

Successes and Challenges of Fisheries Resources in a Large Restoration Project

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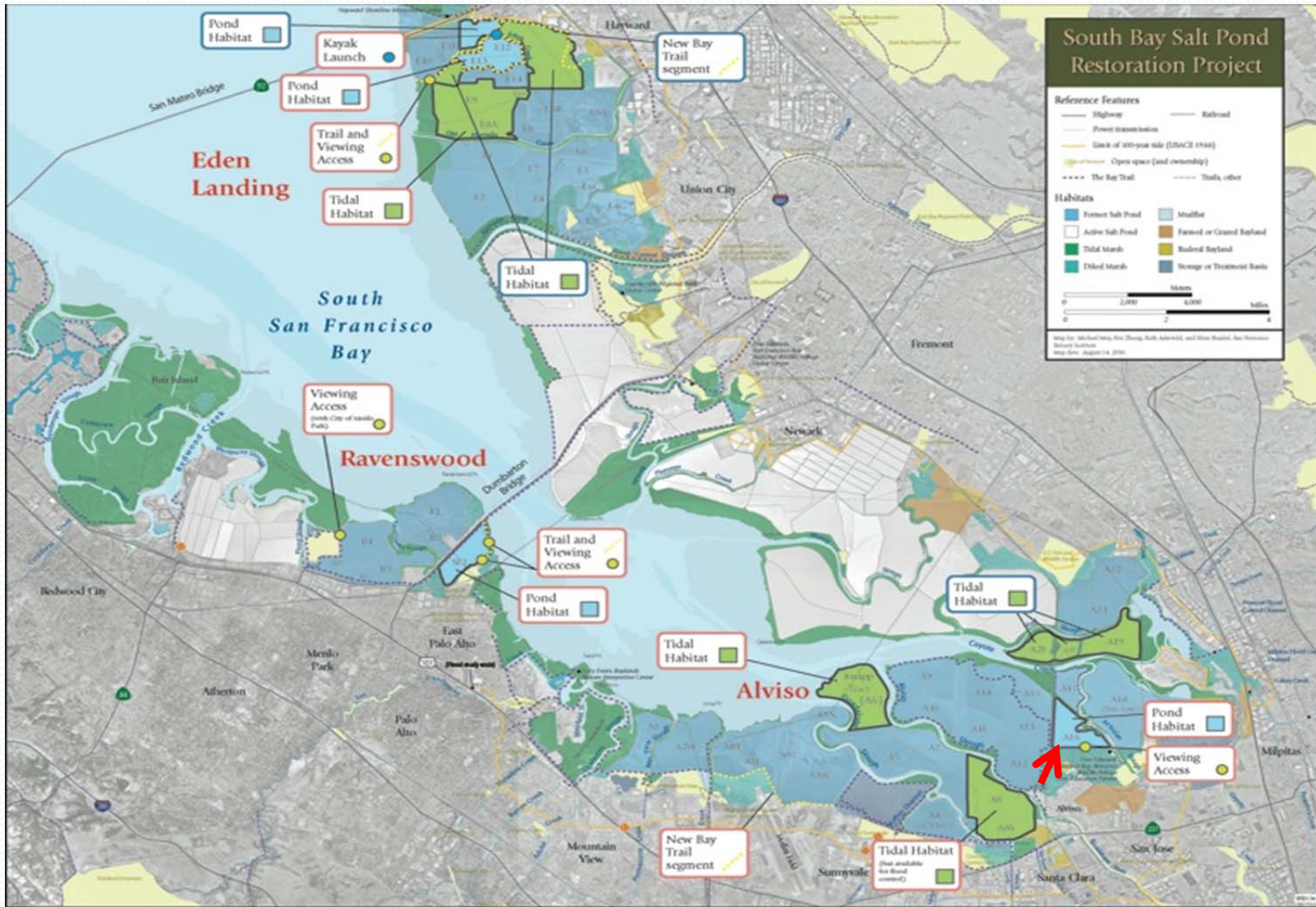
Eric Mruz, U.S. Fish and Wildlife Service



Overview

- Restoration creates new and novel habitat for fish
- Steelhead smolt migration and restoration use in the Guadalupe River-Alviso system
- Entrainment of chinook salmon in managed ponds





