



2nd Steelhead Summit

October 27 & 28, 2016 in San Luis Obispo, CA

+ Session Overview

- Sponsors:
 - California Trout
 - City of San Luis Obispo
 - Sustainable Conservation
 - California Conservation Corps
 - Cachuma Operation and Maintenance Board
 - Wildnote

The year's Summit agenda highlighted adaptive genomic variation, steelhead recovery planning, coastal monitoring status reports, fish passage planning, and water conservation efforts.

The full-day symposium was followed by concurrent field tours to restoration sites that showcase fish passage improvements and water conservation projects.

+ Presentations

Prioritizing Steelhead Recovery Actions Presentations and Panel Discussion Part 1

(Slide 4) NMFS 5-Year Status Reviews: South-Central and Southern California Steelhead
Mark Capelli, South-Central Southern California Steelhead Recovery Coordinator,
NOAA Fisheries

(Slide 39) Coalition-based Southern California Steelhead Recovery – South Coast
Sandra Jacobson, South Coast Steelhead Coalition Coordinator, California Trout

*(Slide 55) It Takes a Watershed Integrating Science, Policy, and Management to Protect
Strongholds, Restore Headwaters, and Reconcile Landscapes*
Candice Meneghin, California Trout

NMFS 5-Year Status Reviews: South-Central and Southern California Steelhead

National Marine Fisheries Service

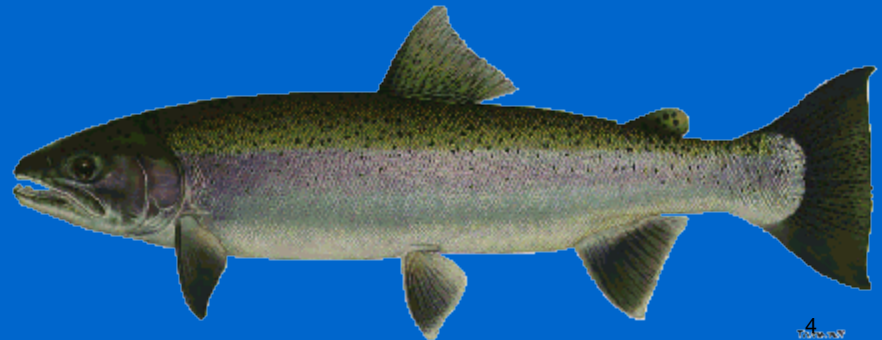


SRF Steelhead Summit

October 27-28 2016

San Luis Obispo, California

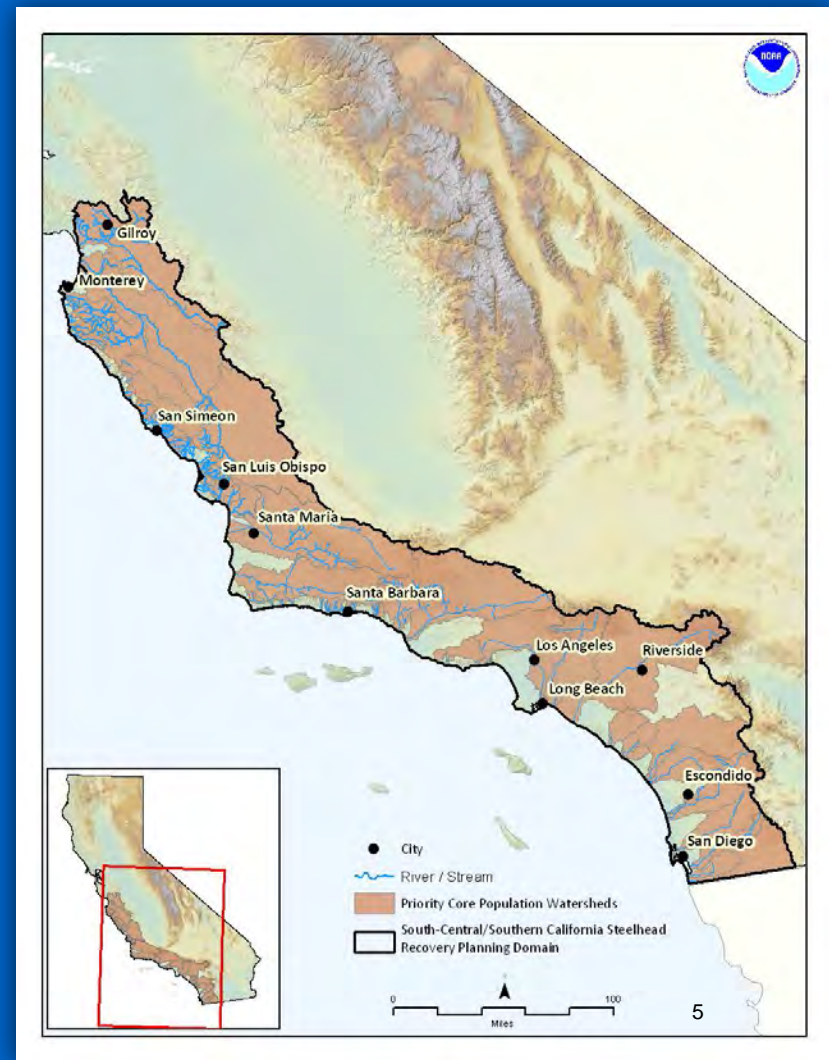
Mark H. Capelli
Steelhead Recovery Coordinator





5-Year Status Review: 2016

South-Central/Southern California Steelhead Recovery Planning Domain





5-Year Status Review: 2016

Estimated Adult Run-Size at the Time of Listing (1997)

- South-Central Coast: 500
- Southern California Coast: 500





5-Year Status Review: 2016

Current Estimated Adult Run-Size (2016)

- South-Central Coast: **Uncertain**
- Southern Coast: **Uncertain**





5-Year Status Review: 2016

South-Central California

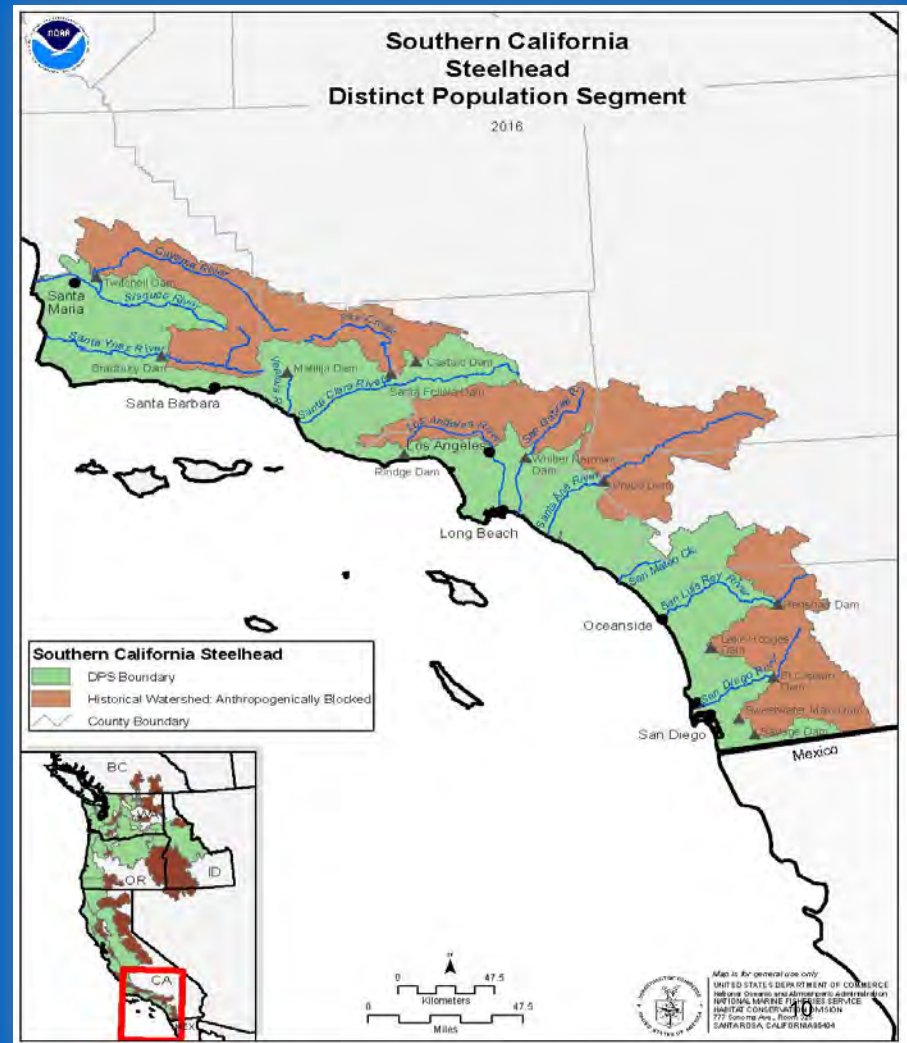
- Less than **500** adults have been recorded in most years
- Current annual run-size may be **greater** than originally estimated (**in individual watersheds**)
- Significant **inter-annual** variability



