Monitoring and Managing Bays, Estuaries, and Lagoons: State Wildlife Action Plan and MPAs

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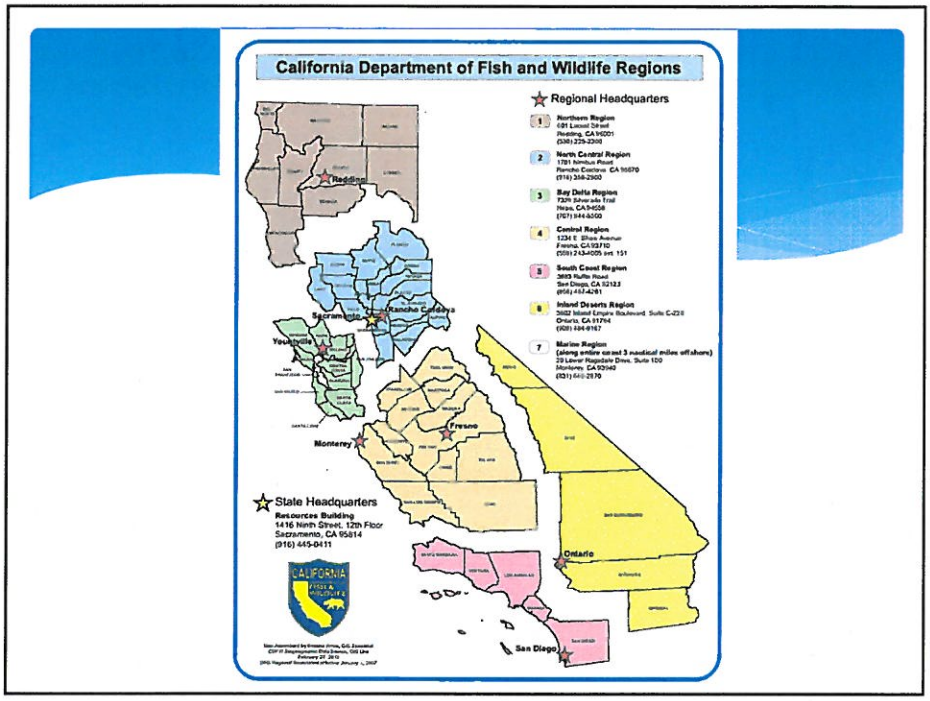
June 28, 2014