Initial Restoration Actions

South Bay Salt Pond Restoration Project

2006 - 07

proposed 2008

Reconciliation Ecology

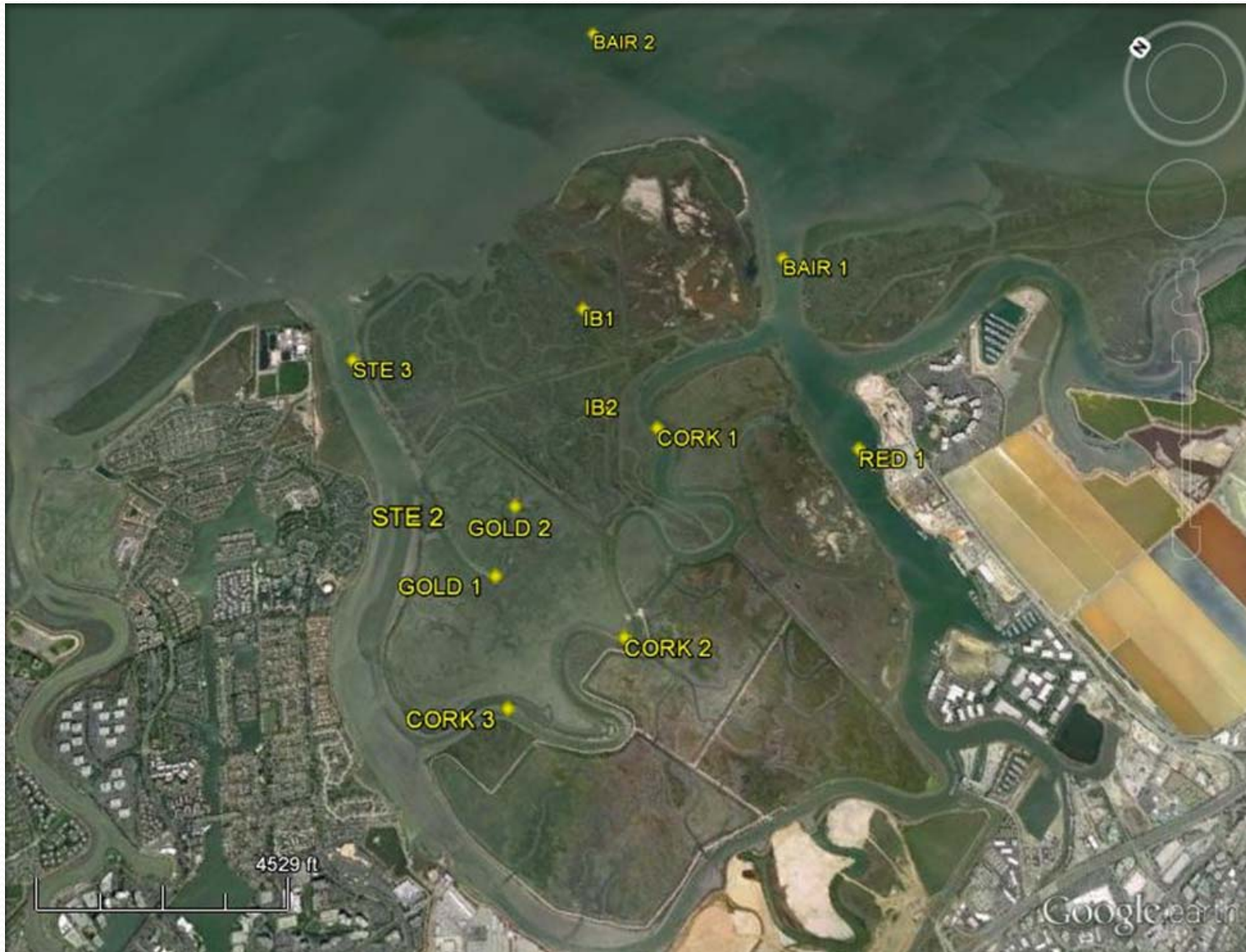


Cris Benton

Alviso Marsh Complex



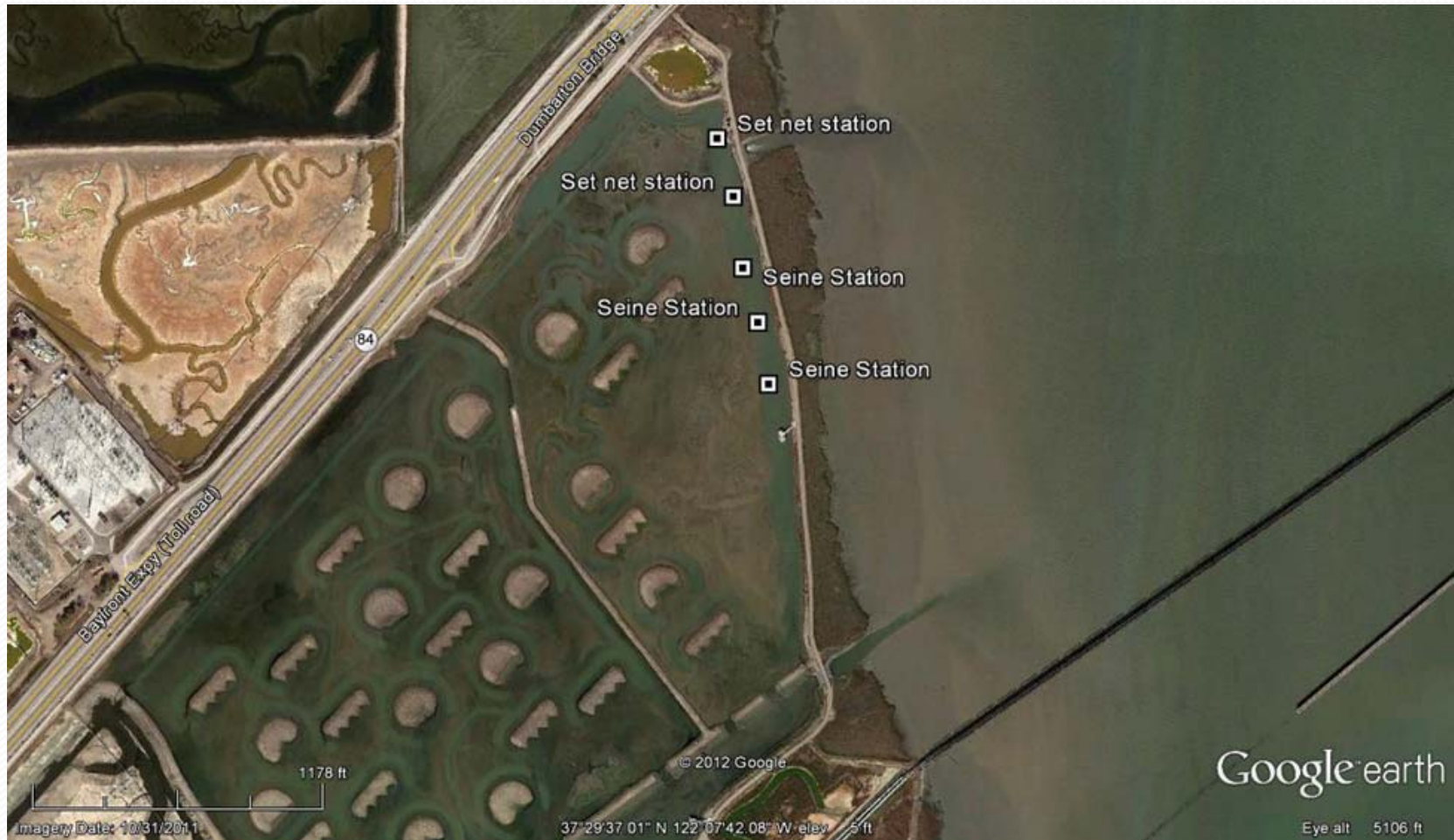