Southern California

Southern California Steelhead DPS

- Watershed Area: 11,863 sq. mi.
- Steelhead Watersheds: c. 48
- Stream Miles: 16,043





5-Year Status Review: 2016

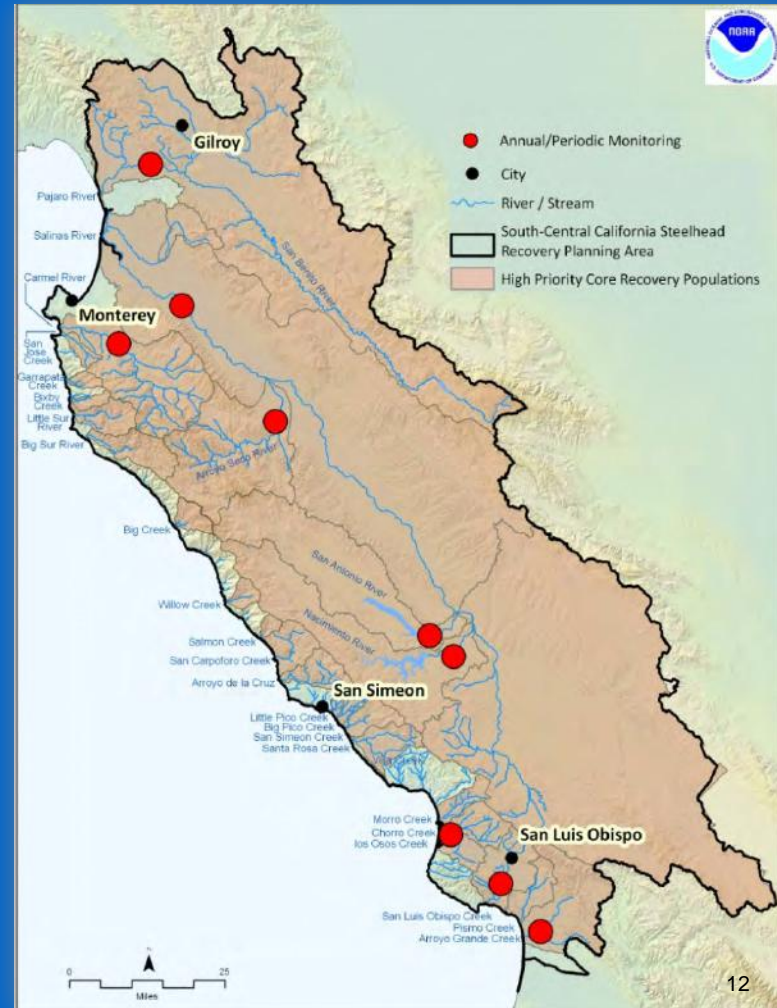
Southern California

- Less than **500** adults have been recorded annually
- Current annual run-size may be **less** than originally estimated
- Significant **inter-annual** variability

South-Central

Current Monitoring Efforts

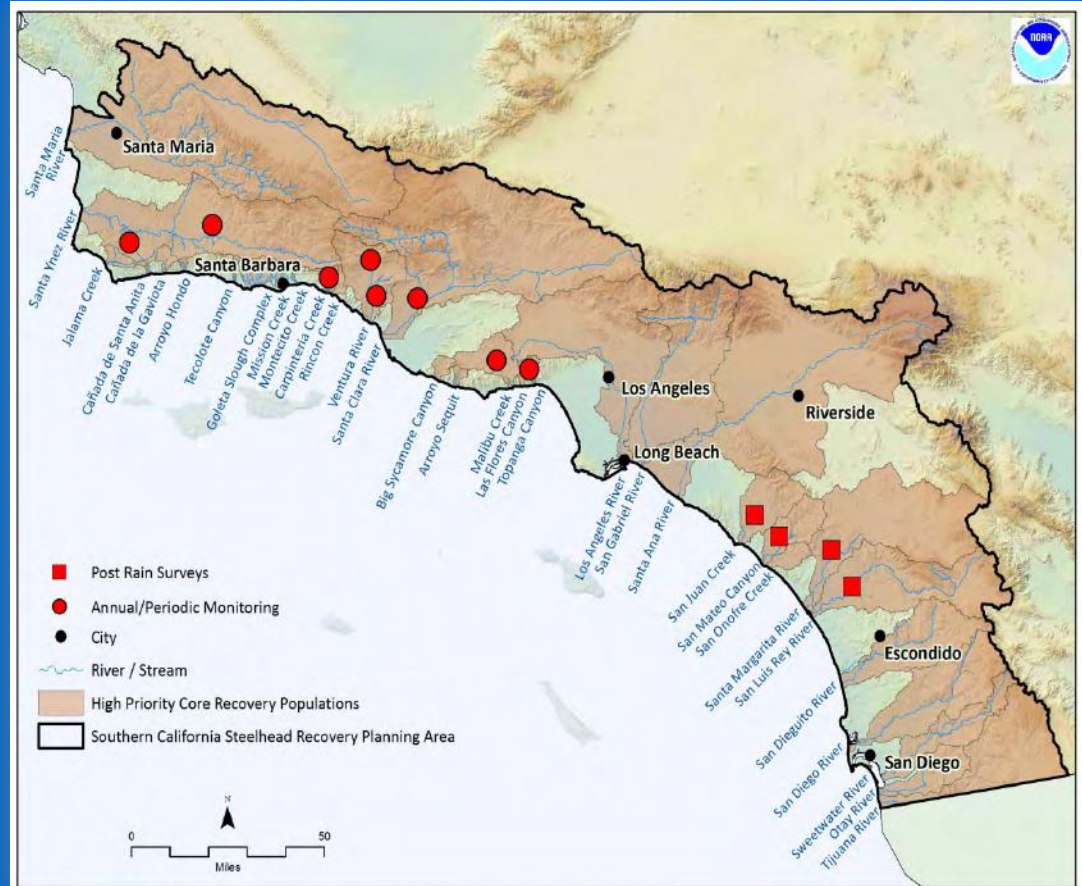
- Carmel River
- Pajaro River
- Salinas River



Southern California

Current Monitoring Efforts

- Santa Ynez River
- Ventura River
- Santa Clara River





Monitoring Methodologies

- V-Slot Ladder
- Video & Infra-red Camera



Pajaro River – Corralitos Creek



Monitoring Methodologies

- Rotary Screw Traps
- Visual Counts



Salinas River – Arroyo Seco



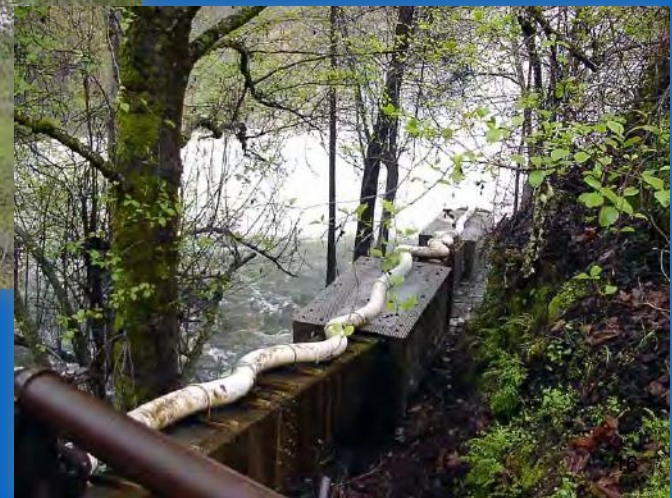
Monitoring Methodologies



Los Padres Dam – Carmel River



Steep Pass
and Holding Pool





Monitoring Methodologies



Big Creek – PIT Tagging Project

Processor



Monitoring Methodologies

- Fyke-Net Trap
- Snorkel Survey
- Redd Counts



Santa Ynez River



Monitoring Methodologies

- Slot-Baffle Fish Ladder
- Vaki River-Watcher Video



Ventura River



Monitoring Methodologies

Red and Kelt Survey



Ventura River



Monitoring Methodologies

- Denil Fish Ladder
- Trip Camera & Didson Sonar Camera



Santa Clara River



Monitoring Methodologies

Snorkeling

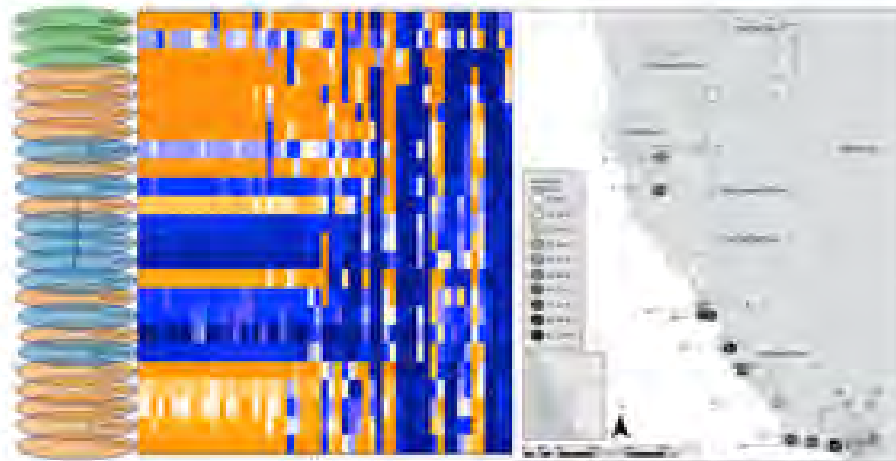


Malibu Creek

5-Year Status Review: 2016

Smoltification in Steelhead/Rainbow Trout: Omy5.