Overview

- CDFW Management of Upper Newport Bay – Ecological Reserve and Marine Protected Areas
- Brief Introduction to SWAP and the Open Standards Process
- Marine Targets, Key Ecological Attributes, Stresses & Threats
- Strategies and Companion Plan
- Monitoring Bays, Estuaries, and Lagoons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Yountville
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Monterey
Ontario
San Diego
State Headquarters
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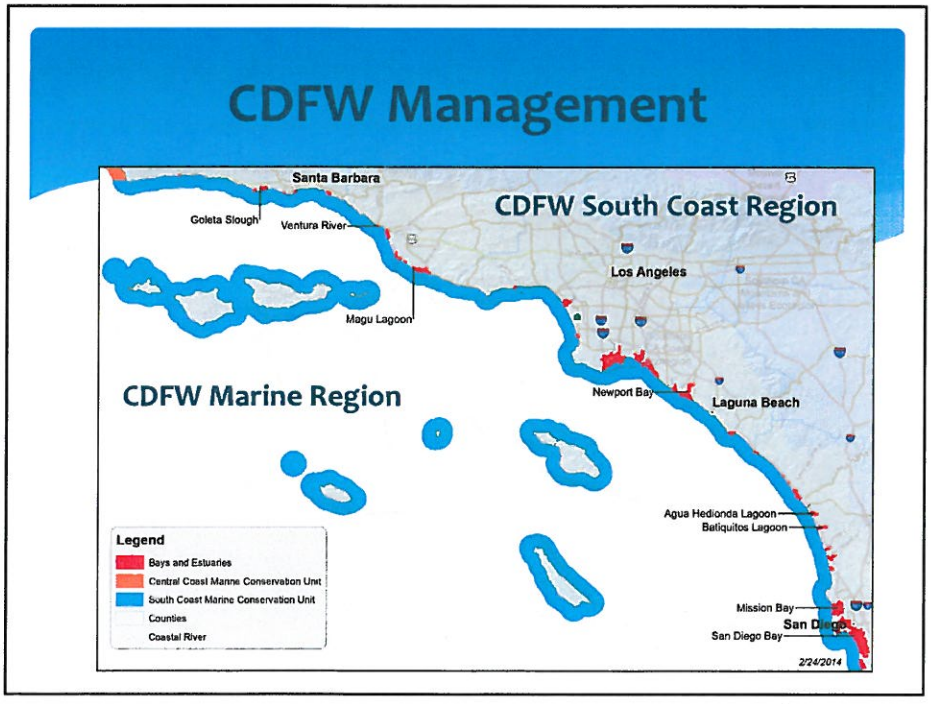
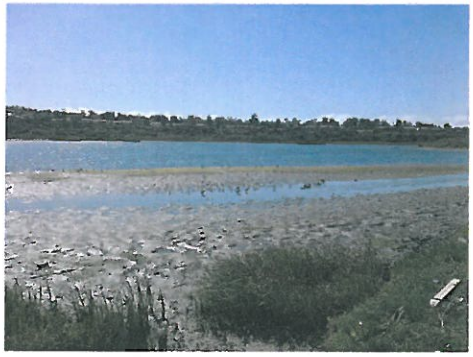

CDFW Management
Santa Barbara
Goleta Slough
Ventura River
CDFW South Coast Region
Los Angeles
Malibu Lagoon
CDFW Marine Region
Newport Bay
Laguna Beach
Agua Hedionda Lagoon
Batiquitos Lagoon
Mission Bay
San Diego
San Diego Bay
Legend
Bays and Estuaries
Central Coast Marine Conservation Unit
South Coast Marine Conservation Unit
Counties
Coastal River
2/24/2014

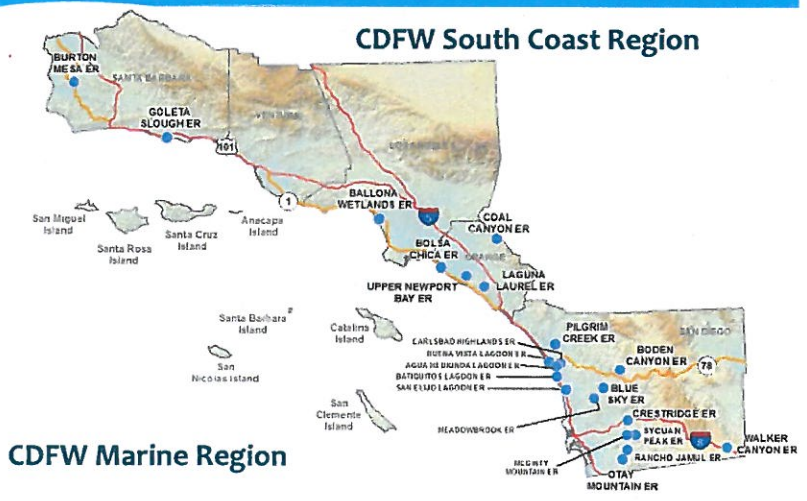
CDFW Management - Ecological Reserves

- Ecological Reserve System authorized by CA Legislature in 1968
- Designed to conserve areas for the protection of rare plants, animals, and habitats
- Provides areas for education, research, and public enjoyment



