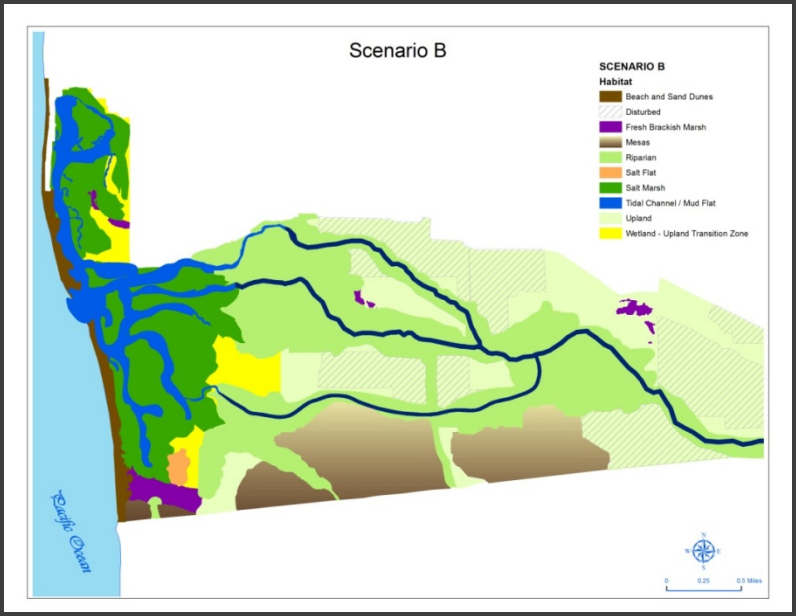
Physical Drivers

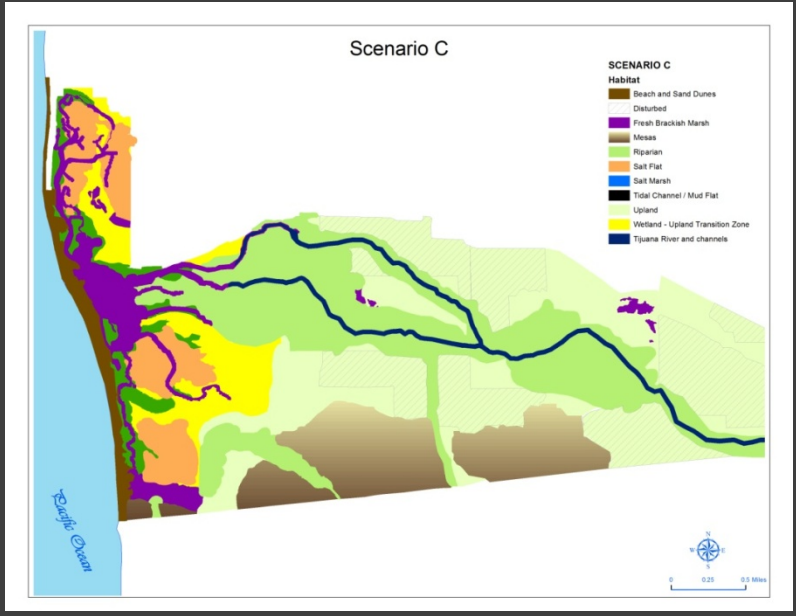
- River-Ocean Connection
- Sediment Dynamics
- Flooding and Inundation
- Water Residence Time
- Surface- and Ground-Water Salinity

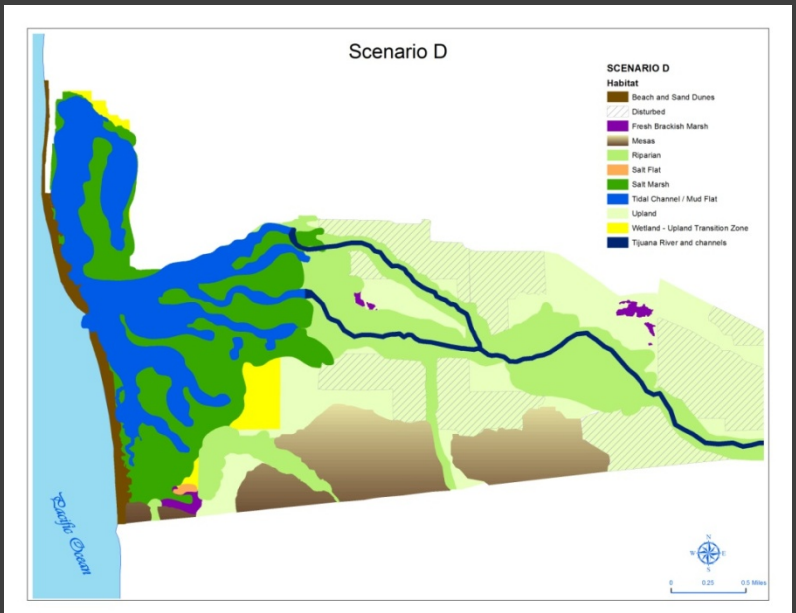


Habitat Responses

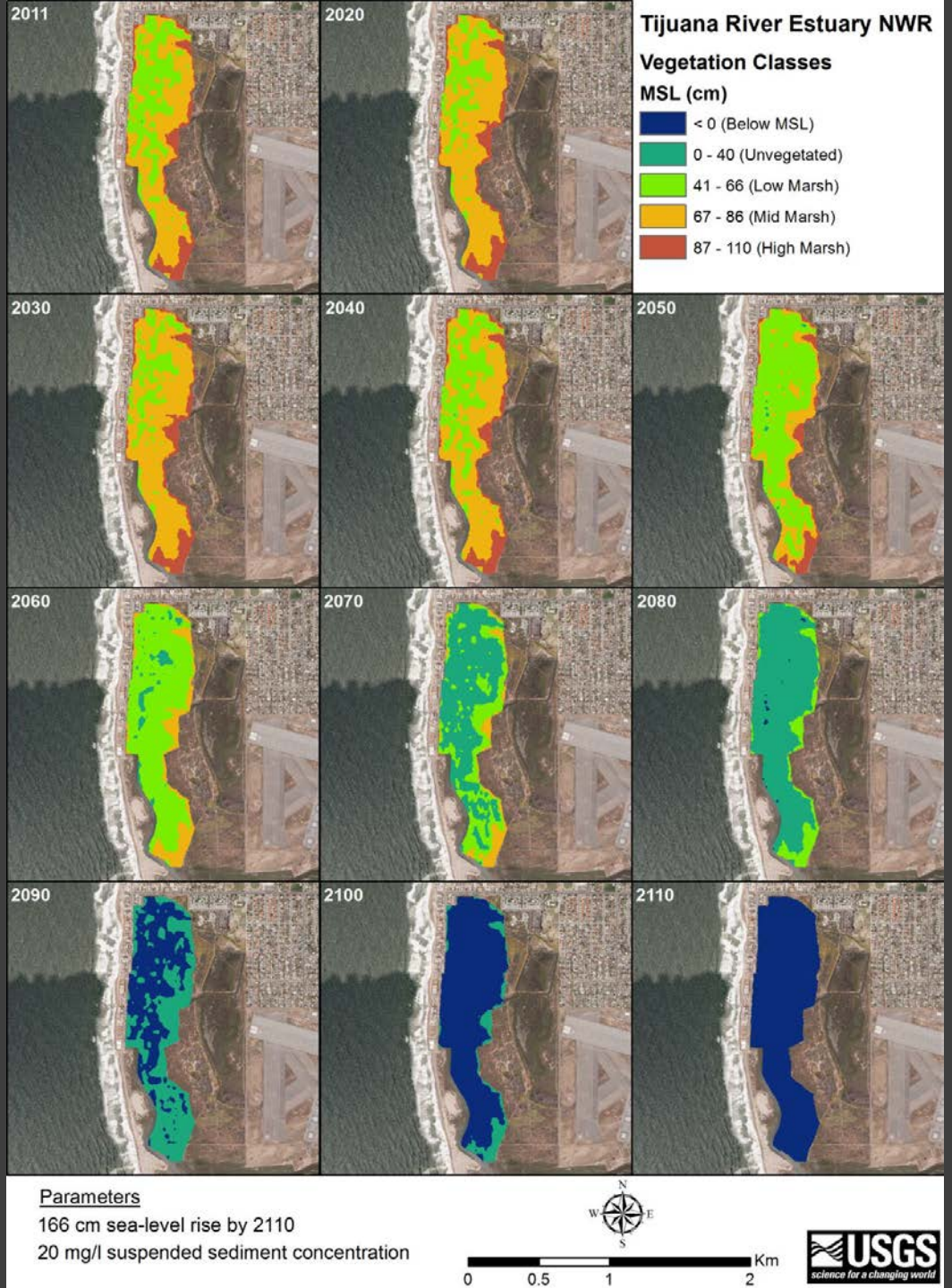








Modeling for Scenario D



TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS

Next presenter

Dr. Julio Lorda
Tijuana River National Estuarine Research Reserve
Post-doctoral Researcher

Ecosystem Services

Those components and processes which are used, required, or demanded from ecological systems for human benefit.

or

The benefits people obtain from ecosystems, including products, functions, and attributes.