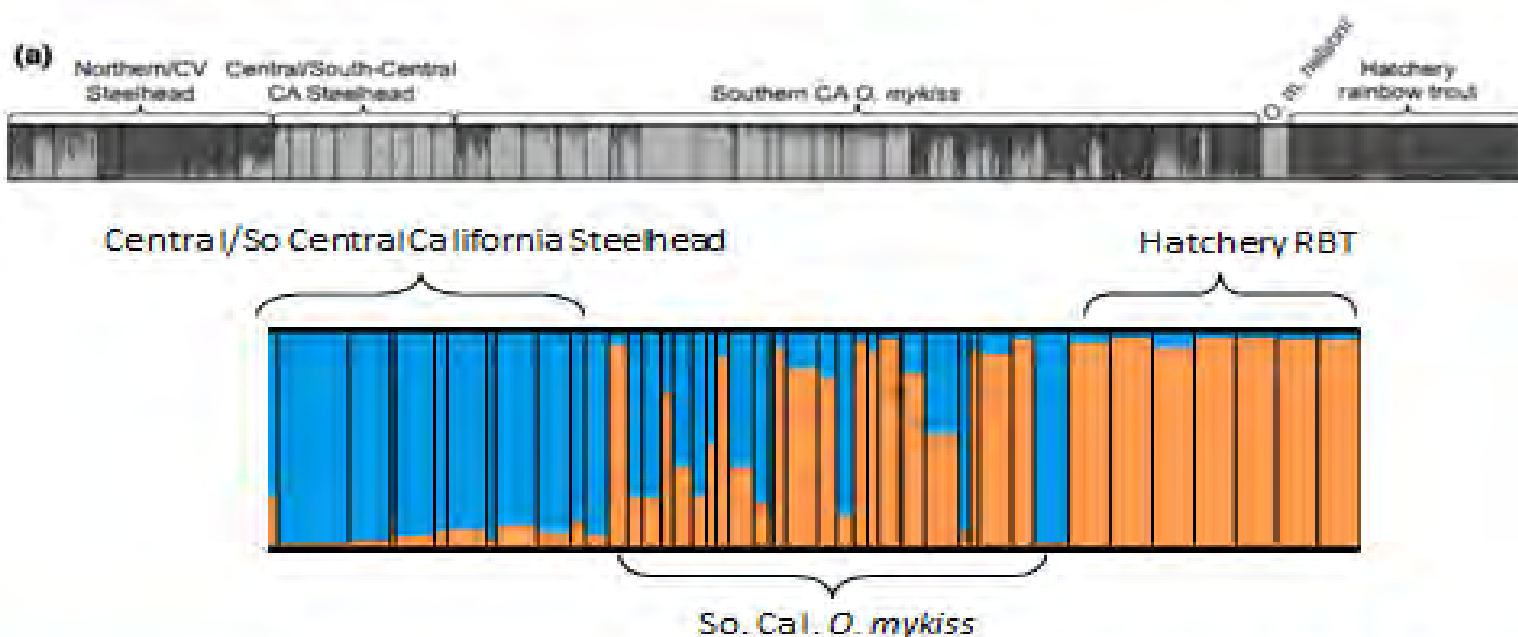
- ❑ **Rapid** adaptation of *O. mykiss* above barriers associated with evolution on one genomic region.
- ❑ **Repeated parallel evolution** from standing variation.
- ❑ **Significant effect** of above-barrier population age.
(natural populations fixed)
- ❑ **Individual** smoltification effects.
(smoltification probability)
- ❑ **Genomic** characterization in progress.



Pearse et al. 2014, *Proc. Roy. Soc. B*

Southern California

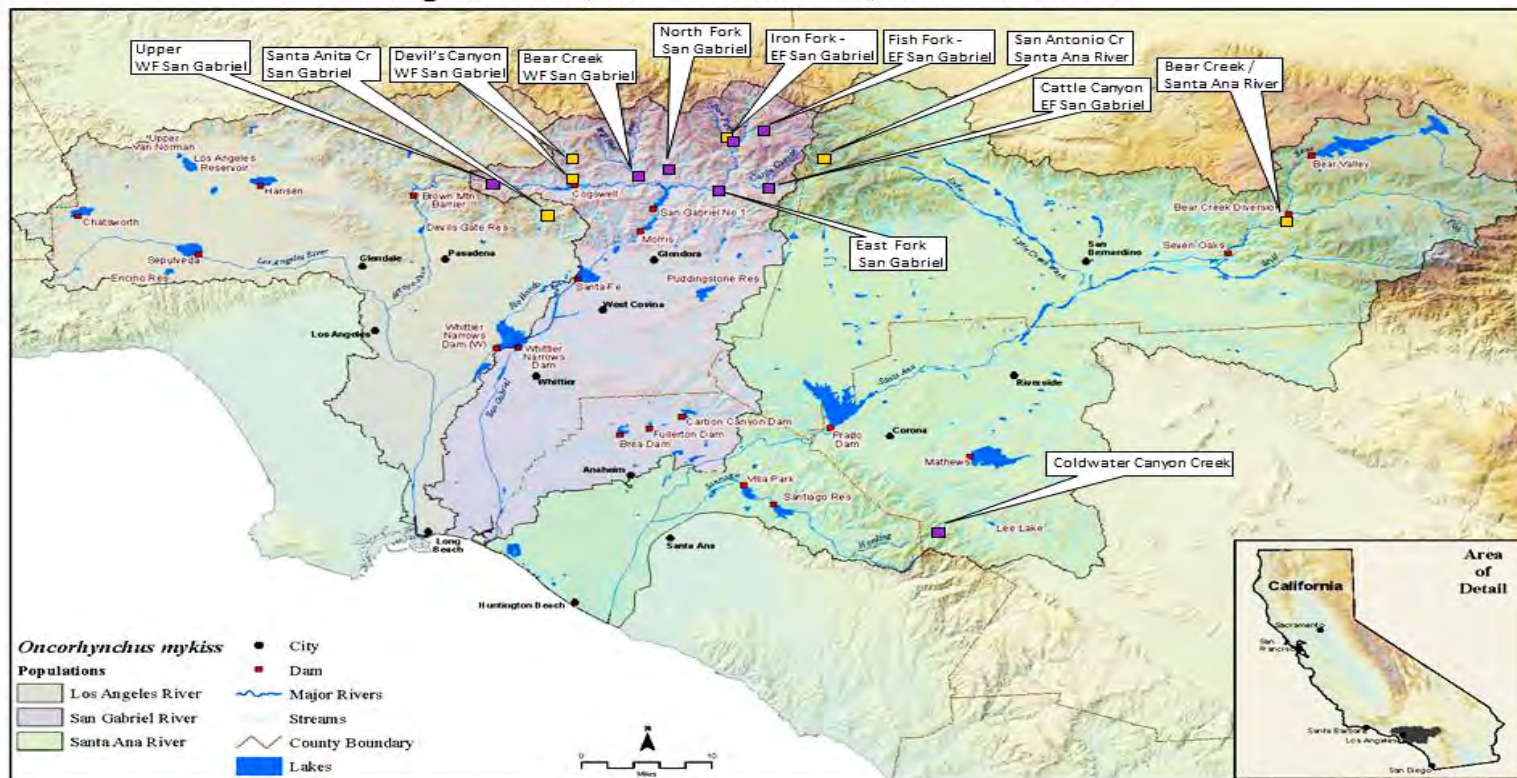
Mixed up *O. mykiss* in Southern California



From Abadía-Cardoso et al. 2016

Southern California

Middle Section of Southern California RT Genetics Study Area (Mojave Rim BPG):
Los Angeles River, San Gabriel River, Santa Ana River