Upper Newport Bay ER. Robin Madrid, CDFW

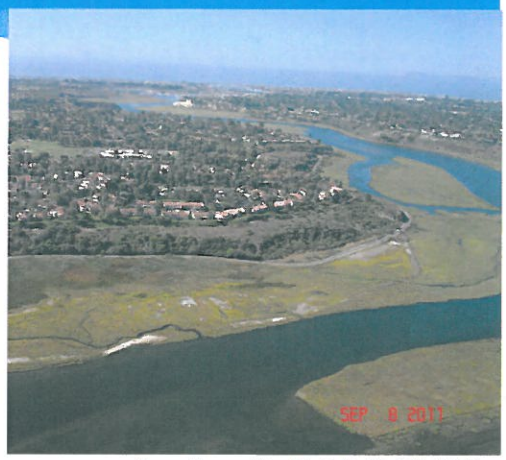
CDFW Management



Upper Newport Bay Ecological Reserve

Buena Vista Lagoon ER was the first ecological reserve; designated in 1968

The Upper Newport Bay ER was designated in 1975.



Upper Newport Bay ER. Robin Madrid, CDFW

Managing Upper Newport Bay

CDFW

- South Coast Region
  - Carla Navarro-Woods
  - Robin Madrid
  - Others…..
- Marine Region
- Habitat Conservation Branch
- Office of Spill Prevention & Response
  - Marine Invasive Species
- Wildlife Branch
- Fisheries Branch

Other State Agencies

- State Water Control Board
- SCCWRP
- State Lands Commission
- Department of Water Resources

Local Agencies, Cities, etc.
Federal Agencies

MLMA & MLPA

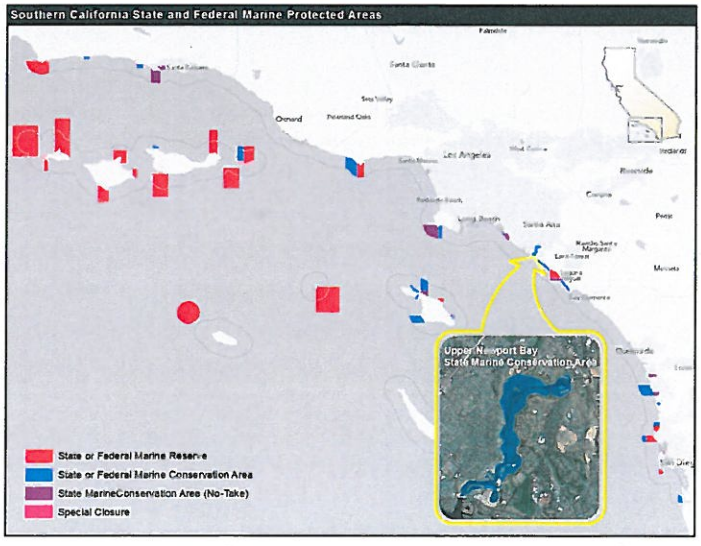
Marine Life Management Act

- Adopted in 1998 and became effective in 1999
- Provided guidelines for managing California's marine resources
- Called for sustainable management of fisheries and ecosystem-based management

Marine Life Protection Act

- Enacted in 1999
- Primary goals are to protect marine life and habitats, marine ecosystems and marine natural heritage, as well as improve recreational, educational and study opportunities provided by marine ecosystems.

South Coast Marine Protected Areas



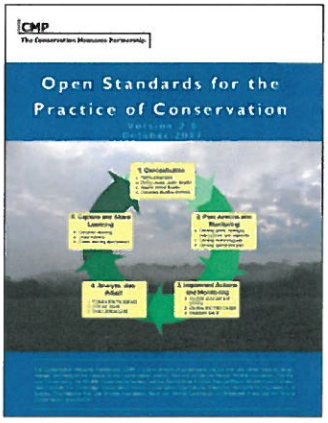
Upper Newport Bay State Marine Conservation Area