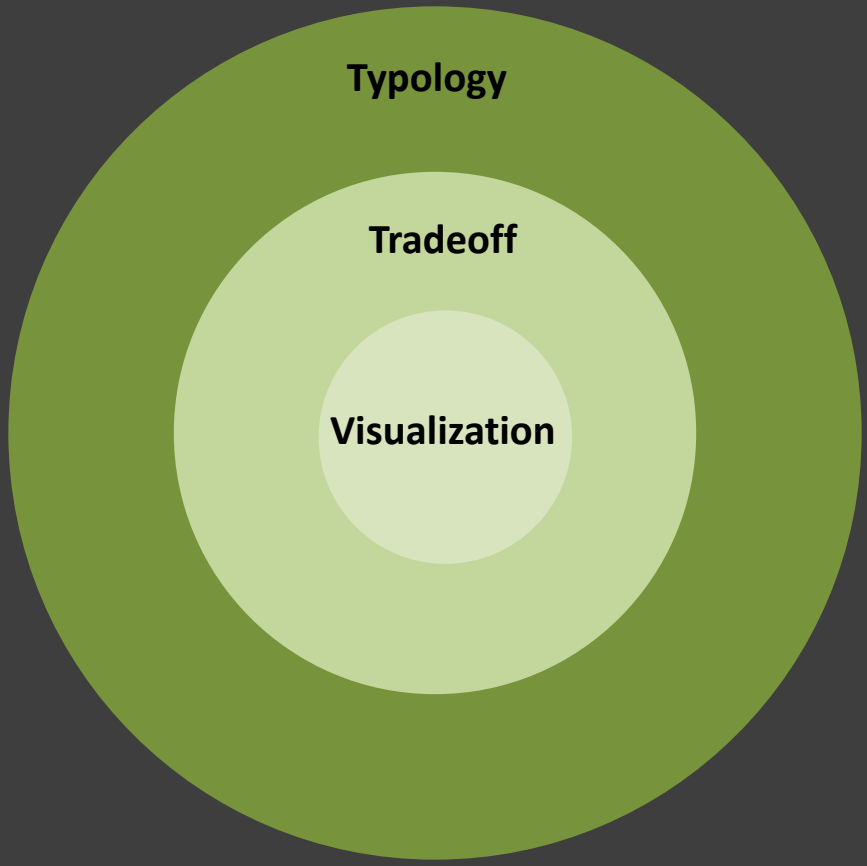
MEA 2003 and Jax 2010

Ecosystem Services - Methodology

- Ecosystem services Advisory Group
- Literature review
- Web-survey to researchers and experts
- Web-survey to WRP task forces

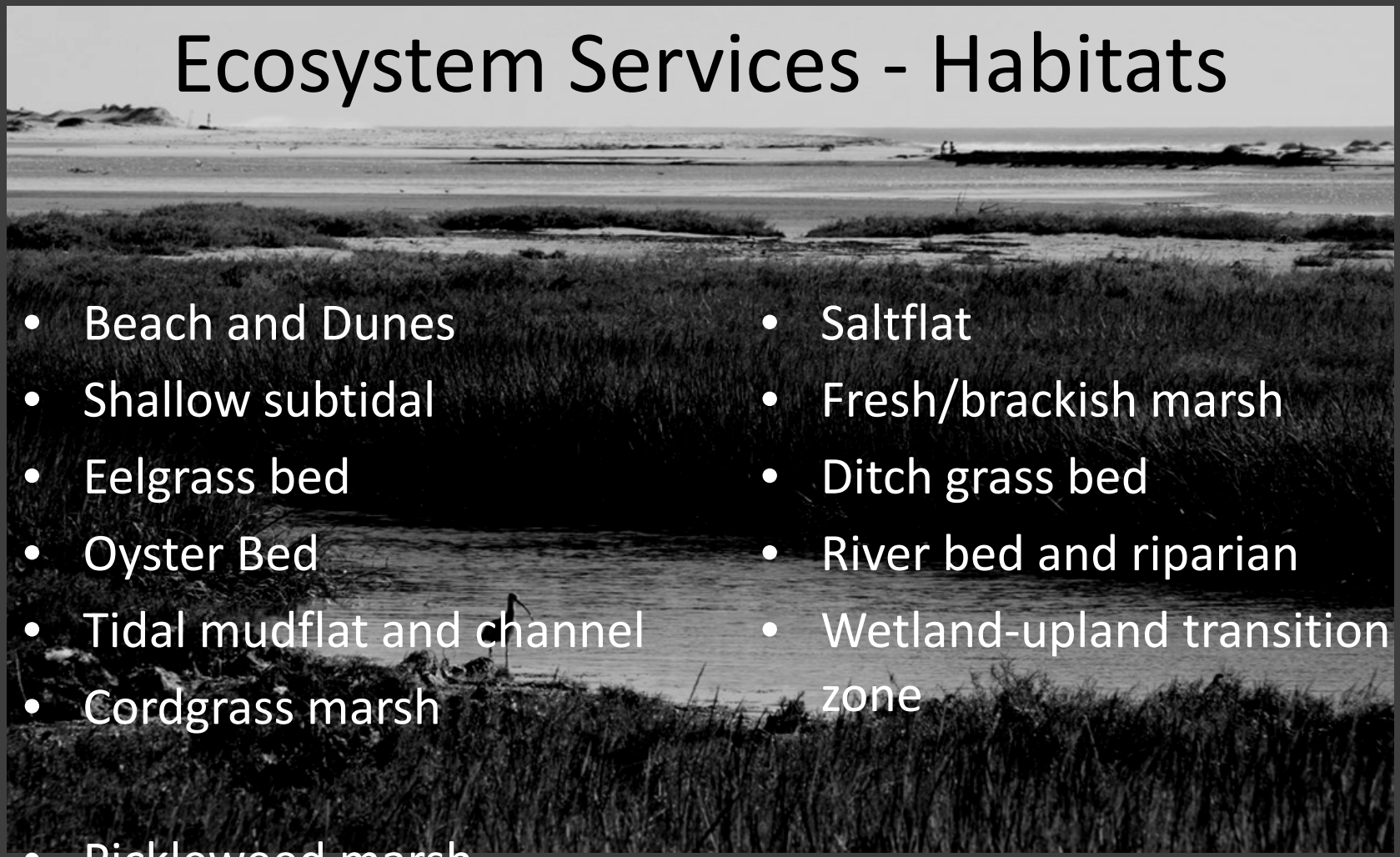
Ecosystem Services

- Ecosystem services list (Typology)
  - Habitat-level
- Tradeoffs
- Visualization



Typology

Ecosystem Services - Habitats



- Beach and Dunes
- Shallow subtidal
- Eelgrass bed
- Oyster Bed
- Tidal mudflat and channel
- Cordgrass marsh
- Pickleweed marsh
- Saltflat
- Fresh/brackish marsh
- Ditch grass bed
- River bed and riparian
- Wetland-upland transition zone

Typology

	Ecosystem services
Nutrient cycling, water purification, and waste treatment	Breakdown and sequestration of anthropogenic nutrients
	Water purification or contaminant dilution
Climate regulation	Local effects on temperature, wind, rainfall, etc…
	Air quality improvement
	Carbon storage/sequestration

(based on MEA 2005 and McInnes 2013)

Typology

	Ecosystem services
Water regulation	Groundwater recharge
	Direct water supply for livestock and agriculture
Storm and erosion and control	Shoreline, tidal creek, or river bank stabilization
	Amelioration of flooding
	Soil and sediment retention (e.g., potential offset to sea-level rise)

(based on MEA 2005 and McInnes 2013)

Typology

	Ecosystem services
Genetic, biochemical, and ornamental resources	Genetic resources
	Biochemical, natural medicines, and pharmaceuticals
	Ornamental resources (shells, drift wood, etc.)
Food and raw materials	Direct provision of food, or habitat support for edible species
	Support for pollinators of crops
	Raw materials such as fuel (including biofuels), wood, and fibers

(based on MEA 2005 and McInnes 2013)

Typology

	Ecosystem services
Biological control	Control of agricultural or livestock pests
	Limit pathogens or vectors of human diseases
	Suppression of noxious weeds
Support of biodiversity	Support native species
	Support for special-status species (culturally-significant)

(based on MEA 2005 and McInnes 2013)

Typology

	Ecosystem services
Cultural	Nature observation, outdoor recreation, and ecotourism
	Aesthetic value
	Scientific and education

(based on MEA 2005 and McInnes 2013)

Scenarios - Ecosystem Services Tradeoffs

Tradeoff

Studies in Avian Biology No. 32:198–204

ARE SOUTHERN CALIFORNIA'S FRAGMENTED SALTMARSHES CAPABLE OF SUSTAINING ENDEMIC BIRD POPULATIONS?