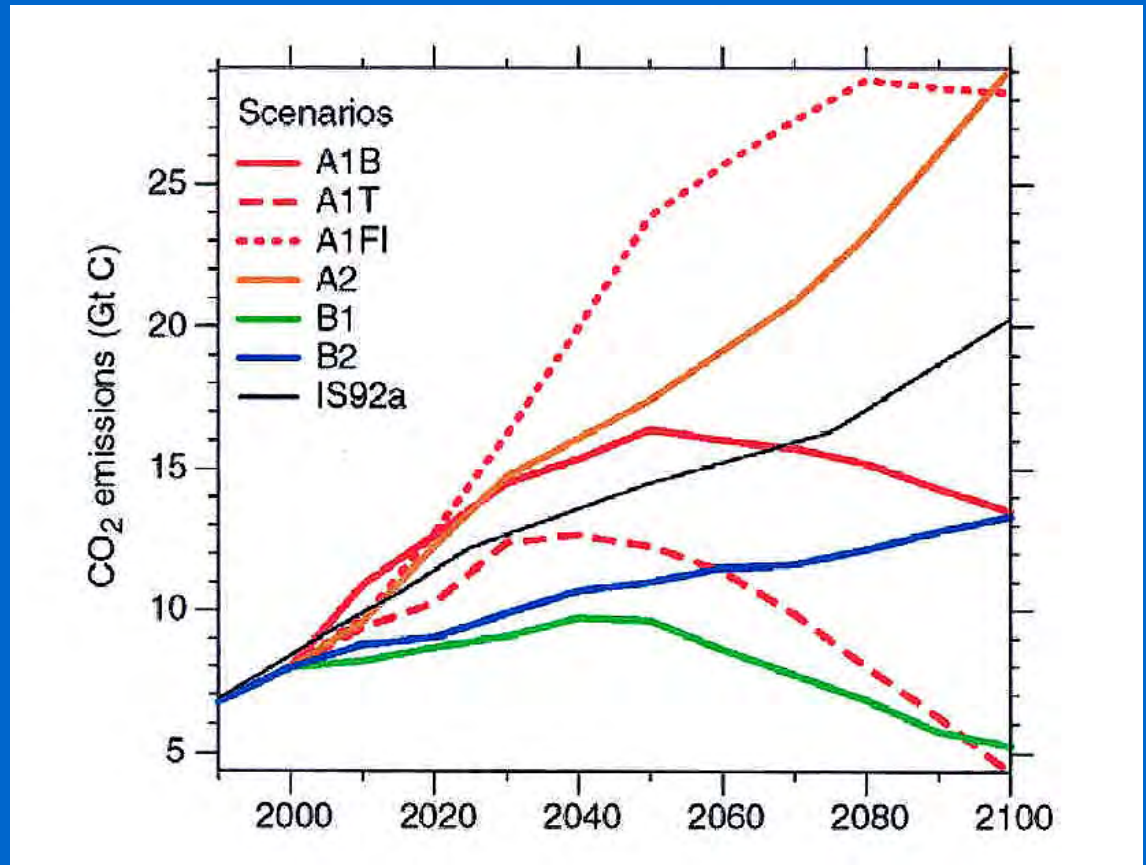


Map generated by Hunt and Associates for the 2008 Southern California Coast Steelhead Recovery Planning Area report for NOAA / NMFS (Mark Capelli, lead) and annotated to show results of Southern California rainbow trout tissue genetic analysis (Dr. Carlos Garza lab, NOAA Southwest Fisheries Science Center) for Trout Unlimited –San Diego study funded by Cal. Dept. of Fish and Wildlife, Grant Agreement P0950015.



