

Developing an Adaptive Management Program for California EcoRestore

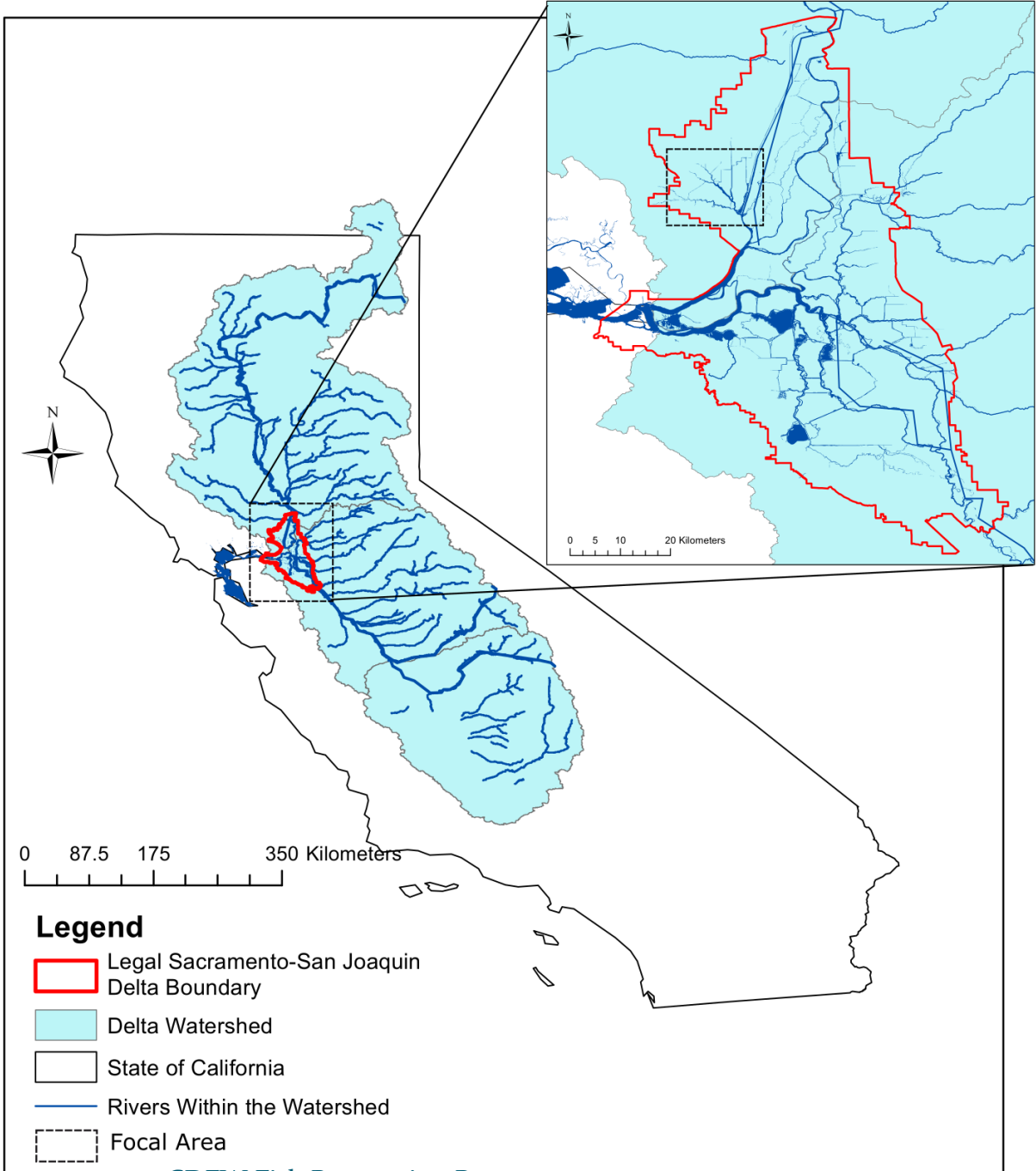
California Delta Habitat Restoration Adaptive
Management Program White Paper

Darcy Austin,
Delta Science Program,
Delta Stewardship Council

Restoration of 30,000 acres of Habitat: Science or Science Fiction?