ABBY N. POWELL

A CENSUS OF THE LIGHT-FOOTED CLAPPER RAIL IN CALIFORNIA

RICHARD ZEMBAL, U.S. Fish and Wildlife Service, 24000 Avila Rd., Laguna Niguel, California 92677

BARBARA W. MASSEY, 1825 Knoxville Ave., Long Beach, California 90815

Estuaries and Coasts (2012) 35:1163–1181
DOI 10.1007/s12237-012-9508-9

Carbon Sequestration and Sediment Accretion in San Francisco Bay Tidal Wetlands

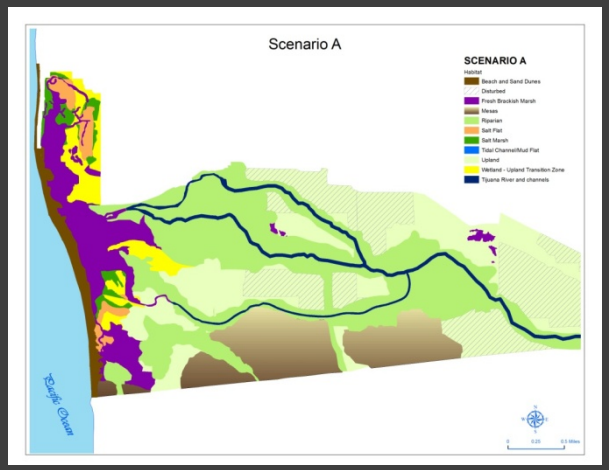
John C. Callaway · Evyan L. Borgnis · R. Eugene Turner · Charles S. Milan

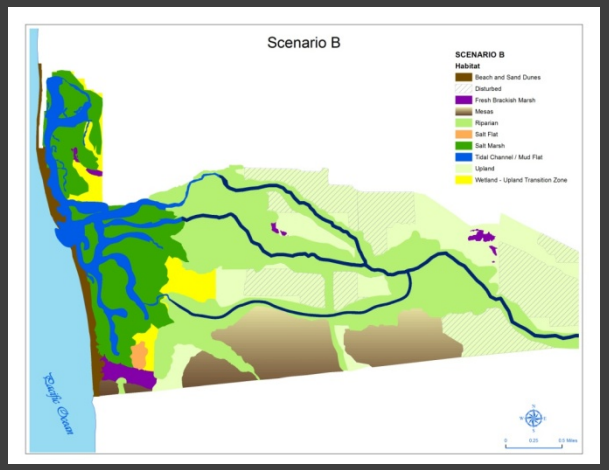
Scenarios - Ecosystem Services and Habitat Area

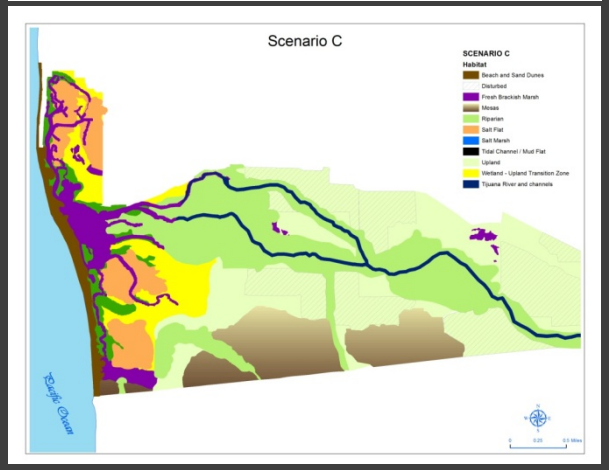
Ecosystem services		Source
Carbon storage/sequestration	Carbon storage/sequestration	Callaway et al.
Soil and sediment retention	Vertical accretion	Callaway et al.
	Mineral accretion	Callaway et al.
Support for special-status species	Belding's Savannah Sparrow	Powell
	Ridgway's Rail	Massey and Zembal

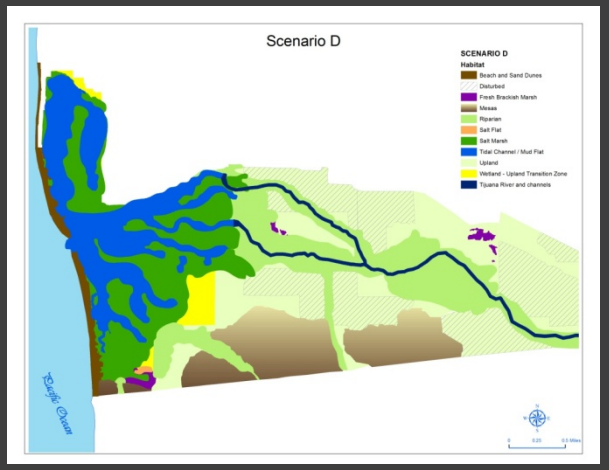
Scenarios - Ecosystem Services Tradeoffs