Bair Island Marsh



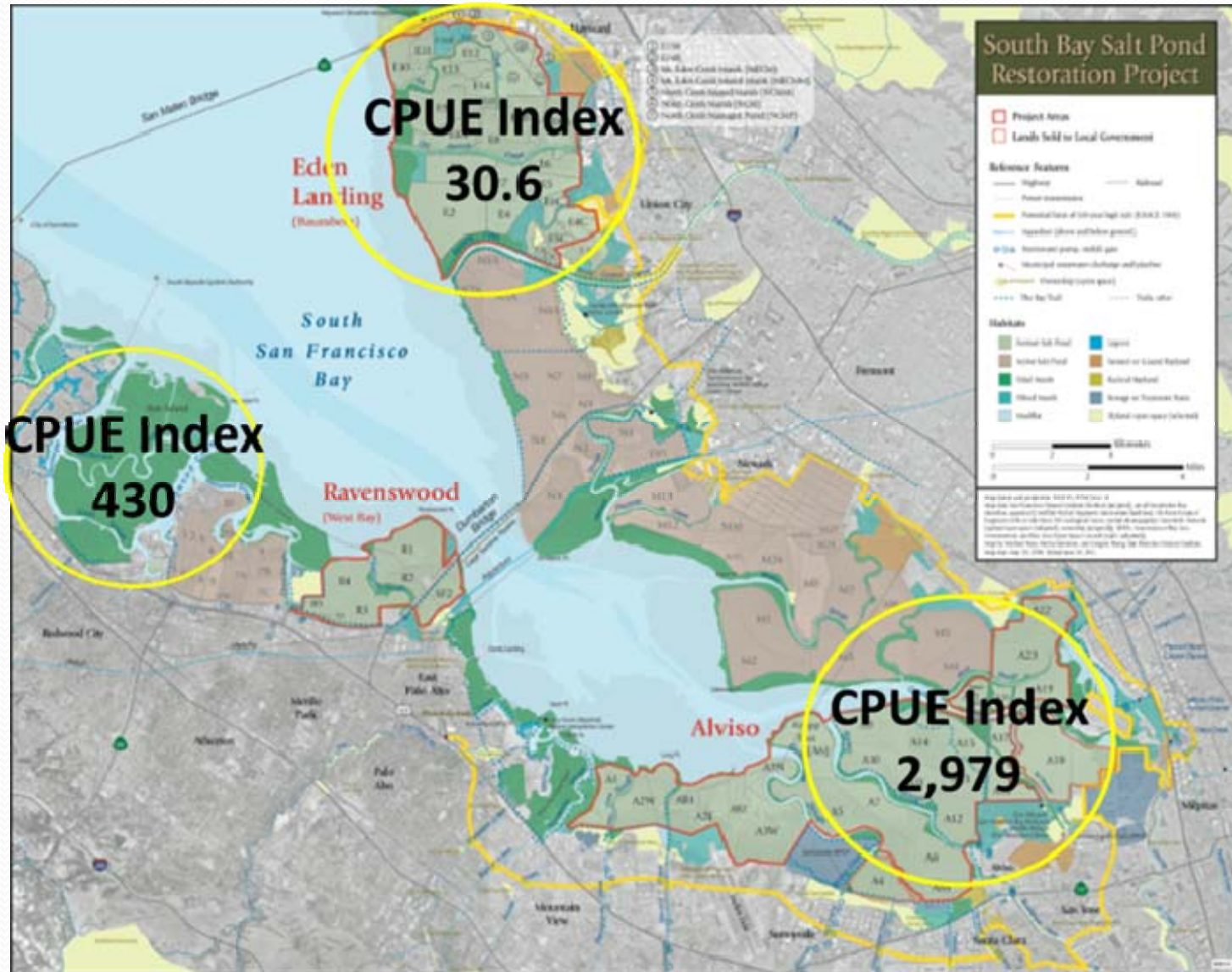
Eden Landing Marsh



Pond SF2 Ravenswood Marsh



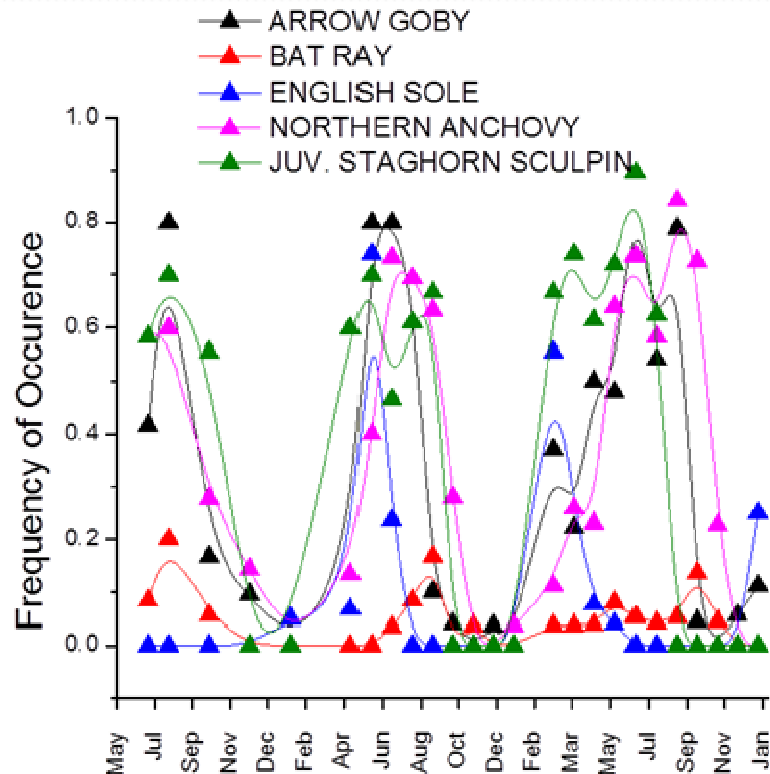
Highest CPUE is at Alviso Marsh



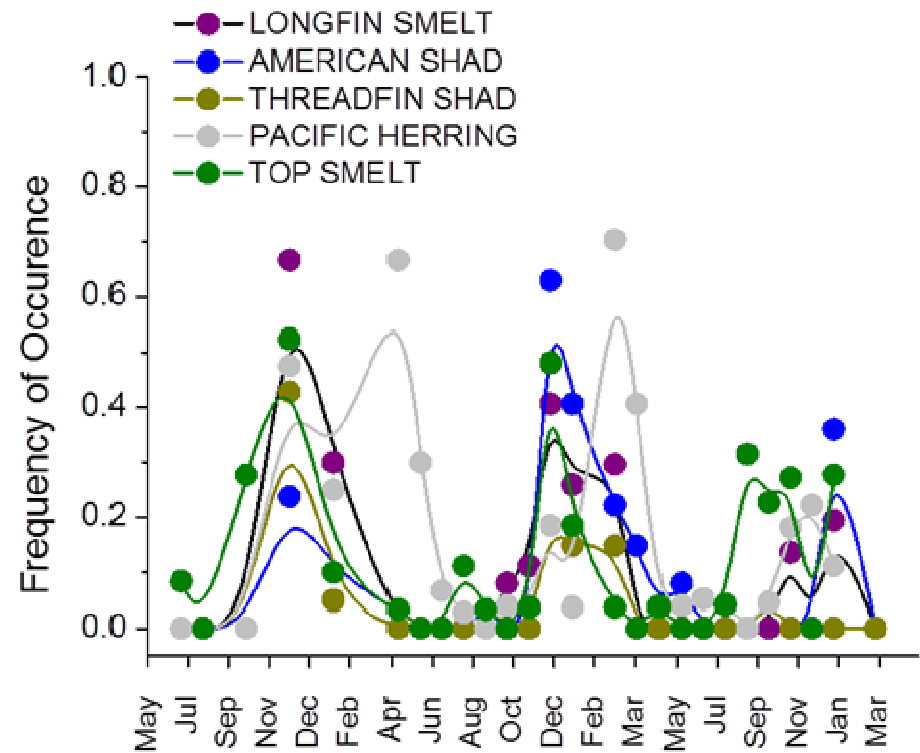
Alviso Complex has seasonal pattern