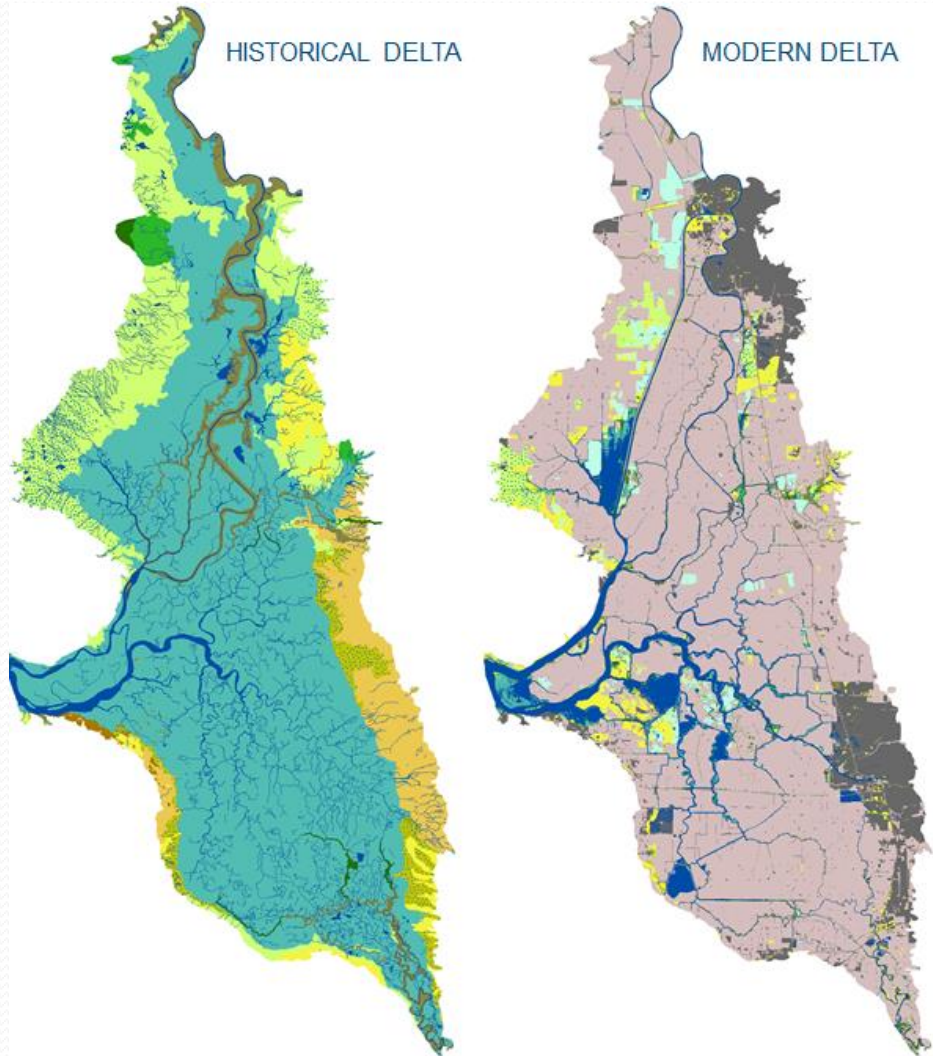
1. Adaptive Management Program for California Delta Habitat Restoration
2. Regional Restoration Planning
3. Evaluating Restoration Effectiveness: Tidal Wetland Monitoring Framework
4. Early Implementation: Lessons Learned from the Tule Red Restoration Project





Modern Delta is heavily altered

- Land conversion, channel simplification, subsidence
- Functions and connections between land and flows have been lost
- Marsh wetlands = 98% loss
- Dendritic channels = 93% loss
- Seasonal flooded = 85% loss
- Riparian = 60% loss





- Delta is the hub of California's water supply system
- Supplies water for 25 million people
- Supports \$45-Billion agricultural sector
- California economy 5th largest globally

California Delta Habitat Restoration

- Driven by
 - Mitigation (BiOps for water project operations, Levee maintenance habitat enhancement)
 - Desire for subsidence reversal
 - Delta Plan recommendations
 - Bond funding, greenhouse gas reduction cap and trade funds