Southern California

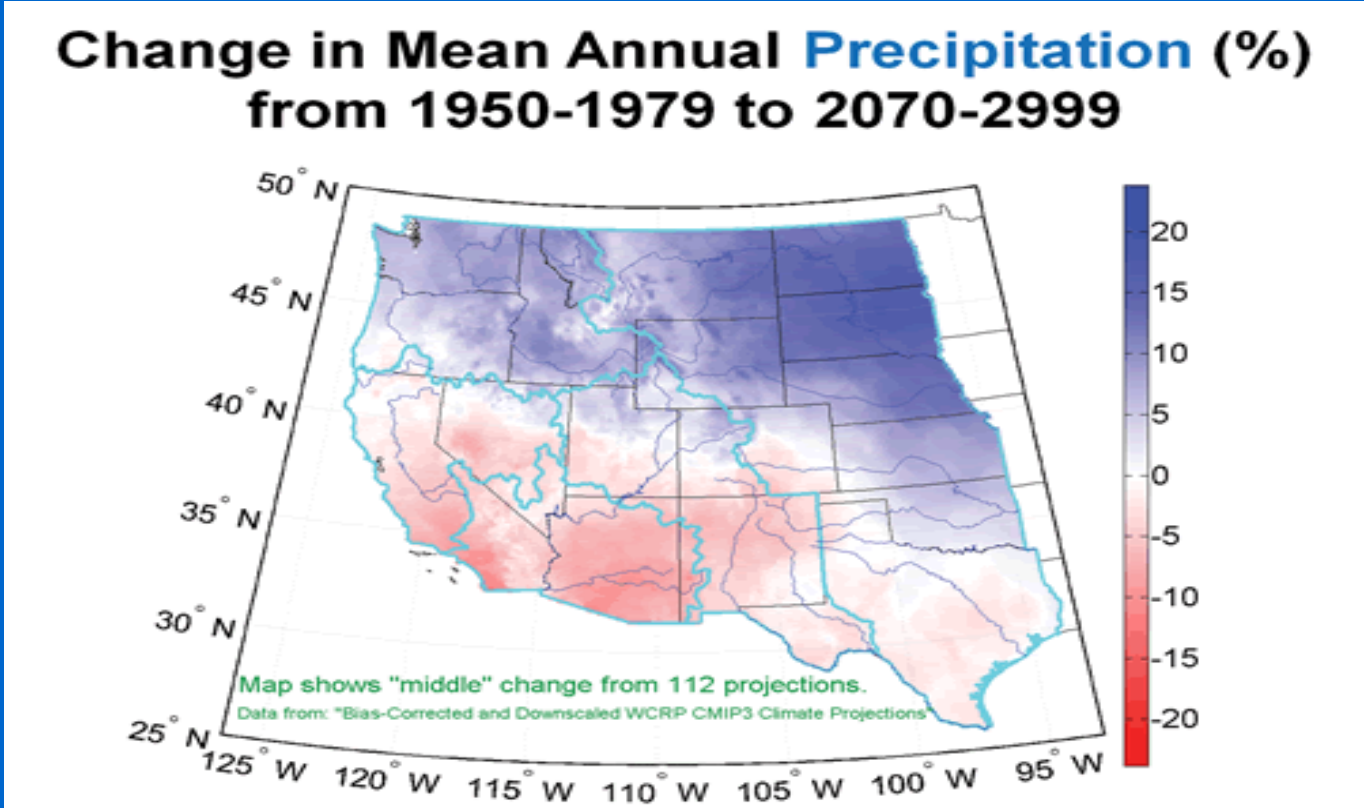
Uncertainty
&
Complexity





Projected Climate Change

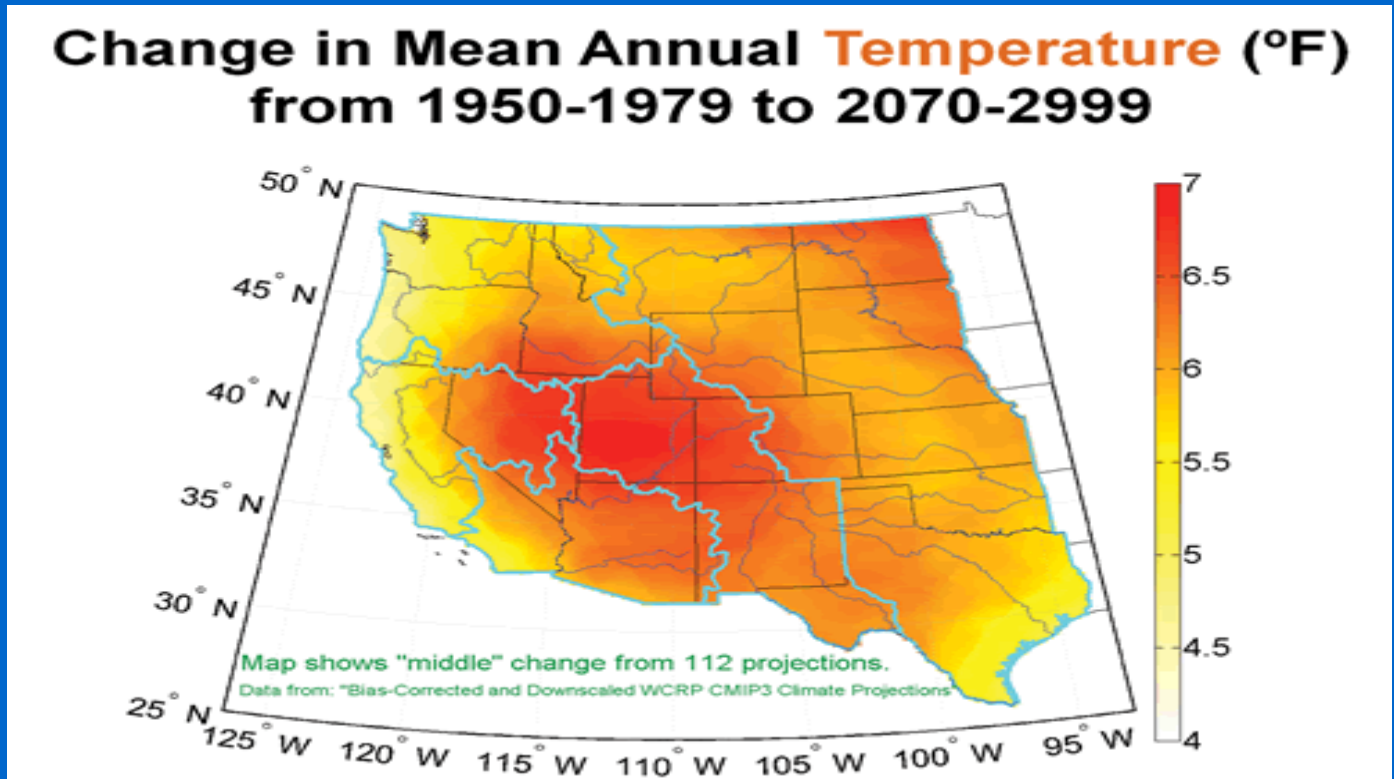
Scaling





Projected Climate Change

Regional
Difference





Current Drought



Malibu Creek

Drought 212 - ?





Current Drought



Malibu Creek

Drought 212 - ?





Current Drought



Topanga Creek

O. mykiss
Relocation





South-Central Recovery Actions

San Clemente Dam





South-Central Recovery Actions

San Clemente Dam





Southern California Recovery Actions

Matilija Dam





Southern California Recovery Actions





5-Year Status Review: 2016

Recommendations for Future Actions

- Expand **monitoring** of core populations (CMP)
- Identify and protect **drought refugia** over-summering habitats
- Expand **research** (anadromy/residency, estuarine functions, etc.)
- Continue to remove or modify **fish passage** impediments
- Establish meaningful **flow regimes** below dams
- Develop strategies to preserve **at-risk** relict populations

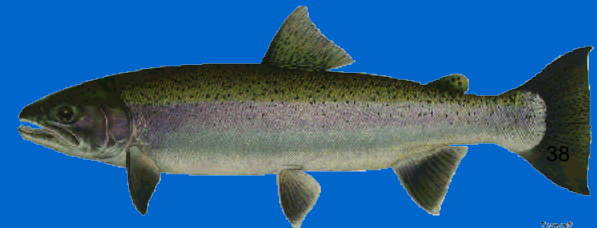
NMFS 5-Year Status Reviews: South-Central and Southern California Steelhead

National Marine Fisheries Service

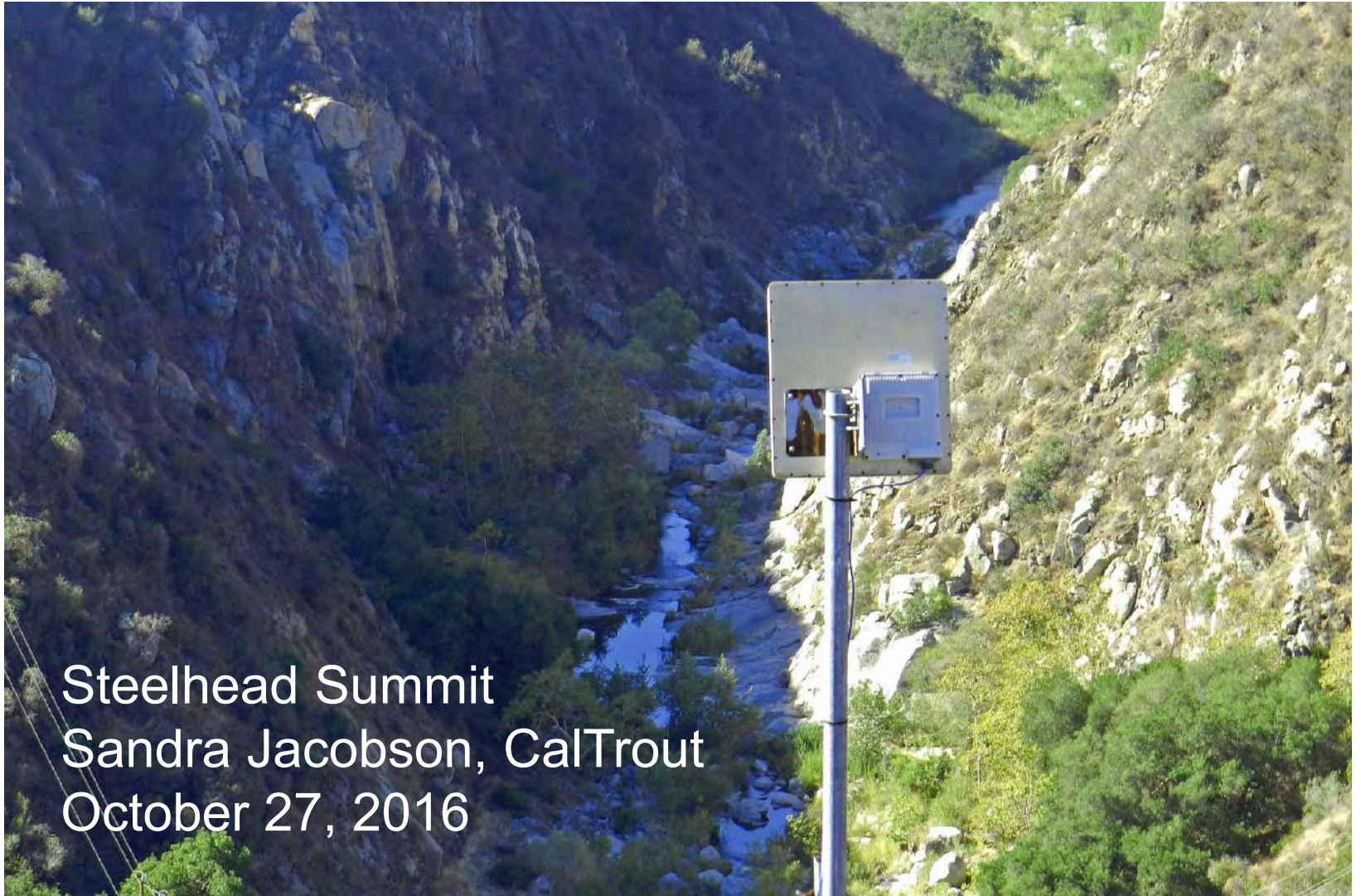


5-Year Status Reviews:

http://www.westcoast.fisheries.noaa.gov/publications/status_reviews/salmon_steelhead/2016_status_review.html