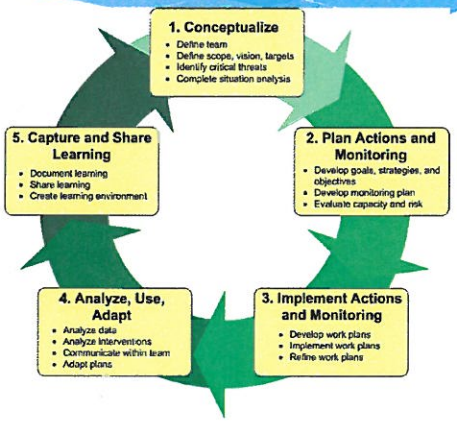
- Covers approx. 1,000 acres
- Overlaps Upper Newport Bay ER but does not contain all of the ER
- Includes waters below mean high tide
- Allowance provided for recreational take of finfish by hook-and-line from shore
- Specific operations such as maintenance dredging, habitat restoration, research, education, and facility maintenance are allowed

State Wildlife Action Plan 2015 Update

- Initial State Wildlife Plan was completed in 2005; provided very general strategies for managing wildlife
- Update required by US Fish and Wildlife Service at least every 10 years in order to receive federal wildlife funds.
- Benefits:
  - Creates strategies to preserve California's diverse habitats that are implementable, measurable, and time bound
  - Ensures a sustainable future for wildlife – and the enjoyment of wildlife by generations to come.

Developing the Plan





Defining the Scope

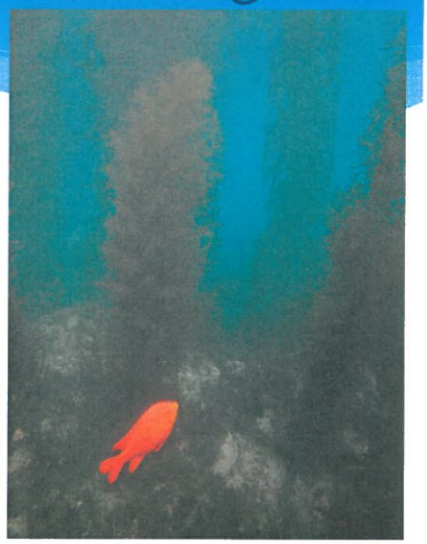
Using Conservation Units

- Ecoregions
- Hydrologic Units = Watersheds
- Marine Conservation Units

Marine Conservation Targets

Broad Ecosystems:

* Bays, Estuaries, & Lagoons
* Intertidal (rocky, beaches)
* Nearshore Zone (0-30 m)
* Mid-Depth Zone (30-100 m)
* Deep Zone (>100 m)



CDFW

Marine Conservation Targets

Derek Stein, CDFW

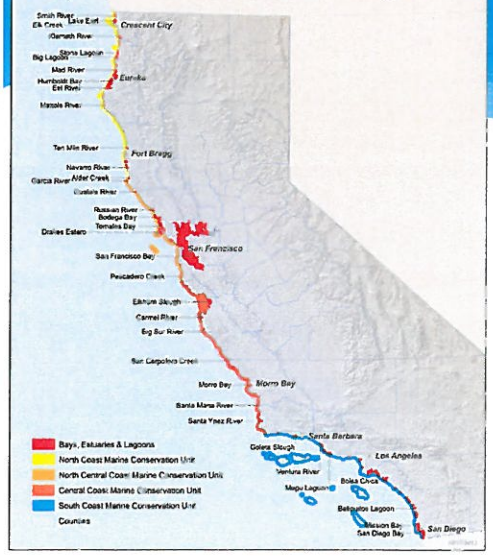
* Bays, Estuaries, & Lagoons
* Intertidal (rocky, beaches)
* Nearshore Zone (0-30 m)

Marine Conservation Targets

* Bays, Estuaries, & Lagoons

Humboldt Bay. Annie Eicher

Bays, Estuaries & Lagoons



Marine Region:

- North Coast
- N-C Coast
- Central Coast
- South Coast

Bays, Estuaries, and Lagoons

Tijuana River Estuary/ Tijuana River National Estuarine Research Reserve

Los Peñasquitos Lagoon. Tim Dillingham, CDFW

Important Key Ecological Attributes (KEA) and Stressors

KEA
- Surface water flow regime
- Freshwater input – water quality

Stressors
- Changes in freshwater input
- Changes in quality of freshwater input

U.S. Fish & Wildlife Service

Important KEA and Stressors

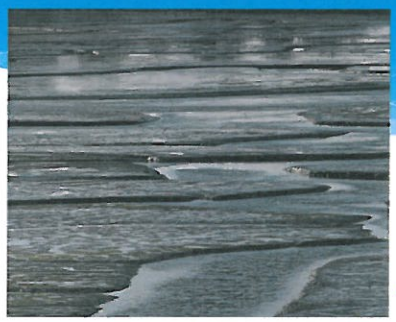
KEA
- Area/extent
- Circulation
- Connectivity

Stressors
- Reduction in area
- Changes in circulation patterns
- Altered tidal mixing
- Change/loss in connectivity

Batiquitos Lagoon. Tim Dillingham, CDFW

Important KEA and Stressors

KEA
- Water quality
- Quality of sediments
- Biogenic habitat



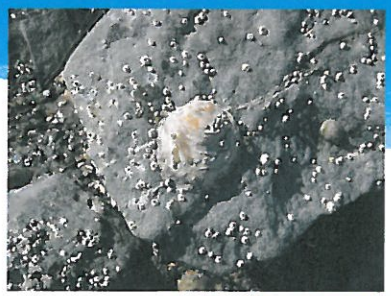
Dave Feliz, CDFW

Stressors
- Decrease in quality of water and sediments within water bodies
- Decrease in seagrass (eelgrass) beds

Kirsten Ramey, CDFW

Important KEA and Stressors

KEA
- Biotic assemblages
- Biotic interactions



Kirsten Ramey, CDFW

Stressors
- Decrease in native species populations including shorebirds and native bivalves

Robin Madrid, CDFW

Species of Interest

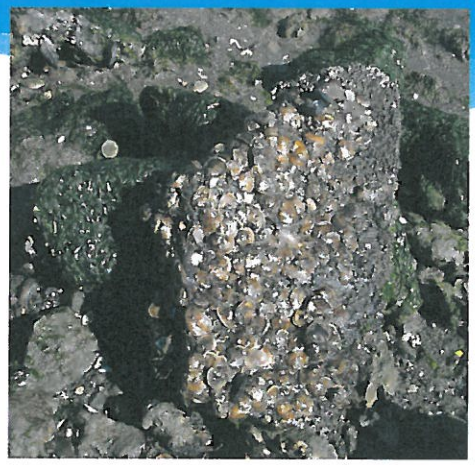
Tidewater Goby. Mike Wallace, CDFW

California Least Terns. Robin Madrid, CDFW

Light-footed Clapper Rail. Robin Madrid, CDFW

Species of Interest

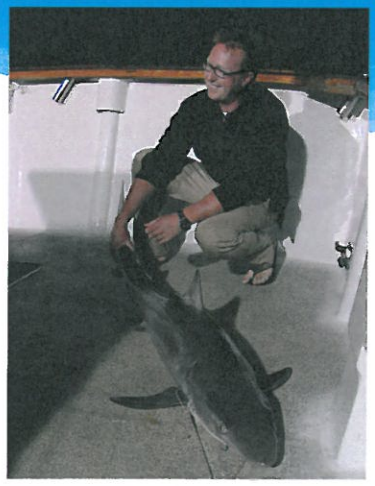
Seagrasses. Kirsten Ramey, CDFW



Native Oysters. Kirsten Ramey, CDFW

Species of Interest

California Halibut. Travis Tanaka, CDFW



Soupfin Shark, Ed Roberts., CDFW

Identify Critical Human-related Activities (Threats)