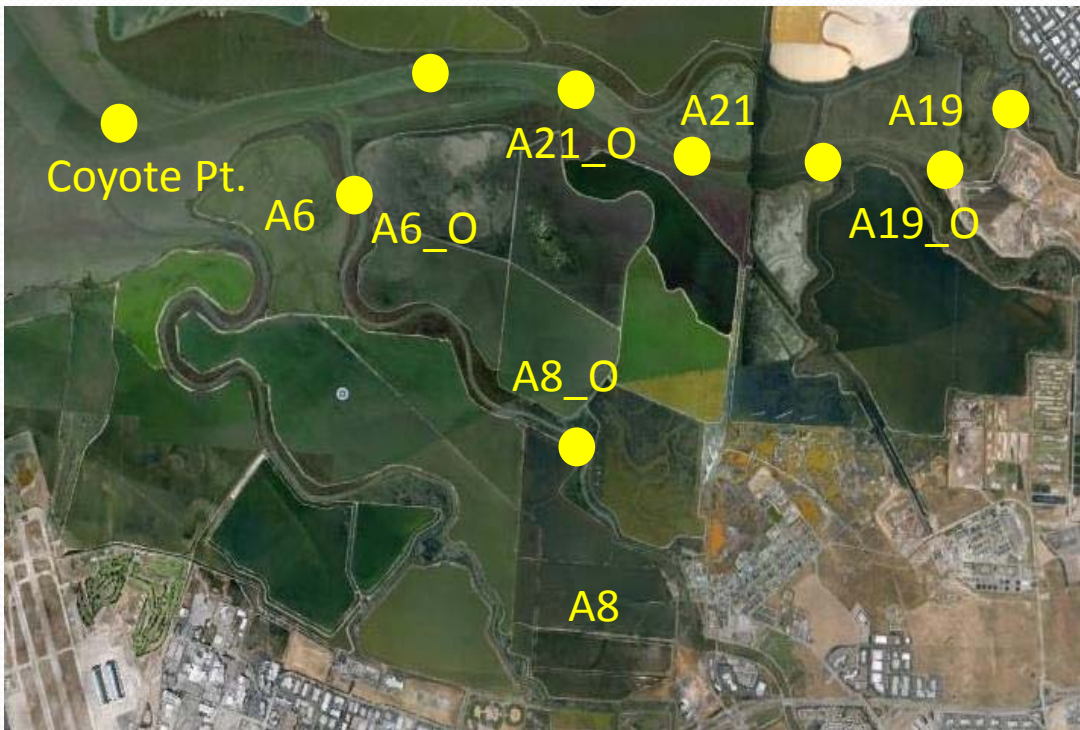
Summer Assemblage



Winter Assemblage



Alviso-Coyote Complex



- July 2010 – Sept 2013
- 266 trawls
- 49 species of fish
- 24,449 fish
- 7 species accounted for >90% of fish collected