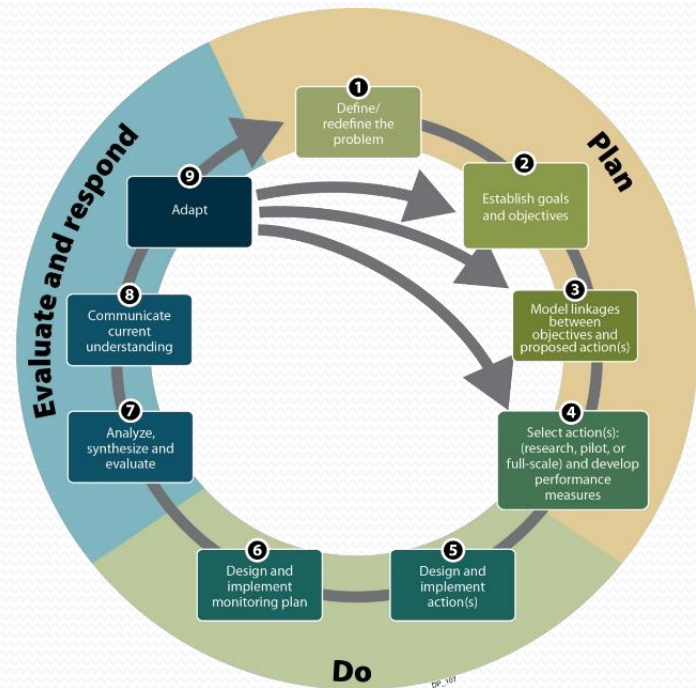
Delta Plan Chapter 4: Vision of a Restored Delta:

“...a resilient, functioning estuary and surrounding terrestrial landscape capable of supporting viable populations of native resident and migratory species with diverse and biologically appropriate habitats, functional corridors, and ecosystem processes.”



Adaptive Management in the California Delta

- Called for in the Delta Reform Act and multiple regulatory processes
- Defined in the Delta Reform Act as...
- Can be applied at a program, plan, or project level





CALIFORNIA ECO RESTORE

A STRONGER DELTA ECOSYSTEM.

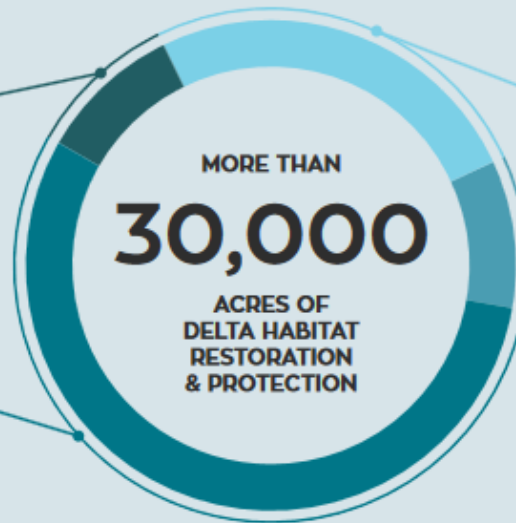
RESTORATION TARGETS

3,500 ACRES

MANAGED WETLANDS CREATED
*for subsidence reversal and
carbon management*

17,500+ ACRES

FLOODPLAIN RESTORATION
*500+ acres restored; planning,
permitting and financing secured
for an additional 17,000 acres*



9,000 ACRES

TIDAL & SUB-TIDAL HABITAT RESTORATION

1,000+ ACRES

**PROPOSITION 1 & 1E FUNDED
RESTORATION PROJECTS**
*Aquatic, riparian and upland
habitat projects; multi-benefit
flood management projects*