- For Bays, Estuaries, and Lagoons, identified 22 threats
  - Includes threats related to:
    - Watershed Inputs
    - Pollutants and Pathogens
    - Development
    - Consumptive Uses
- Using Open Standards Process, narrowed these down to ten critical threats

Human-related Activities

Aqua Hedionda Lagoon. Tim Dillingham, CDFW

- Shoreline Development
- Urban Runoff

- Diversion/Control of Freshwater
- Agricultural Runoff

San Luis Rey River. Tim Dillingham, CDFW

Human-related Activities

- Hazardous Spills
- Invasive Species

Calerpa. Bill Paznokas, CDFW

Batiquitos Lagoon. Tim Dillingham, CDFW

Human-related Activities

Modification of Mouth/Channels

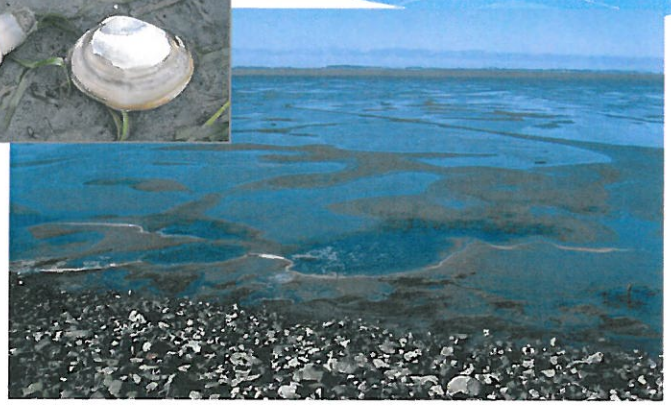
Buena Vista Lagoon. Tim Dillingham, CDFW

Batiquitos Lagoon. CDFW Archived Photo

Human-related Activities

Climate Change and Ocean Acidification

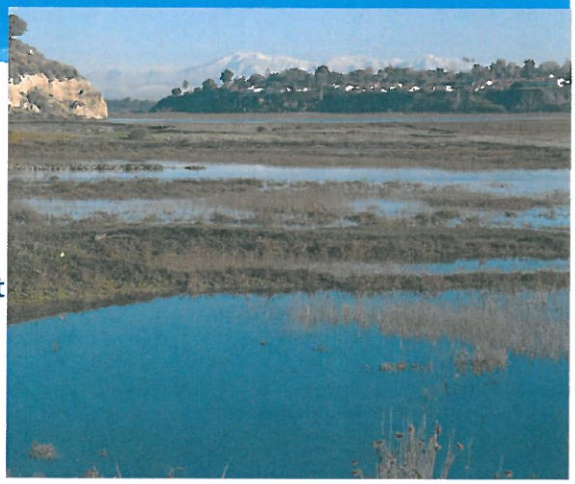
B. McVeigh, CDFW



Humboldt Bay. Annie Eicher

Strategies

* Improve engagement in decision-making process
* Coordinate with relevant local and state agencies on shoreline management planning
* Advocate for policies and practices that minimize impacts on shorelines and wetlands



Upper Newport Bay ER. Robin Madrid, CDFW.

Strategies

* Improve rapid response capabilities to events that degrade target
* Support development, implementation, and enforcement of effective regulations
* Expand education and outreach activities

Upper Newport Bay. Robin Madrid, CDFW

Strategies

* Expand restoration activities
* Support monitoring activities and data integration into management
* Encourage research
* Perform vulnerability assessment of marine resources to climate change and ocean acidification

Elkhorn Slough. Dave Feliz, CDFW

Strategies – Companion Plan

Companion Plan:

- Will be developed with agencies and partners that are likely to be involved in implementation of the SWAP strategies
- Provides venue for discussions of conservation goals and prioritization of conservation strategies, objectives, and actions