1. Staghorn Sculpin



2. 3-Spine Stickleback



3. Northern Anchovy



4. English Sole



5. Pacific Herring



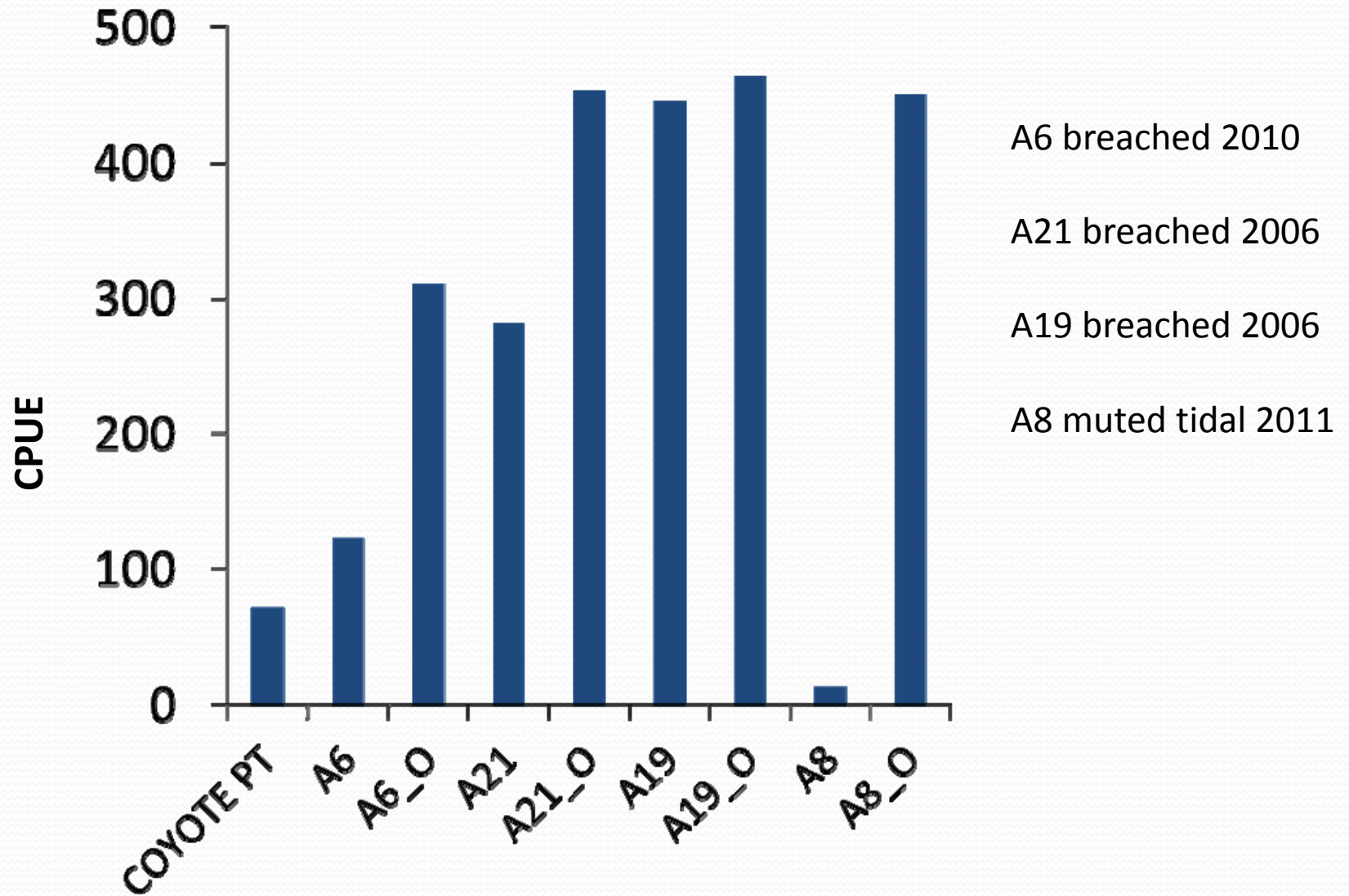
6. Arrow Goby



7. Yellowfin Goby



Restored Ponds Similar to Extant Habitat

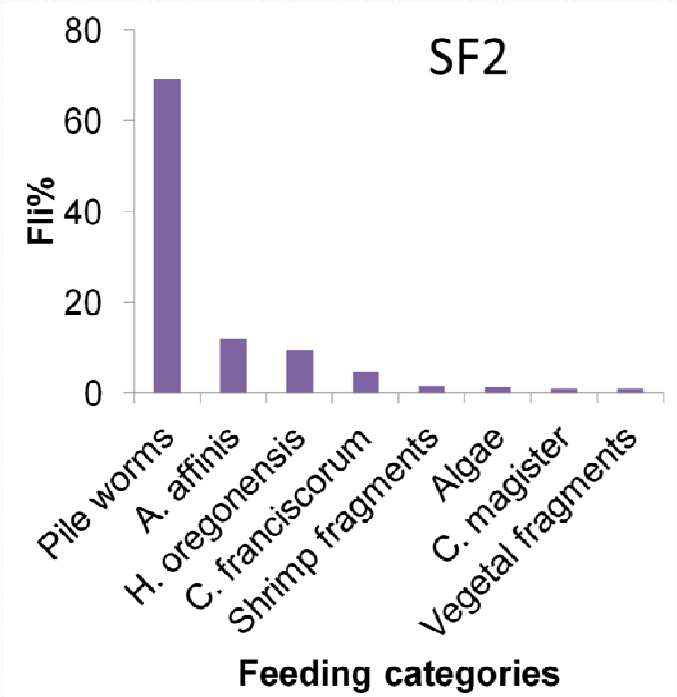
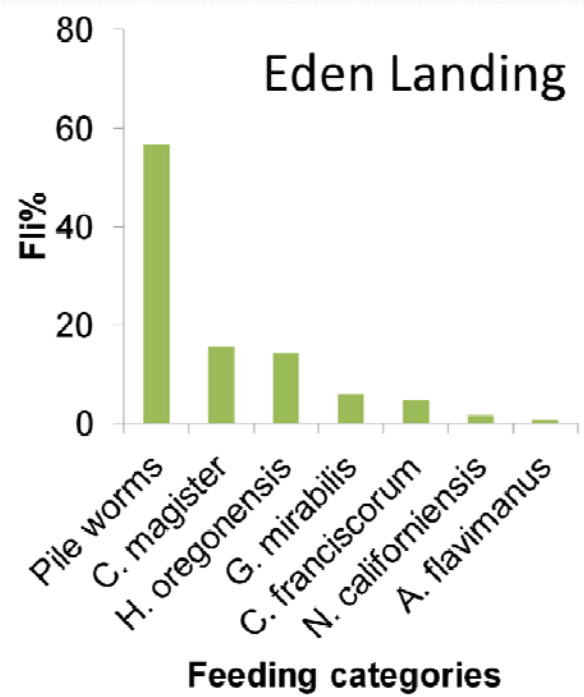
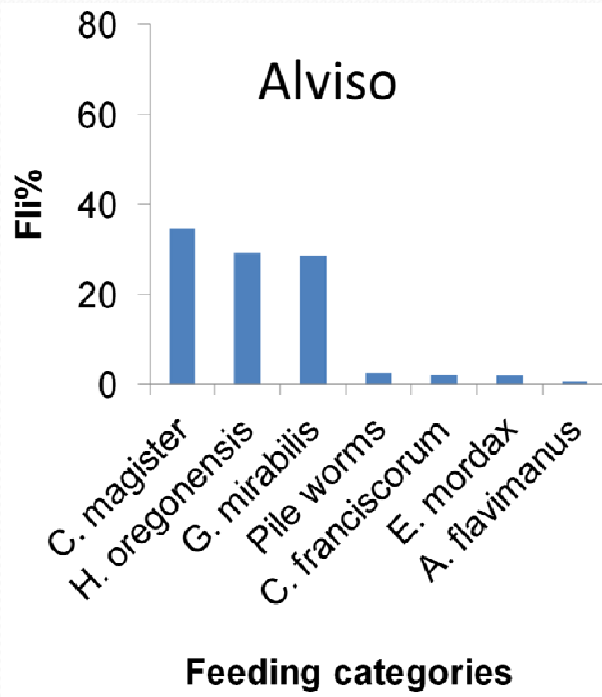