Tradeoff



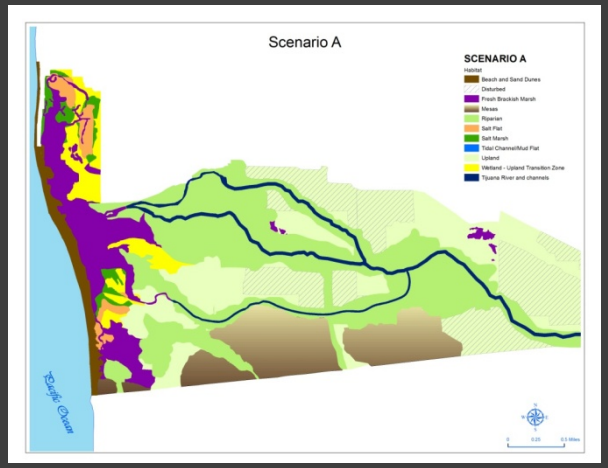


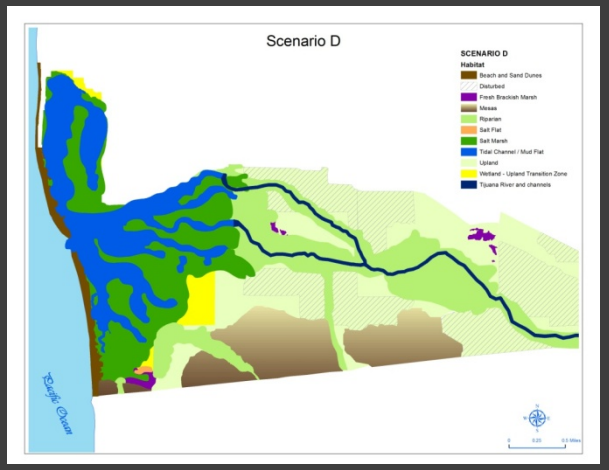




Scenarios - Ecosystem Services Tradeoffs

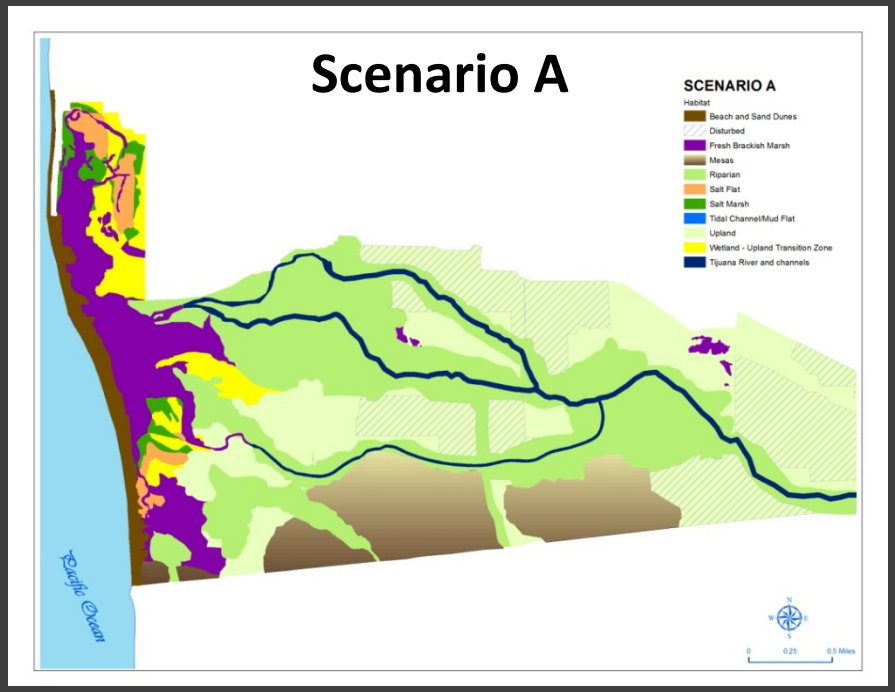
Tradeoff

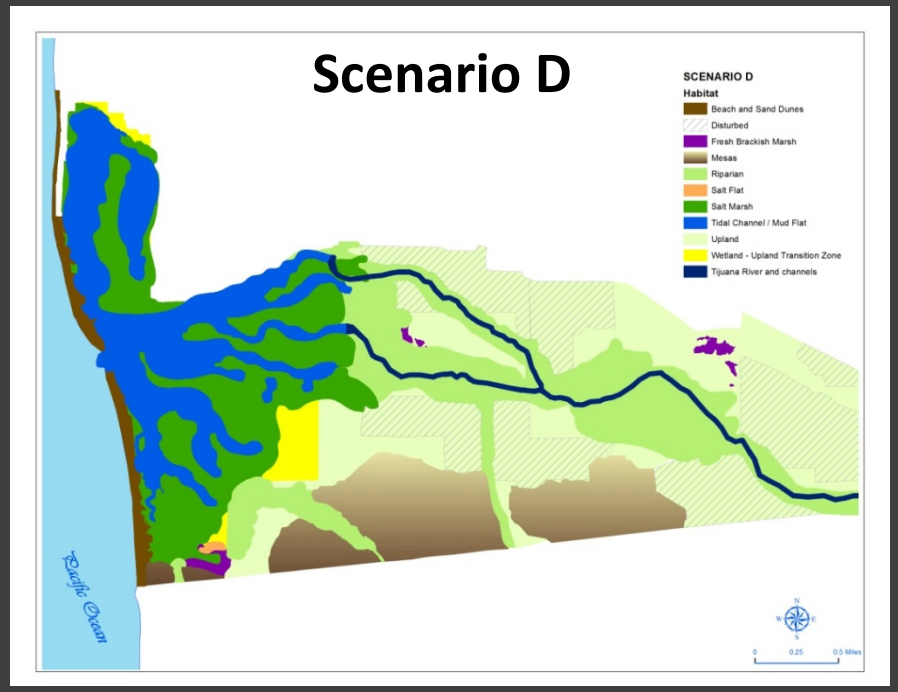




Scenarios - Ecosystem Services Tradeoffs

Tradeoff

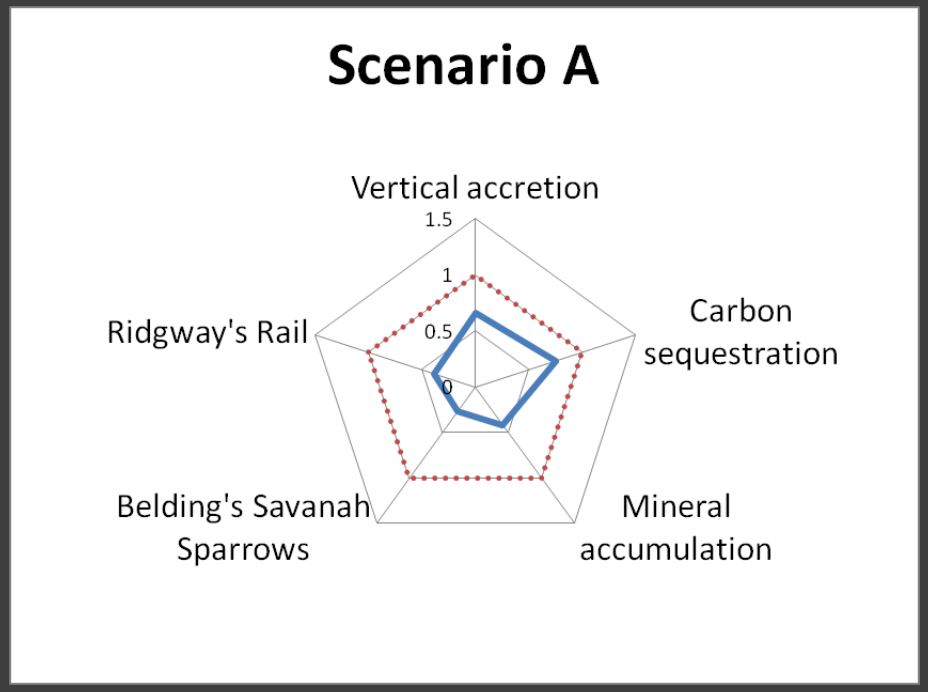


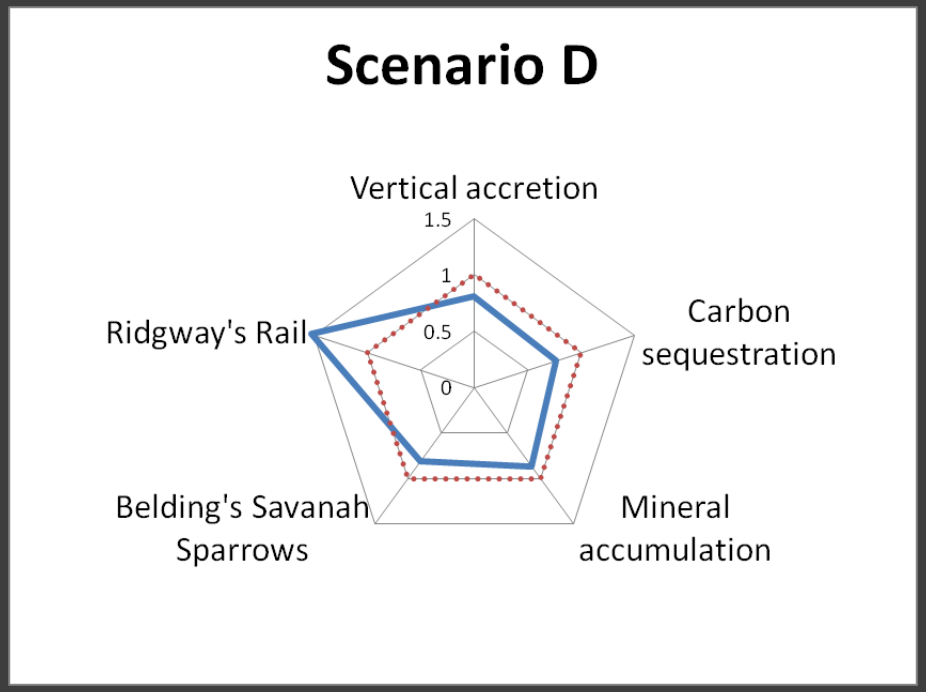


Scenarios - Ecosystem Services Tradeoffs

Tradeoff

Scenarios - Ecosystem Services Tradeoffs





(data from Zembal and Massey 1981, Powell 2006, and Callaway et al. 2012)

Scenarios - Ecosystem Services Tradeoffs

Ecosystem Service	Management Importance	Scenario A	Scenario B	Scenario C	Scenario D	Confidence
	High					High
	Medium					High
	Low					Medium
	High					Low
	Medium					Low
	High					Low