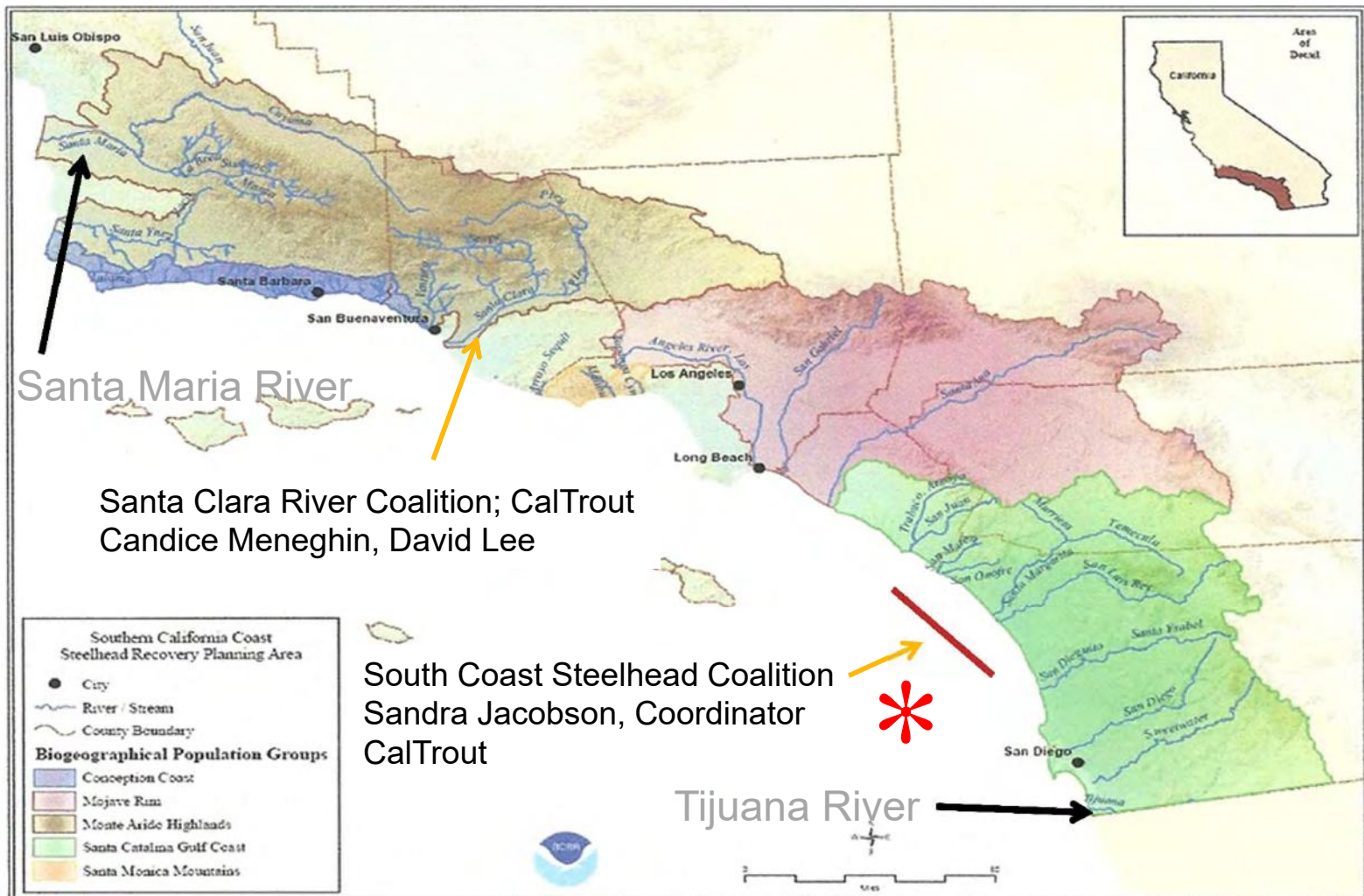


Coalition-based Southern California Steelhead Recovery – South Coast



Steelhead Summit
Sandra Jacobson, CalTrout
October 27, 2016

ESA Listing Area – Southern California Steelhead



Adapted from NMFS Southern California Steelhead Recovery Plan (2012)
So Cal Steelhead Coalitions funded through CDFW Fisheries Restoration Grants Program

South Coast Coalition Participants

Coalition Mission: Implement Federal Recovery Plan
Impact Area: San Diego, Orange, Riverside Counties

Coalition Leadership:

CalTrout, Coalition Lead
Trout Unlimited, Co-chair



Federal: National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Forest Service (Cleveland National Forest), U.S. Marine Corps – Camp Pendleton, U.S. Geological Survey

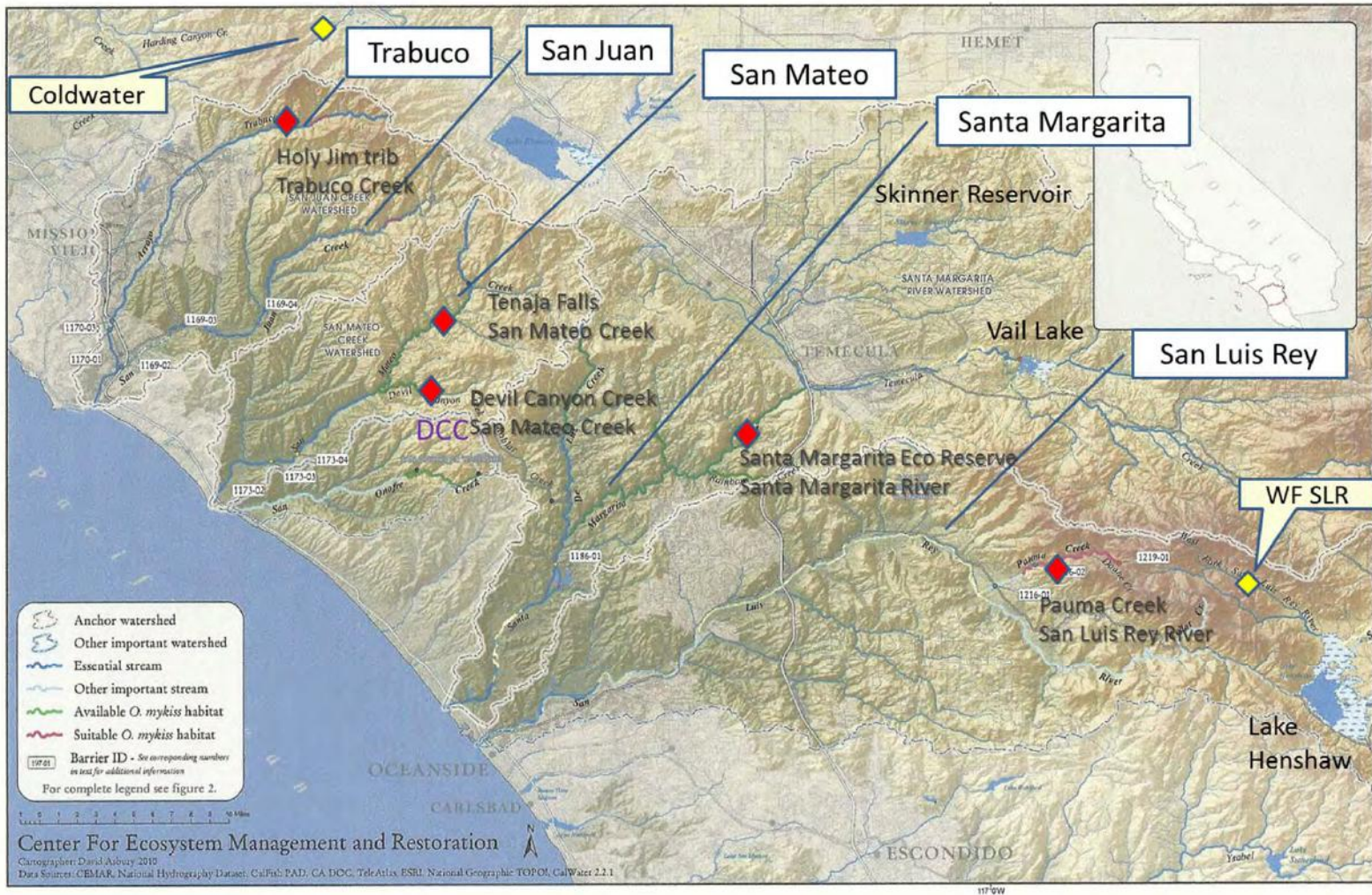
State and Districts: California Department of Fish and Wildlife, Riverside-Corona Resource Conservation District; Vista Irrigation District, Santa Monica Mountains Resource Conservation District

Tribal Nations: Pauma Band of Mission Indians, Pala Band of Mission Indians,

Nonprofits: Santa Margarita Ecological Reserve, Sierra Club, Audubon-Starr Ranch, The Escondido Creek Conservancy, Mountains Restoration Trust, SW Council International Federation Fly Fishers, Aquasolver, Golden State Flycasters, San Diego Fly Fishers

Focal Watersheds - Steelhead Recovery

Four Priority Watersheds – Core 1 designated NMFS Recovery Plan



- ◆ Native trout populations: Coldwater Canyon Creek (Santa Ana River), WF San Luis Rey (San Luis Rey River)
- ◆ Proposed new connected metapopulations (red symbols).

Conservation Goals

- **CONNECT:** establish two connected steelhead populations in focal watersheds in ten years
Coastal steelhead populations that are connected to ocean and to each other in focal watersheds
- **CREATE:** Create more unconnected native rainbow trout populations from two to eight for risk mitigation/diversity
Expand native trout populations into high quality refuge sites; may be within same watershed or neighboring one; may be occupied or unoccupied.

How accomplish goals?