EcoRestore Components



RESTORATION PROJECTS



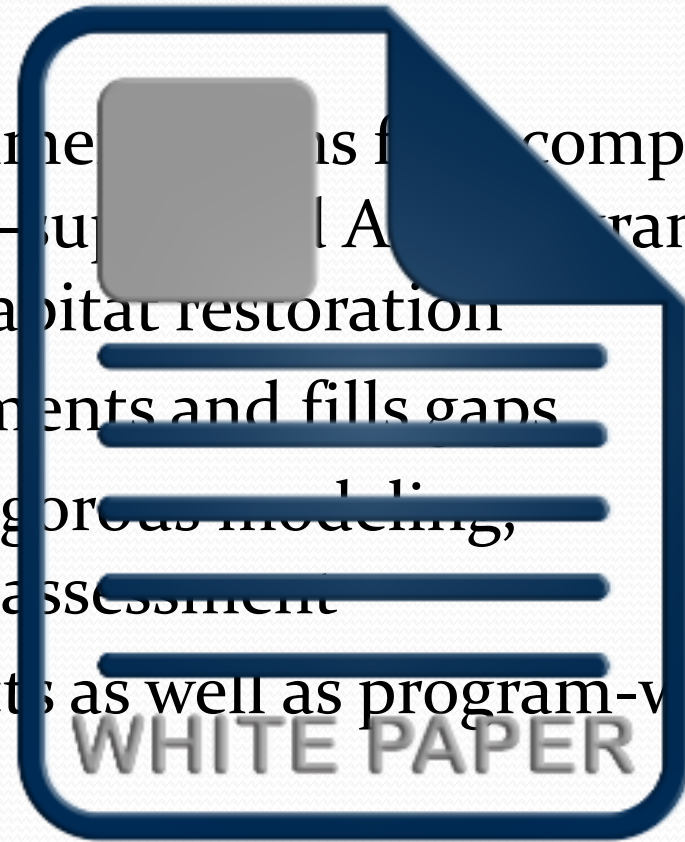
ADAPTIVE MANAGEMENT



PLANNING

EcoRestore Adaptive Management White Paper

- Purpose: to develop recommendations for a complete, integrated, and financially-sustainable Adaptive Management program for Delta and Suisun Marsh habitat restoration
- Connects existing AM elements and fills gaps
- Is based on scientifically rigorous modeling, monitoring, research, and assessment
- Supports individual projects as well as program-wide evaluation



Approach

- Who:
 - Interagency Adaptive Management Integration Team (IAMIT)
 - Policy Team (AM Steering Committee)
- How:
 - Determine desired elements of AM Program
 - Determine existing AM elements
 - ID gaps
 - Convert gaps to recommendations

Purpose of the IAMIT

Work in support of an integrated Adaptive Management Program for habitat restoration in the Delta and Suisun Marsh

- Technical coordinating body
- Strengthen collaborations
- Elevate and enhance existing efforts



Who is on the IAMIT?

- Delta Conservancy
- Delta Counties (Contra Costa, Solano, Sacramento, San Joaquin, and Yolo)
- Delta Stewardship Council
- Delta Science Program
- CDFW
- DWR
- DWR EcoRestore
- NOAA NMFS
- NOAA Fisheries Science Center
- NGO Representative
- Reclamation
- SFCWA
- SWRCB
- USFWS
- USGS

Recommendations

34 Recommendations in 10 categories:

- Governance
- Goals and Objectives
- Conceptual models and key uncertainties
- Quantitative modeling
- Data management
- Project-level support
- Monitoring and research
- Analysis and synthesis
- Communication
- Regulatory support

Review

- AM Steering Committee
- EcoRestore Status Meeting
- Colleague reviewers
- Delta Independent Science Board

White Paper Implementation

- Recommendations divided among AM Steering Committee, IAMIT and individual agencies/organizations

IAMIT role:

1. Develop interagency collaborative products
2. Provide consultation and further advice to others
3. Track the status of all White Paper recommendations

Some Key Lessons Learned:

- An interdisciplinary and interagency effort
- Vetting
- Communication
- It takes time
- Stuff happens



Questions





Adaptive Management: Problem Statement

“Past attempts to adaptively manage Delta water operations and habitat restoration have rarely covered the full adaptive management cycle, and have not considered the appropriate time frame and spatial scale required for changes to occur as a result of management actions. System-wide progress toward achieving the coequal goals will not be possible if multiple adaptive management efforts are incomplete, nonintegrated, fail to consider system-wide and local effects, or are unable to respond within the time frame of management actions” (Delta Stewardship Council, 2013).