Scenarios - Ecosystem Services Tradeoffs

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Scenarios - Ecosystem Services Tradeoffs

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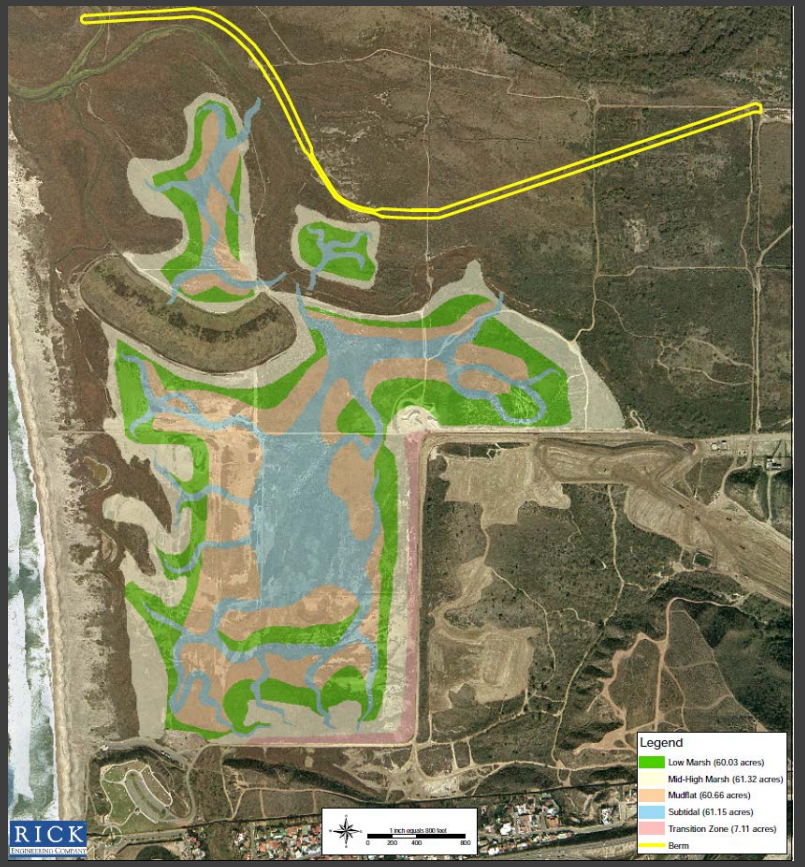
	Low					Medium
	High					Low
	Medium					Low
	High					Low