- Remove Fish passage barriers
- Improve Habitat – Remove non-native species
- Water conservation / water quality
- Preserve native trout populations

Working Groups To Address Threats

1) Remove Fish Passage Barriers to Increase Access

- ◆ allow aquatic organisms to access their spawning and rearing grounds and search out new habitat

2) Improve Steelhead Habitat

- ◆ remove non-native aquatic species and augment gravels; reduce competition for limiting resources; multi-benefit

3) Water Conservation and Water Quality

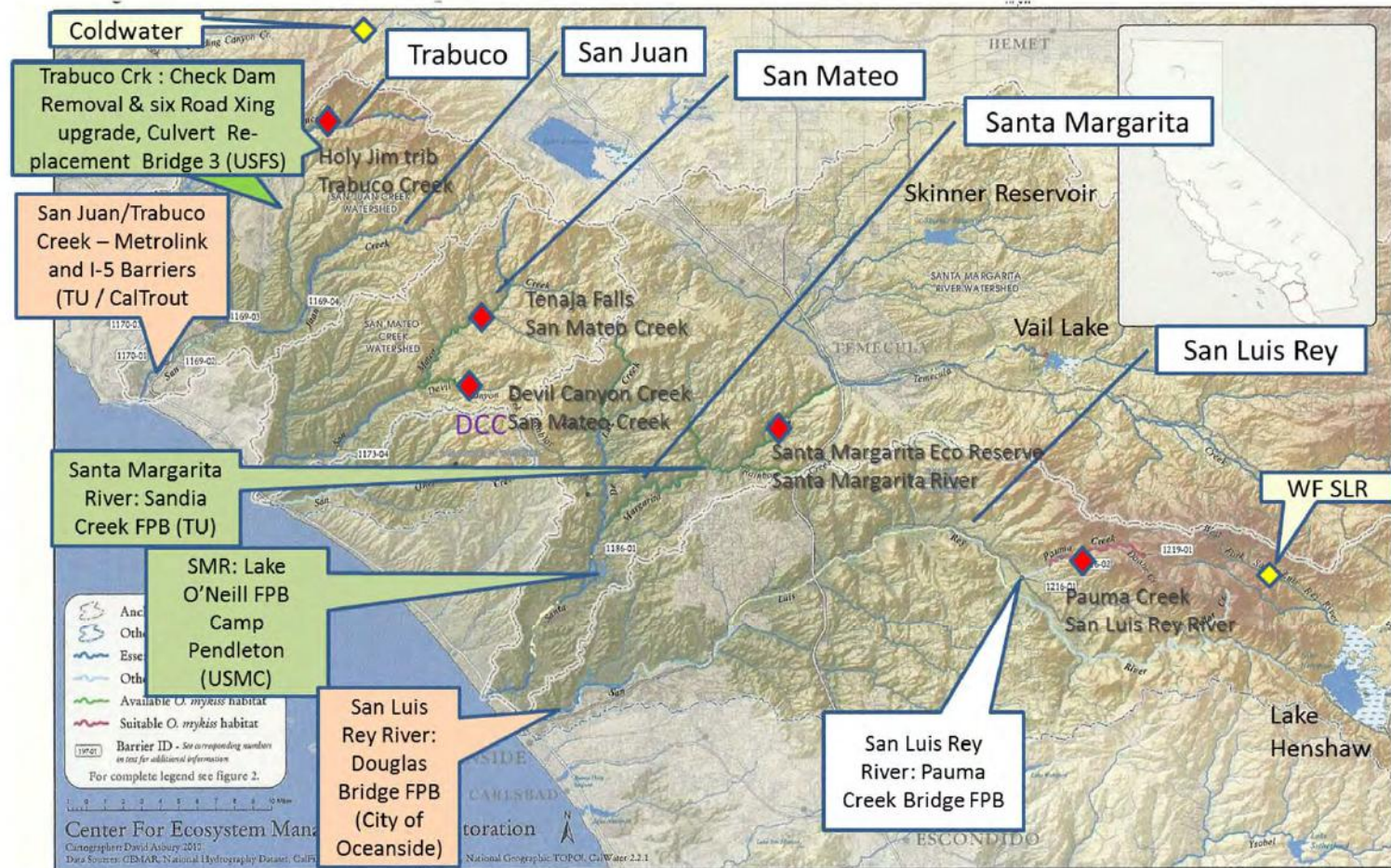
- ◆ work with commercial agricultural operations for groundwater recharge, irrigation upgrades, fertilizer BMPs, greywater use
- ◆ sediment reduction; benthic macroinvertebrate monitoring
- ◆ utilize trained citizen monitors for water quality testing and bioassessment

4) Native Trout Preservation

- ◆ identify new native trout populations, high quality habitat and effective propagation protocols, respond to envt stressors

Fish Passage Barrier Removal

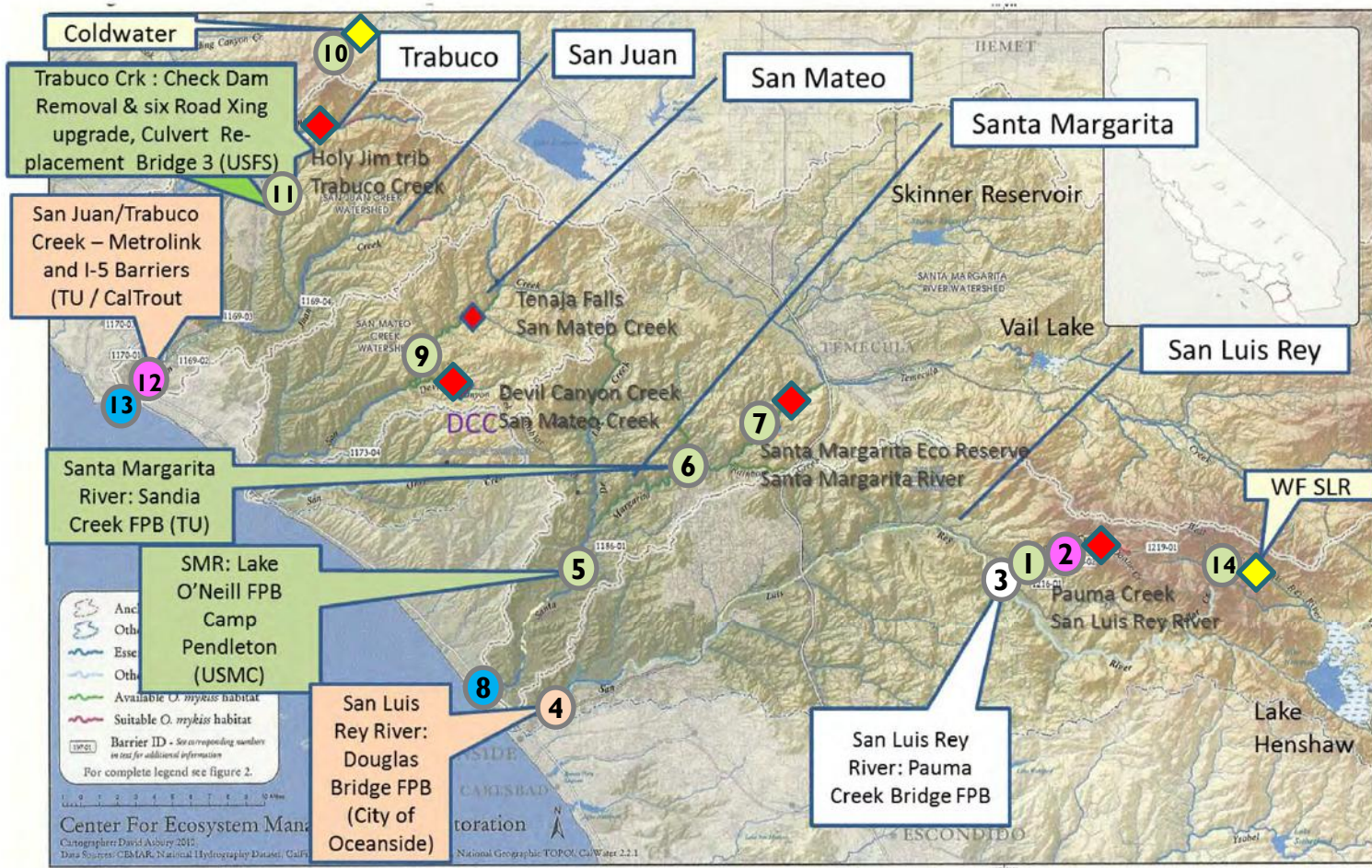
Main Fish Passage Barriers (FPB) In Prioritized Steelhead Recovery Rivers



Green: Projects Underway; Tan: Projects Initiated not grant funded; White: – future projects.
 Red symbols: target habitat to support anadromous populations; Yellow: native trout populations

Base map from Center for Ecosystem Management and Restoration (Oakland, CA) – annotated with NMFS Core 1 Rivers

South Coast Steelhead Recovery Projects



Base map from Center for Ecosystem Management and Restoration (Oakland); Annotated here to show NMFS high priority steelhead recovery rivers and steelhead Coalition projects.