Leopard Shark Studies

- Sampled with gillnets and hook and line
- CPUE was highest at Eden Landing



Diet Diversity Varied By Pond Complex

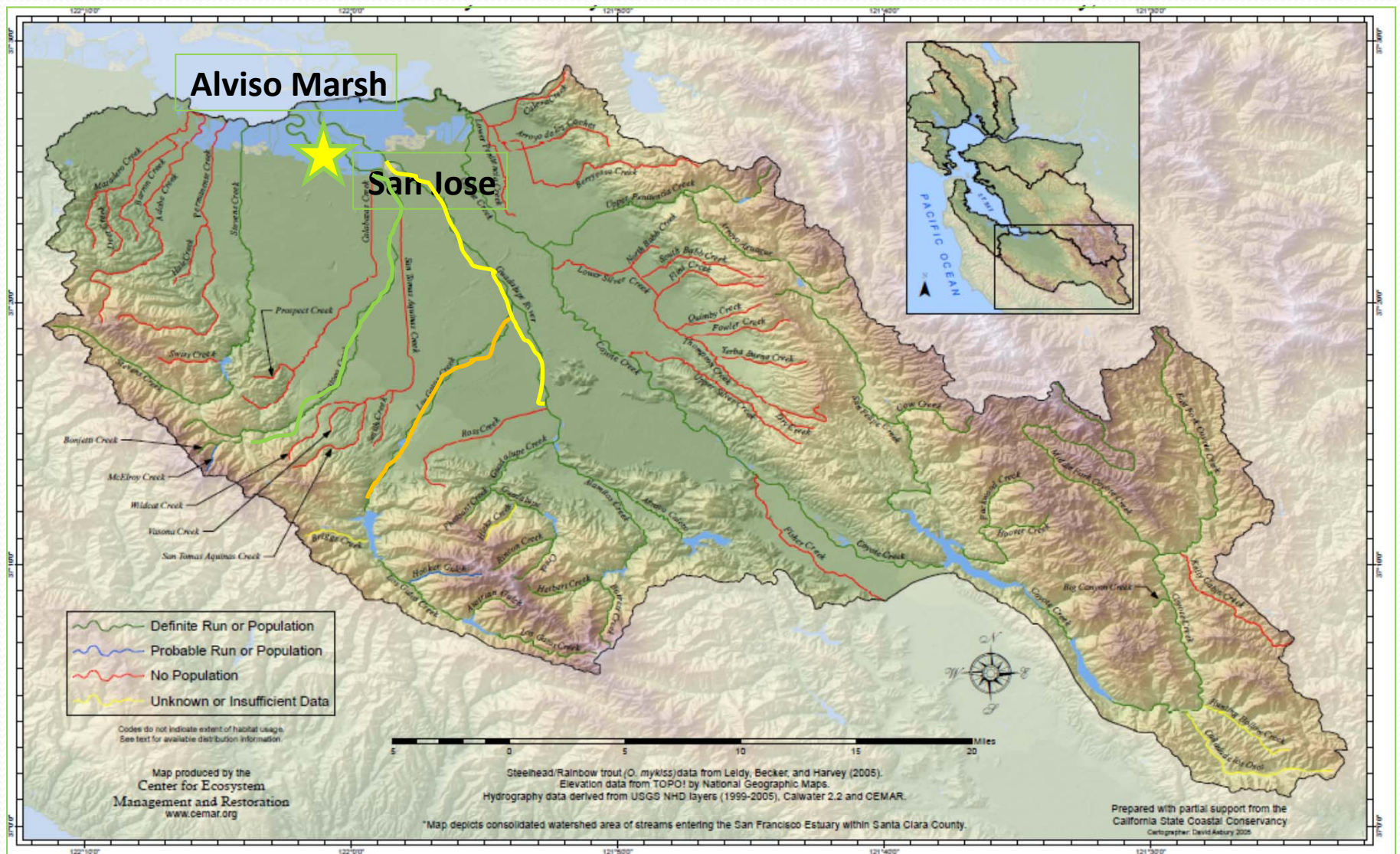


Overview

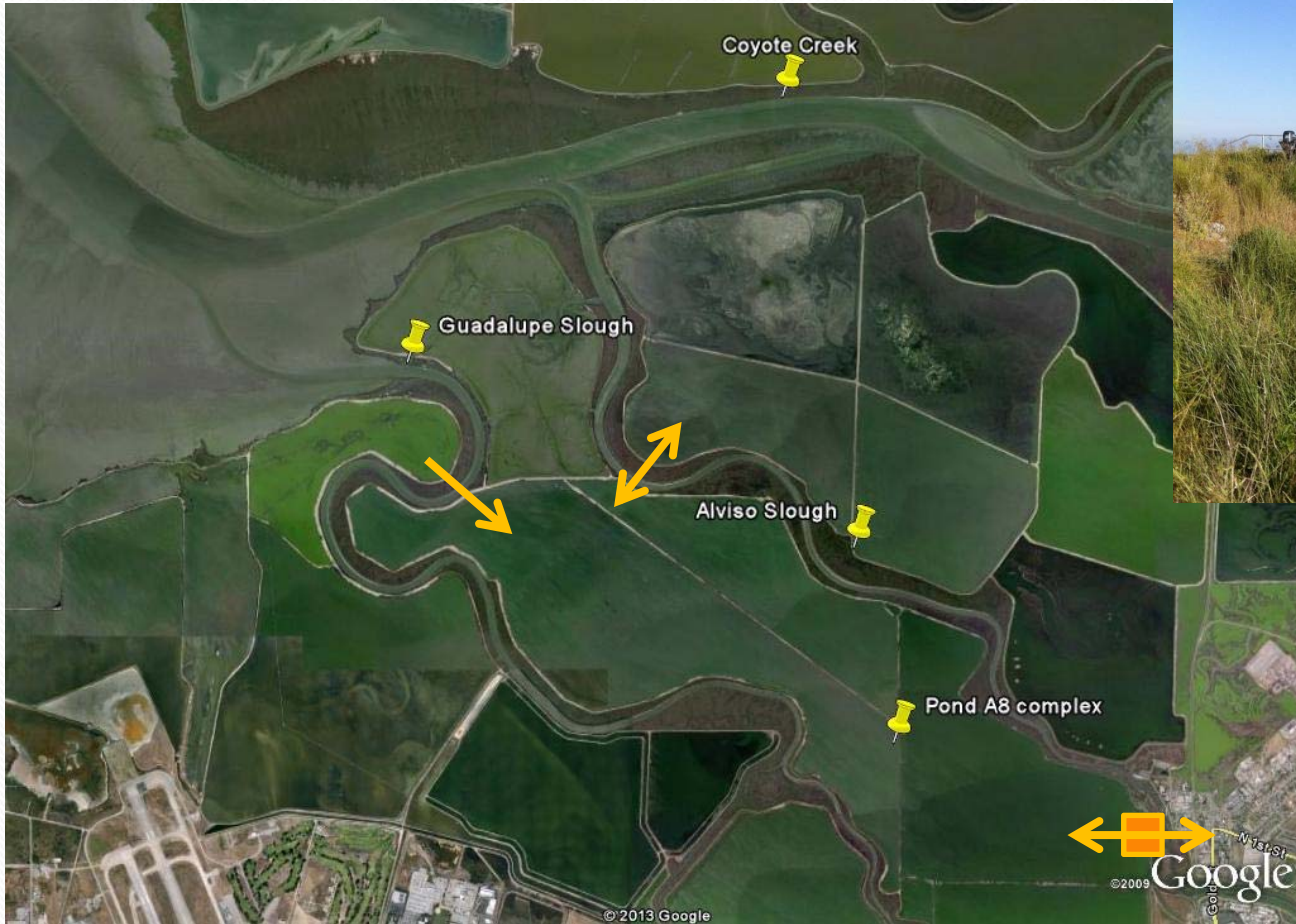
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Steelhead Out-Migration Study