Scenarios - Ecosystem Services Tradeoffs

Tradeoff

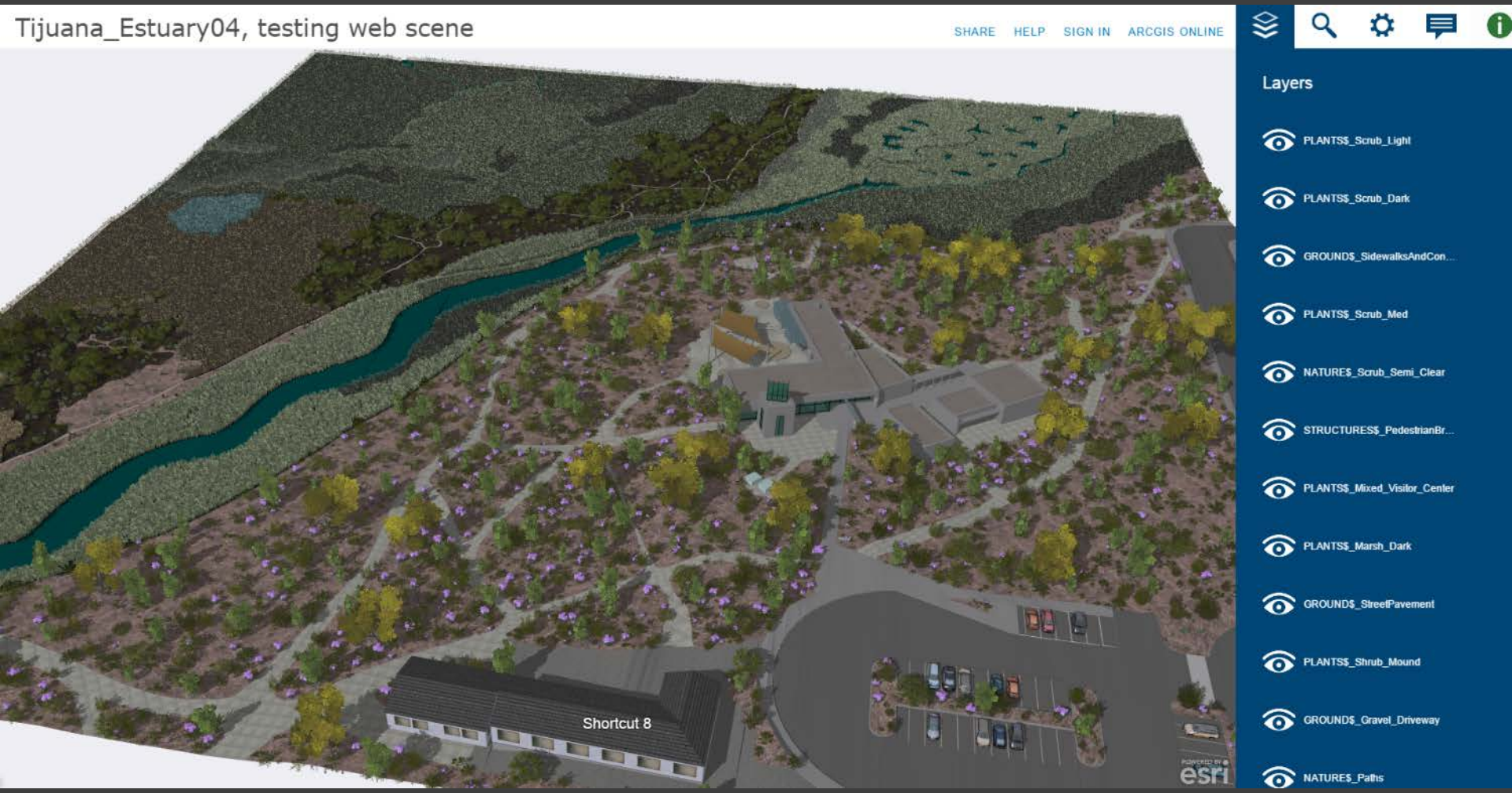
Current conditions

TETRP



Visualization

Visualization



Visualization

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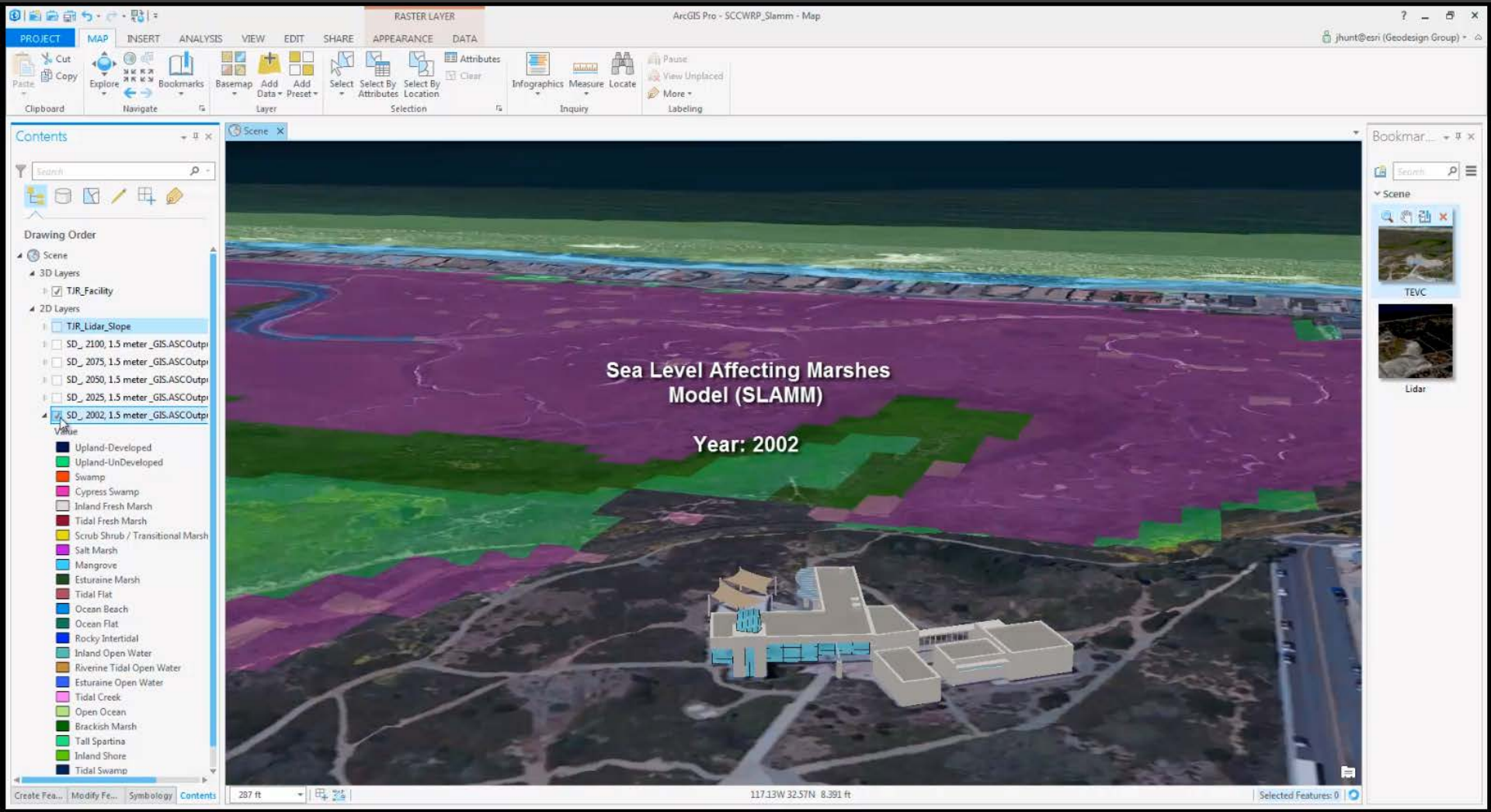
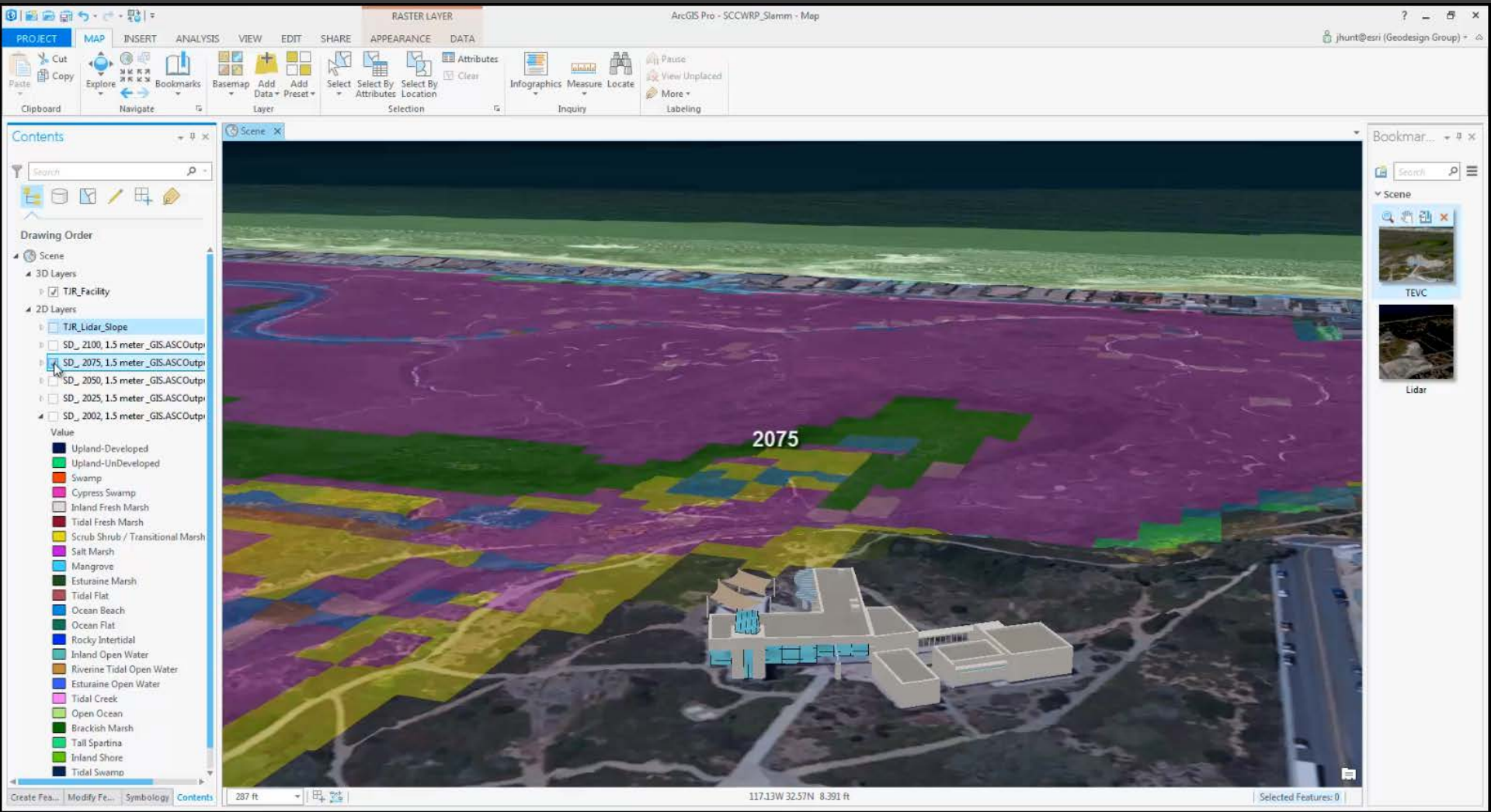


Visualization



Local: Tijuana River Valley

Historical Ecology — Past

Research & Mapping — Present

Climate Change — Future

CURRV

Ecosystem Services:
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TRV Recovery Strategy & Tijuana Estuary Tidal Restoration Program

Other Wetlands & WRP Regional Strategy Update

Southern California Wetlands Recovery Project

Regional: Southern California


TEMPORAL INVESTIGATIONS OF MARSH ECOSYSTEMS
Questions?
©Ralph Lee Hopkins with support of LightHawk`

Next presenter

Greg Gauthier
California Coastal Conservancy
Wetland Recovery Project Manager

SOUTHERN CALIFORNIA
WETLANDS
RECOVERY
PROJECT

REGIONAL STRATEGY UPDATE

WETLAND HABITAT GOALS FOR SOUTHERN CALIFORNIA

REGIONAL STRATEGY 2001

MULTI-YEAR PROCESS

MEMBER AGENCIES

SCIENCE ADVISORY PANEL

COUNTY TASK FORCES

SO CAL WETLANDS

REGIONAL SETTING

WETLAND LOSSES

REGIONAL GOALS

KEY STRATEGIES

COUNTY OBJECTIVES

WORK PLAN PROJECTS

SMALL COMMUNITY-BASED PROJECTS

TRAINING

Regional Strategy 2001 Goals

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

1. Preserve and restore coastal wetland ecosystems
2. Preserve and restore stream corridors and wetland ecosystems in coastal watersheds
3. Recover native habitat and species diversity
4. Integrate wetlands recovery with other public objectives
5. Promote education and compatible access related to coastal wetlands and watersheds
6. Advance the science of wetlands restoration and management in Southern California

Improving Regional Planning of Wetland Ecosystem Restoration and Management in Southern California

Southern California Wetland Recovery Project Science Panel Recommendations

May 15, 2002

Principal Author: Martha Sutula, Ph.D.,
Southern California Coastal Water Research Project (SCCWRP), Westminster, California

Southern California Wetland Recovery Project Science Panel Members and Contributing Authors:

Richard Ambrose, Ph.D., University of California, Los Angeles, California
John Callaway, Ph.D., University of San Francisco, San Francisco, California
Wayne Ferren, Ph.D., University of California, Santa Barbara, California
Michael Horn, Ph.D., California State University, Fullerton, California
Michael Josselyn, Ph.D., Wetland Research Associates, San Francisco, California
Sharook Madon, Ph.D., Pacific Estuarine Research Laboratory, San Diego, California
Keith Macdonald, Ph.D., Independent Consultant, Seattle, Washington
Kenneth Schwarz, Ph.D., Phillip Williams Associates, San Francisco, California
Eric Stein, Ph.D., PCR Associates, Irvine, California
Stephen Weisberg, Ph.D., SCCWRP, Westminster, California

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

- Establish quantifiable recovery objectives;
- Develop decision support tools to aid in prioritizing preservation and restoration activities; and
- Implement a regional monitoring program to measure the progress towards objectives.