“Coequal goals means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.” (CA Water Code §85054)

Appendices

- Appendix 1: Existing Resources Supporting Adaptive Management
- Appendix 2: Key Gaps and Needs for Adaptive Management
- Both appendices organized by AM Phases and cross-cutting effort
 - Plan
 - Do
 - Evaluate and Respond
 - Data Management

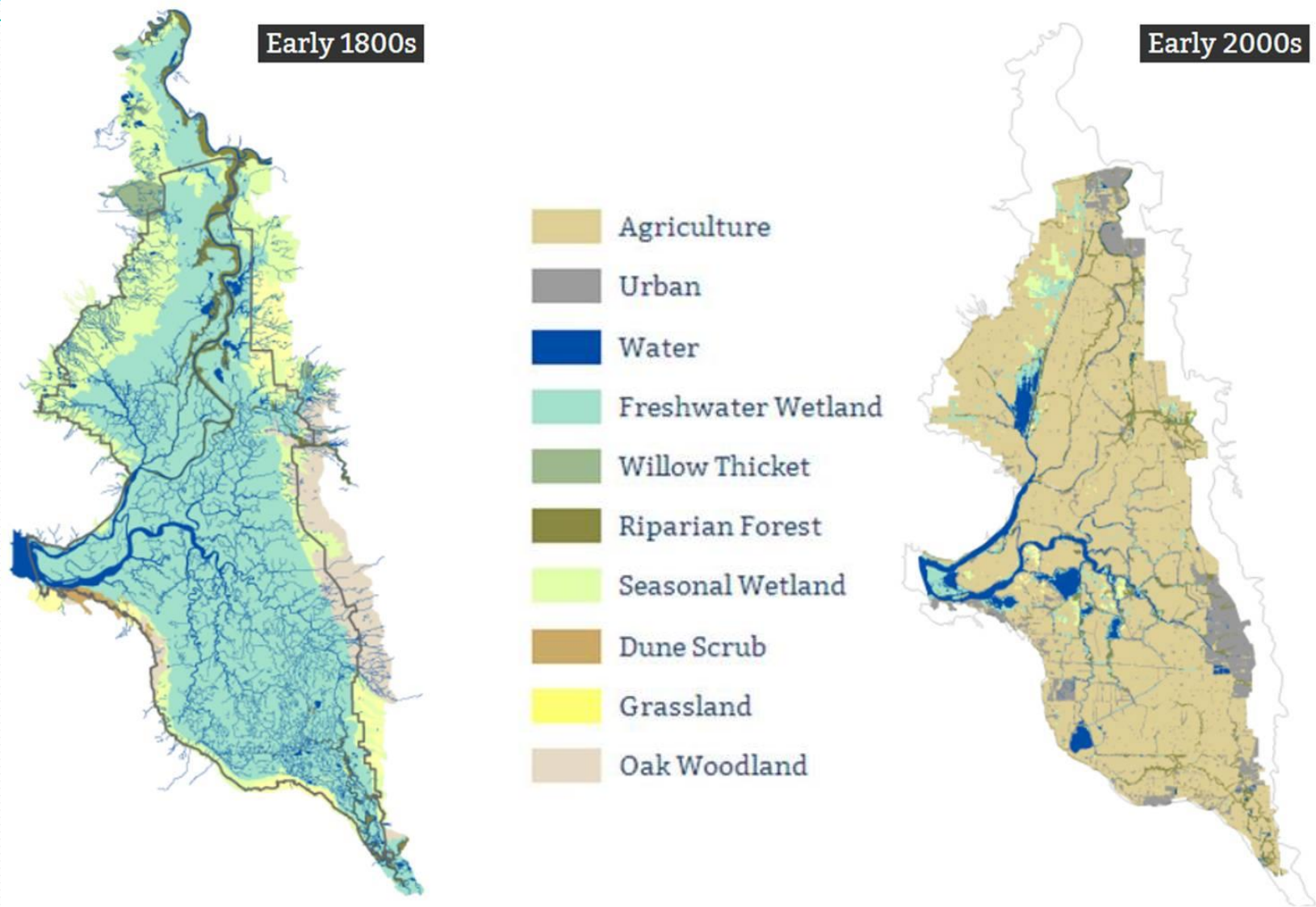


Image Credit: San Francisco Estuary Institute, Whipple, A., R. Grossinger, D. Rankin, B. Stanford, and R. Askevold. 2012. Sacramento-San Joaquin Delta Historical Ecology Investigation: Exploring Pattern and Process. San Francisco Estuary Institute, 672, Richmond. <http://www.sfei.org/DeltaHEStudy>.