Will Steelhead Use Restored Habitats?



 Armored Notch

Opened early
March 2014

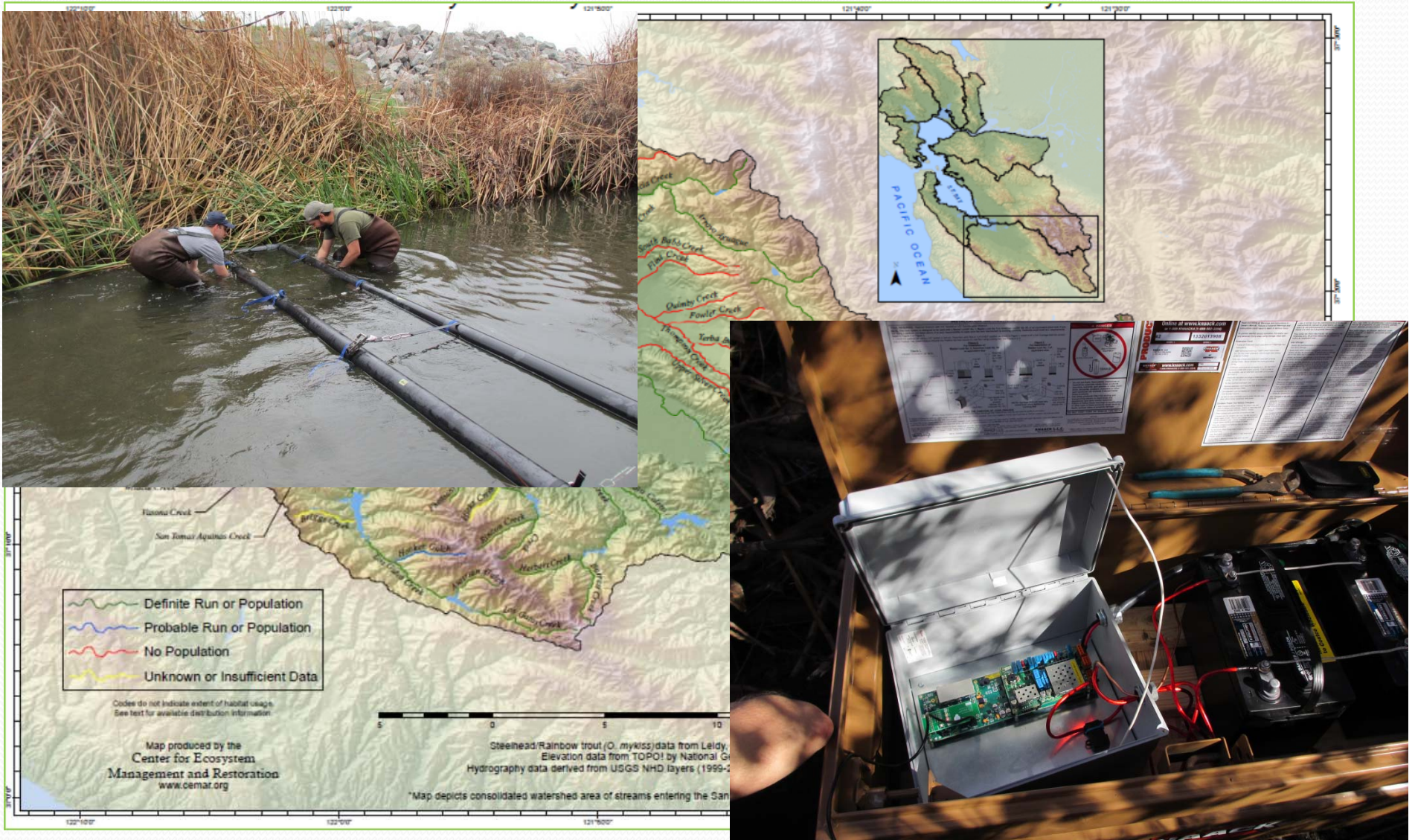
PIT Tagging Steelhead

So Far:

- 74 fish tagged from Dec 2013 – March 2014
- Lower Guadalupe River & Los Gatos Creek.