WMG Statement of Need - 2008

The Wetland Managers Group needs a management framework that will:

- Guide project prioritization, selection and design to reflect regional priorities
- Provide project-specific guidance for practitioners
- Provide a method for assessing progress toward our goals
- Support proactive project solicitation

We are updating the Regional Strategy because:

We have much more data developed over the last decade and a half

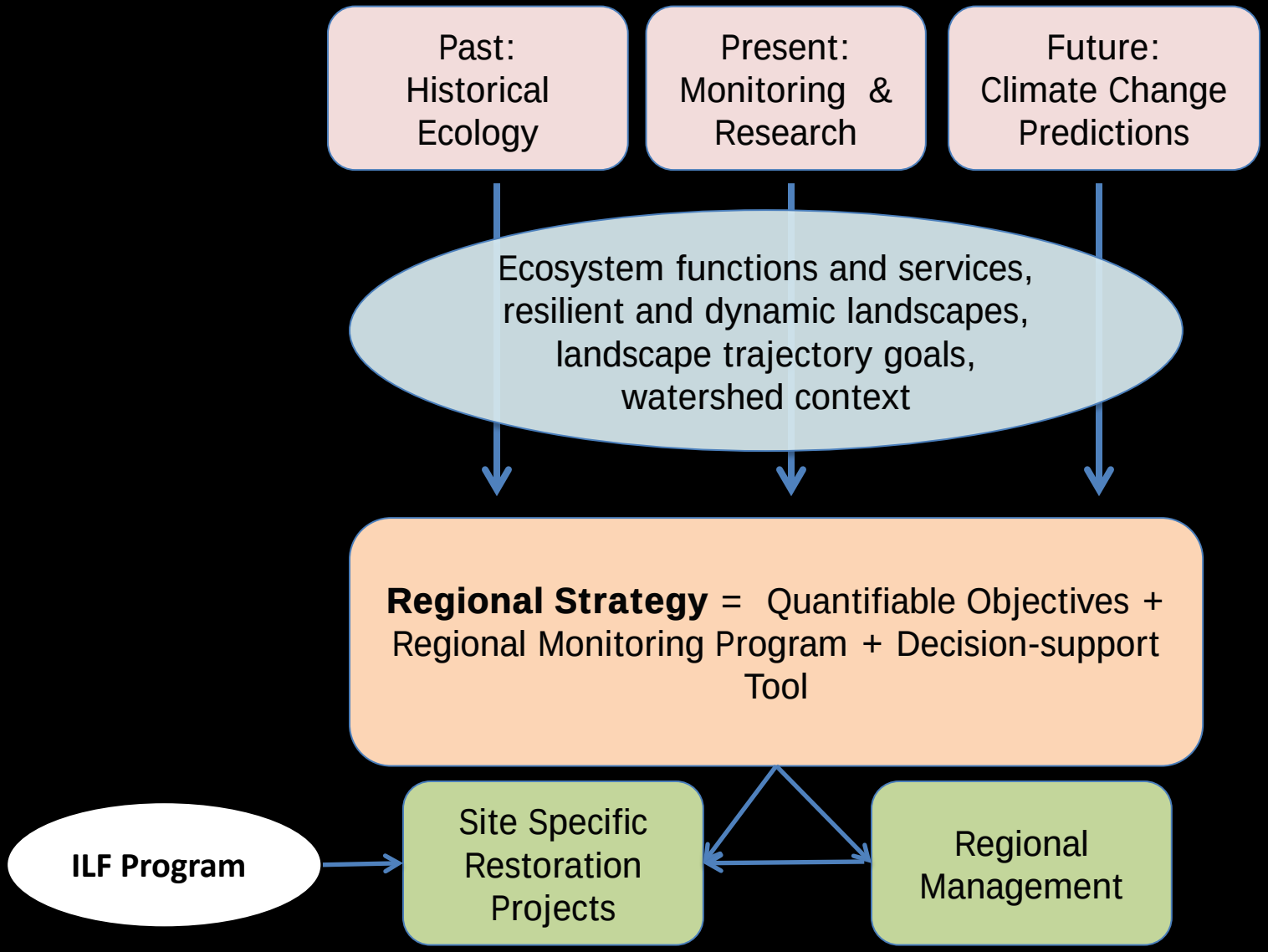
Old goals were not based on integrating past, present and future

We have developed monitoring systems that will measure progress toward our goals and those systems will help define more specific quantifiable goals

New ways of thinking about resilience, adaptive management and what restoration means

WRP is part of the State Wetlands Program Plan – define how our regional efforts relate to and support statewide programs

Approach for the Regional Strategy Update



SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Sources of Data/Inputs

Past

- USGS Topographic Survey Maps (T-sheets): 1850s coastal maps
- In-depth historical ecology studies
- Coastal Wetland Change Analysis (compares T-sheets to NWI maps)

Present

- National Wetland Inventory (NWI) mapping
- Wetland assessments (IWRAP,CRAM)
- Regional status and trends monitoring

Future

- Coastal Storm Modeling System (CoSMoS)
- Climate Understanding and Resilience in the[Tijuana] River Valley (CURRV)
- Habitat Evolution Models (SLAMM, WARMER, MEM)

Wetlands Recovery Project

Regional Strategy 2001

Tasks related to completing the Regional Strategy Update

- Analyze changes in ecological function over time
- Analyze climate change predictions
- Update regional habitat goals
- Develop guidance for selection, design and prioritization of restoration projects
- Define the process and protocols for assessing (IWRAP) and reporting progress (EcoAtlas) on the Regional Strategy
- Develop Regional Strategy products including likely a written document, maps and visualization tools.

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Regional Strategy Update Team

- Science Advisory Panel
  - Technical Assistance Grants
- Wetlands Managers Group
  - Work Group
- Wetlands Advisory Group
- Task Forces
- Board of Governors
- Conservancy Staff

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Role of the Scientific Advisory Panel

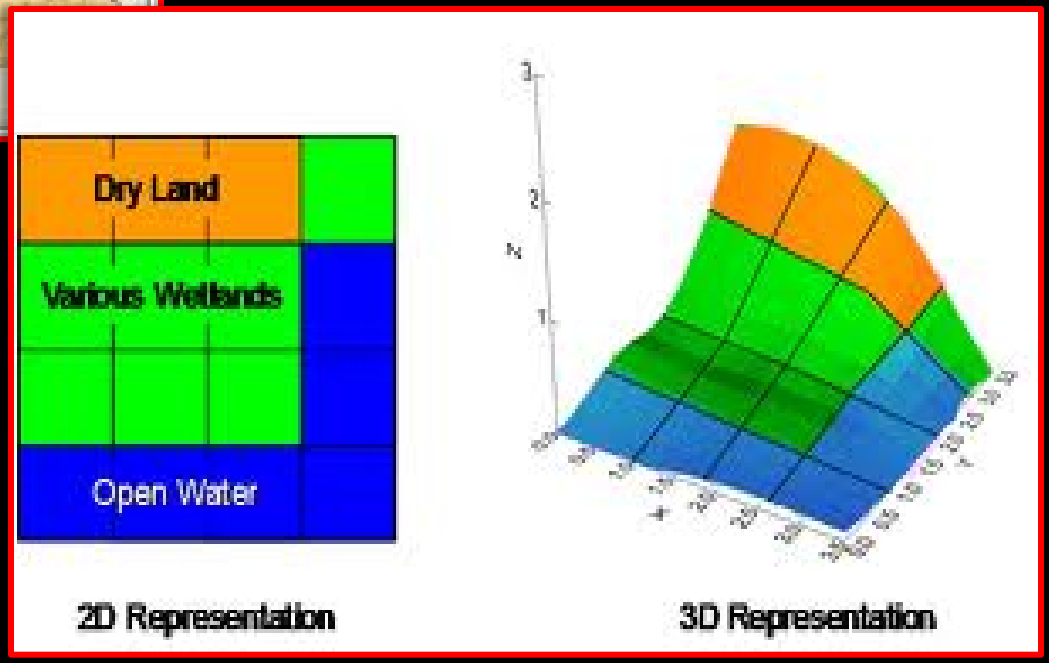
- Standing committee
- Provides ongoing technical support
- Initial focus – development of regional strategy