Strategies Across Conservation Units

Watersheds

- Common strategies and objectives

SWAP – Managing Ecosystems

- SWAP provides one approach for managing ecosystems sustainably
- MPAs are a tool in our management toolbox
- Monitoring MPAs is a one approach for evaluating ecosystem health (general strategy) – South Coast MPA Monitoring Plan (developed by the MPA Monitoring Enterprise and CDFW)

Southern CA Monitoring for Bays and Estuaries

Vital Signs

- Eelgrass areal extent
- Ghost & mud shrimp abundance
- Clam abundance & size frequency (Pacific gaper, Washington & common littleneck)
- Marine birds richness & abundance
- California halibut abundance & size frequency
- Croaker abundance & size frequency
- Arthropod biomass
- Pinniped abundance (harbor seal, California sea lion, northern elephant seal)

Monitoring

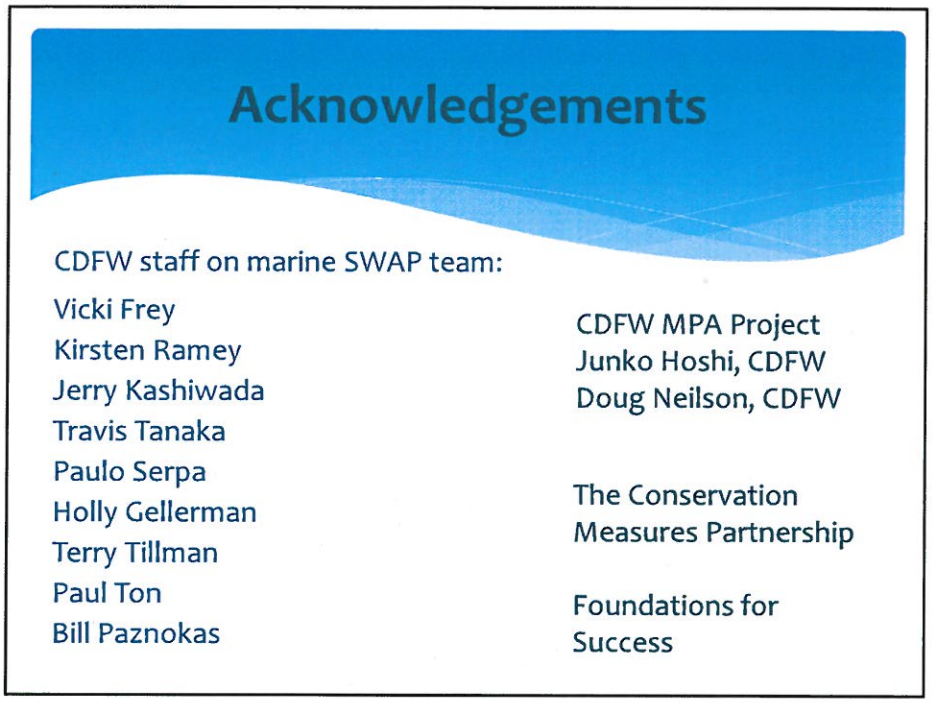
Ecosystem Assessment

- Biogenic Habitat: Plants
  - Areal extent of focal species:
    - Eelgrass, pickleweed
- Trophic Structure: Infaunal Assemblage
  - Abundance of focal species:
  - Mud shrimp, ghost shrimp, Pacific gaper clam, Washington clam, common littleneck clam
- Trophic Structure: Predatory Birds
  - Piscivorous bird richness & abundance
  - Shorebird richness & abundance

Monitoring

Ecosystem Assessment

- Trophic Structure: Predatory Fishes
  - Density & size structure of focal species:
    - Leopard shark, California halibut
- Trophic Structure: Predatory Fishes
  - Density & size structure of focal species:
    - Leopard shark, California halibut
- Trophic Structure: Resident Species
  - Density & size structure of focal species:
    - Spotted sand bass, gobies, topsmelt , croaker (multiple species)
- Productivity
  - Arthropod biomass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Foundations for Success