Steelhead Smolt Study – RFID Antenna

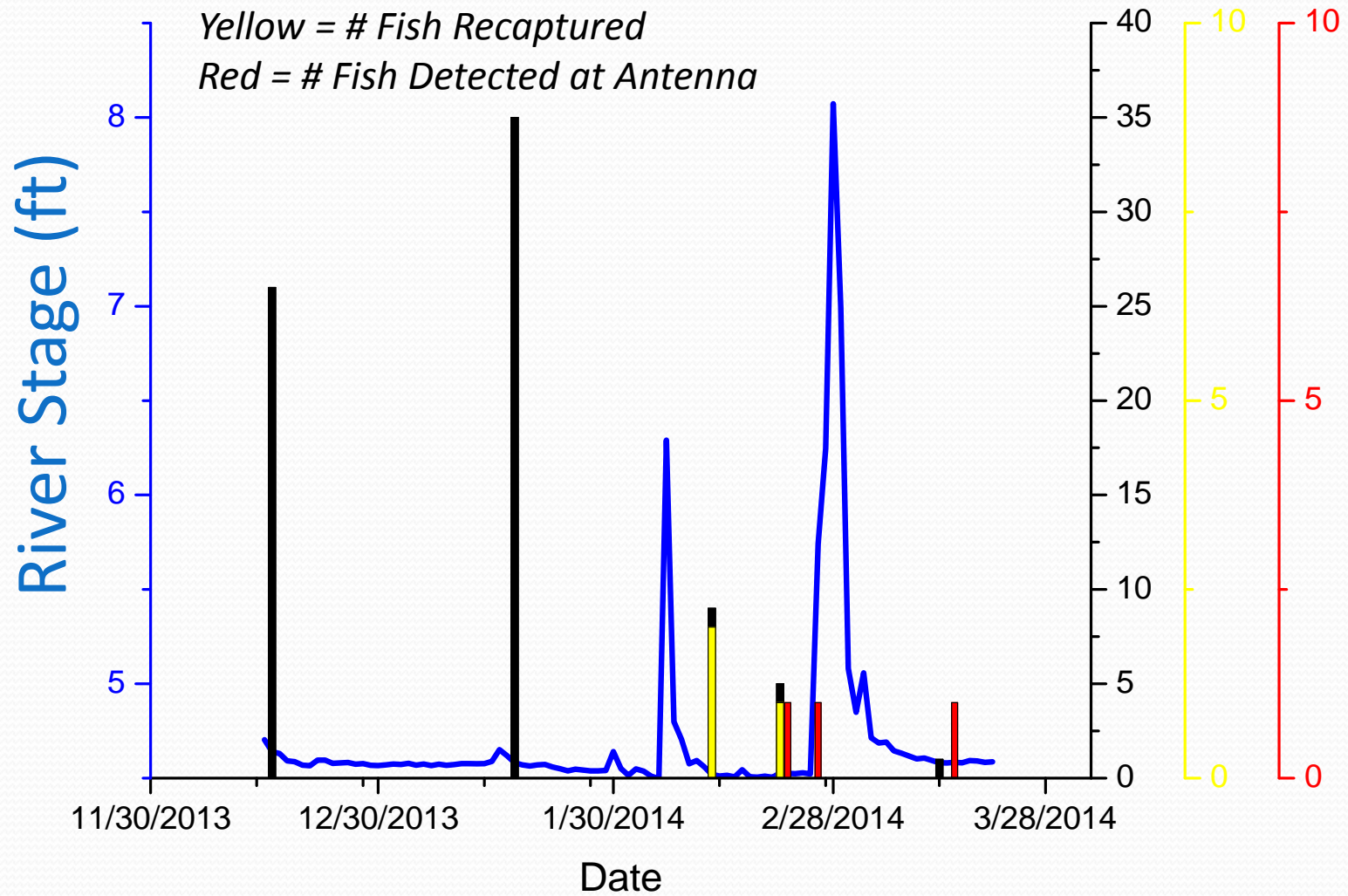


RFID Antennas Ponds



Steelhead Smolt Study Results

Black = # Fish Tagged
Yellow = # Fish Recaptured
Red = # Fish Detected at Antenna



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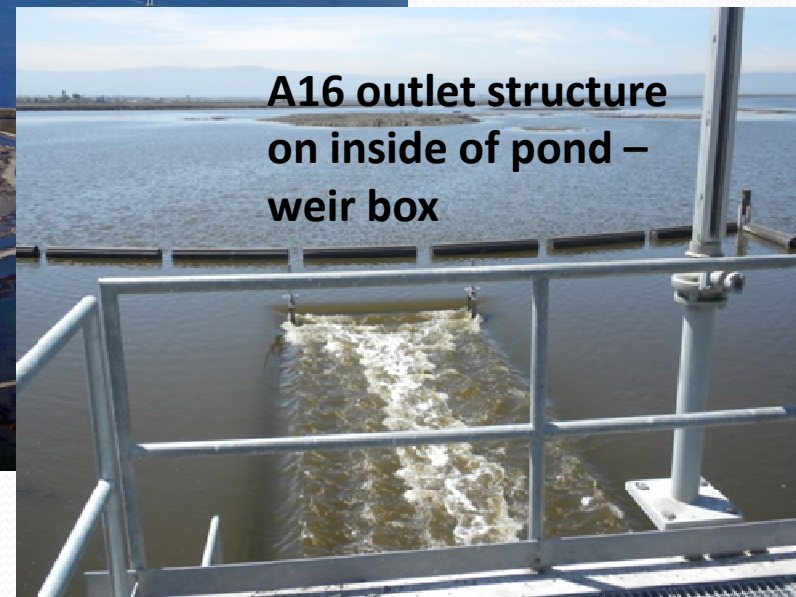
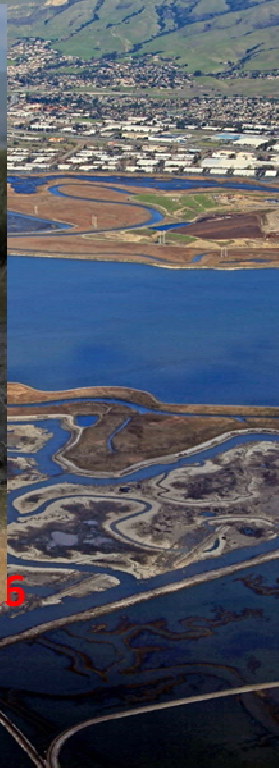
Chinook at Pond A16/A17



Chinook Salmon in



A16 culvert looking toward Artesian Slough 2013 – flap gate



A16 outlet structure on inside of pond – weir box

Opened to flows January 2013

Fall-run Chinook Salmon



Hatchery Chinook Salmon



\$3 Million Fish Screen





Summary of Fish Studies

- Fish were able to utilize the restoration ponds shortly after initial breaching of the levees.
- Species assemblages found within restoration ponds were not found to be different from adjacent slough, nor were they different among restoration ponds of different age or composition.
- The tidal ponds provide spawning and nursery habitat for many important species including, Pacific Herring, Northern Anchovy and Longfin Smelt.



Summary of Fish Studies

- The muted tidal ponds (A8, A16 and SF2) did have fewer species and abundances were lower.
- By transforming primary production to secondary production (small fish and invertebrates) restored ponds are supporting the top of the food chain (Leopard Shark).
- Steelhead smolt outmigration, entrainment, and escapement of a muted tidal pond is being studied.
- Entrainment of chinook salmon inside muted tidal ponds poses a challenge



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

www.southbayrestoration.org

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