2015 Science Advisory Panel

Rich Ambrose	UCLA
John Callaway	University of San Francisco
Josh Collins	SFEI & Aquatic Science Center
Jeff Crooks * SAP Chair 2016-17	Tijuana River Nat. Estuarine Research Res.
Jeff Haltiner	ESA
Jason Keller	Chapman University
John Largier	UC Davis
Shelley Luce * SAP Chair 2015-16	Environment Now
Brett Sanders	UC Irvine
Erin Stein	SCCWRP
Martha Sutula	SCCWRP
Christine Whitcraft * SAP Chair 2014-15	CSU Long Beach

Final Products

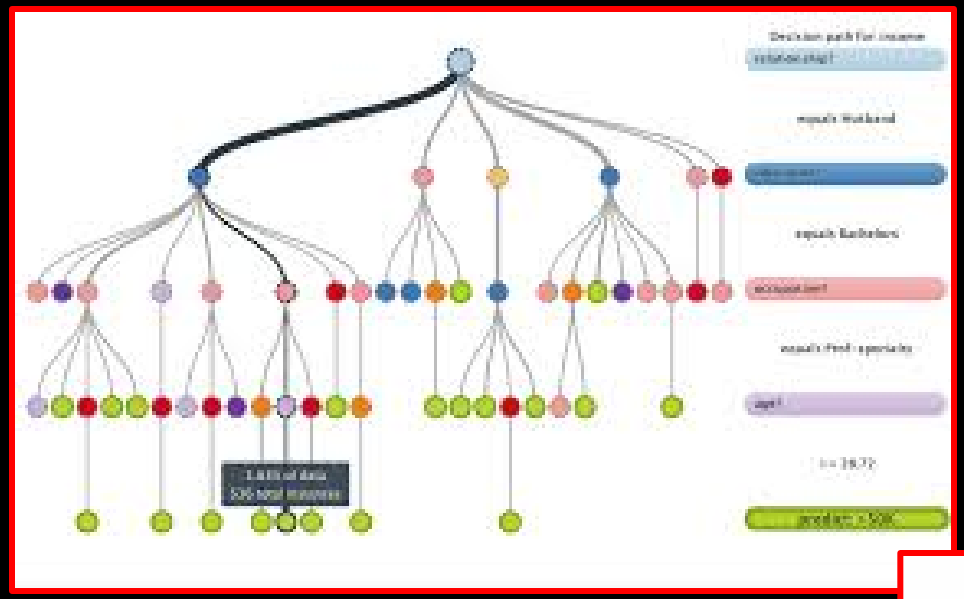
MAPS



VISUALIZATIONS

Final Products

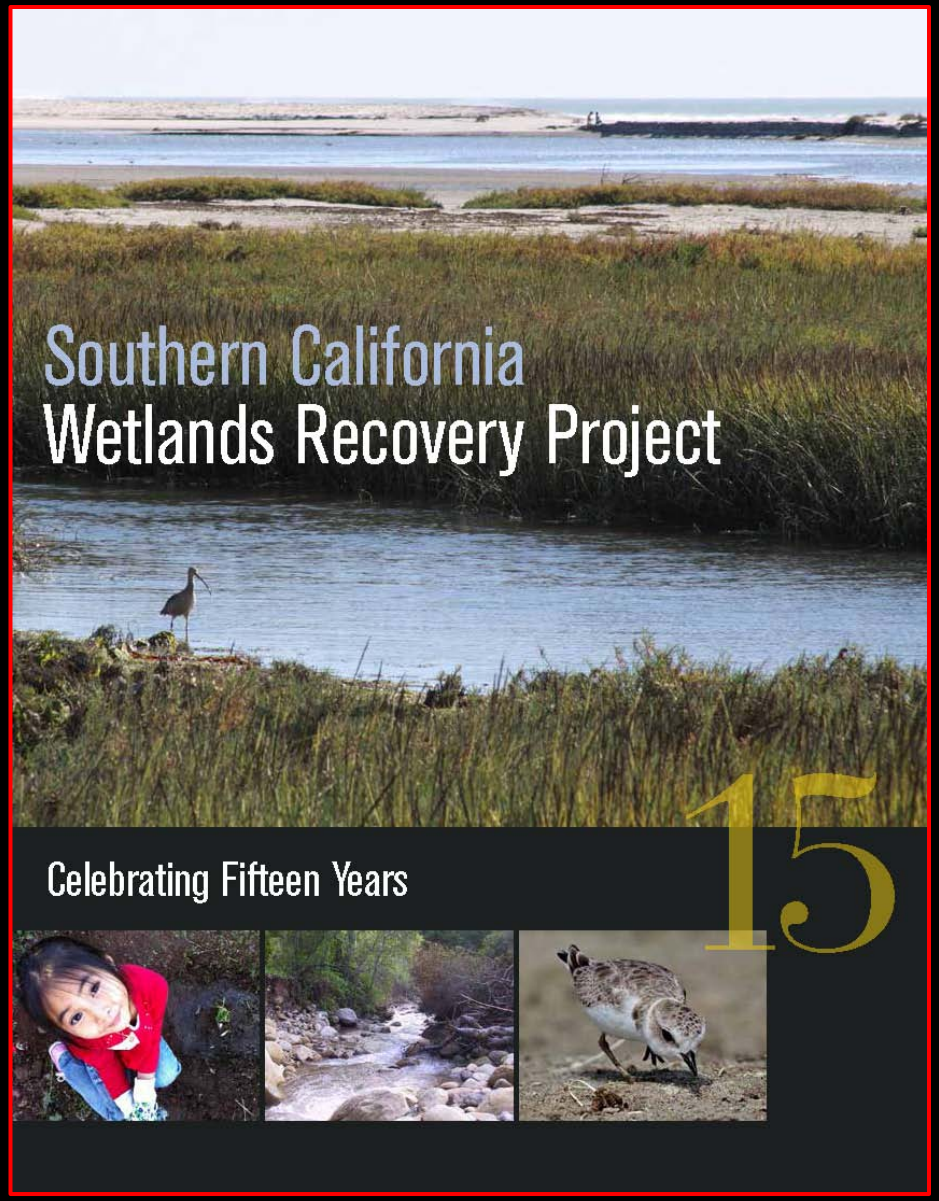
SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT



DECISION TREES

SELECTION CRITERIA

Final Products



PUBLICATION

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Funding Support

NERRS Science Collaborative:
Temporal Investigation of Marsh Ecosystems (TIME) - Tijuana Estuary

U.S. FWS - Landscape Conservation Cooperative:
Climate adaptation measures
Decision-support tool

EPA Wetlands Program Development Grant:
Technical Support for RSU
In-Lieu Fee Program development

Coastal Conservancy:
Technical Support for RSU
Science Panel Stipends

SOUTHERN CALIFORNIA WETLANDS RECOVERY PROJECT

Next presenter

Jocelyn Christie, MESM
California Sea Grant Fellow
California Coastal Conservancy
Wetlands Recovery Project

Wetlands Advisory Group

A Stakeholder Committee

Who, what, when, where, and why.

WHY- *Why create the WAG?*

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- The WMG declared need for stakeholder input on the RSU

- To receive feedback from the end-users of the Regional Strategy on products *as they are developed*

- To ensure that RSU products are useful to WRP partners

WHAT- *What will the WAG be doing?*

- Helping the WMG and SAP understand the type of info that's helpful for restoration projects

- Providing feedback on products created by the SAP and WMG

WHO- *Who will be on the WAG?*

- Wetland professionals, restoration partners, grantees

WHERE- *Where will the WAG meet?*

- Dual meetings will be held for each meeting topic
- North San Diego County and Ventura

WHEN- *When will the WAG meet?*

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~3 Meetings per year

May: foundational goals/guiding principles; target ecosystem functions and services

August: archetypes and habitat typology

November: match contemporary archetypes and habitats to target ecosystem functions and services

Questions?

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Closing remarks