Underway

Under Review

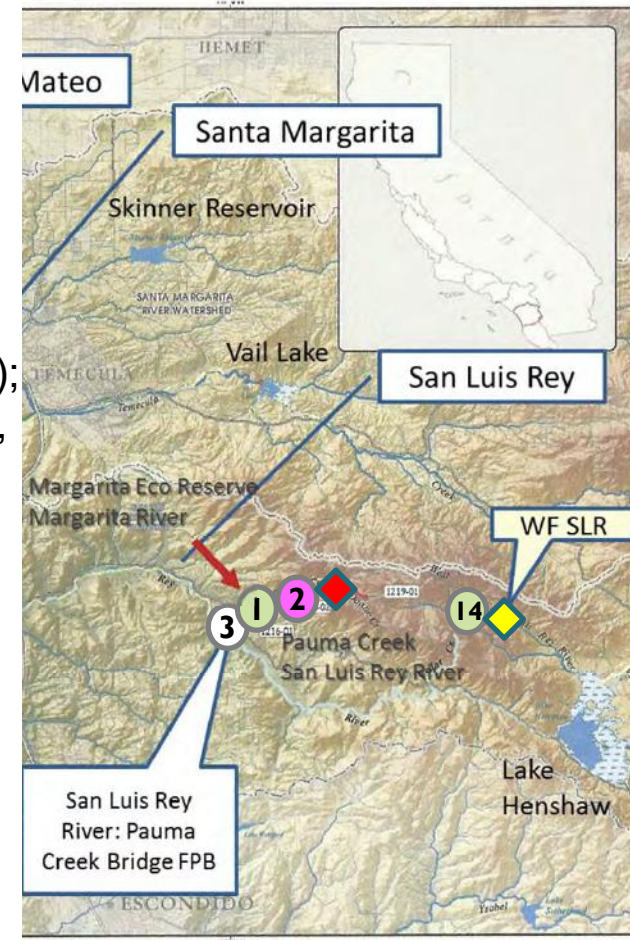
In development

Projects Underway – San Luis Rey

I San Luis Rey – Pauma Creek Water Conservation & Habitat Protection

Lead: SLR Watershed Council
Funded by CDFW Drought (2016)

-Install weather station soil moisture sensors
(Pauma Band of Mission Indians orange groves);
Link to automated irrigation w/ technical training,
residential grey water installations

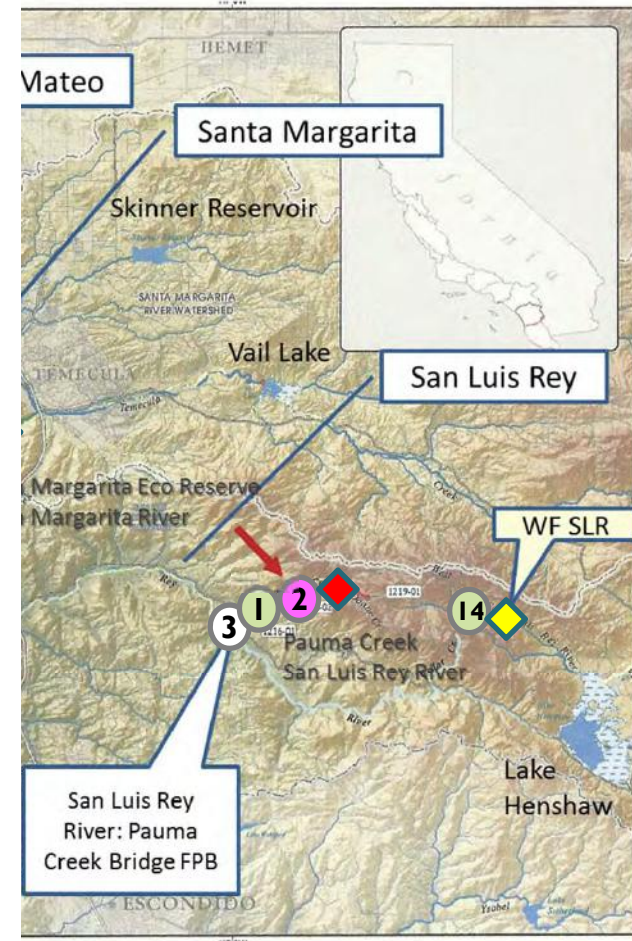


Projects Pending – San Luis Rey

2 Pauma Creek Trout Baseline Analysis

Lead: CalTrout
Submitted to CDFW Prop 1 (2016)

- Collect baseline trout population data before fish passage barrier removal.
- Follow statewide CMP - population estimate; spawning productivity; genetic diversity; PIT tagging to track anadromy..

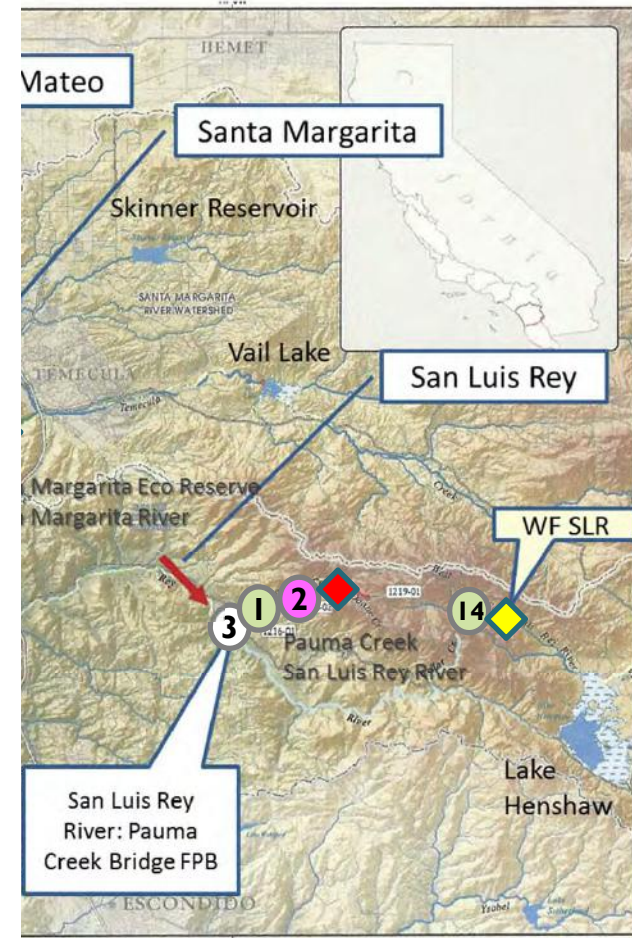


Projects Future – San Luis Rey

3 Pauma Creek Barrier at Highway 76

Caltrans scoping – future project

Main fish passage barrier in San Luis Rey watershed – removal allows access to Pauma creek with demonstrated high quality habitat; platform for anadromy.



Barrier blocks access to upper Pauma Creek.

Projects Underway – Santa Margarita River

6 Santa Margarita River – Barrier Removal at Sandia Creek

Lead: Trout Unlimited – South Coast
Funded by CDFW FRGP (2016)

- Engineering design to 65% level
for fish passage at Sandia Creek;
additional funding by Coastal
Conservancy for 100% design to be
recommended at upcoming
SCC Board Meeting.



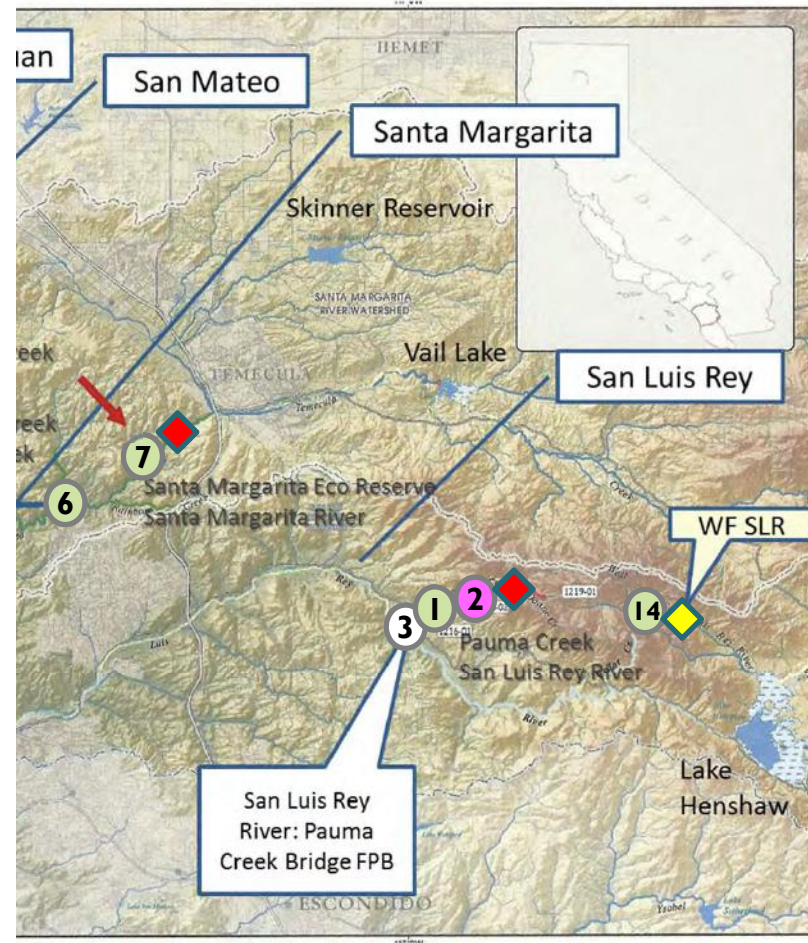
Upstream of fish passage project on
U.S. Marine Corps - Camp Pendleton
–In consultation with NMFS

Projects Underway – Santa Margarita River

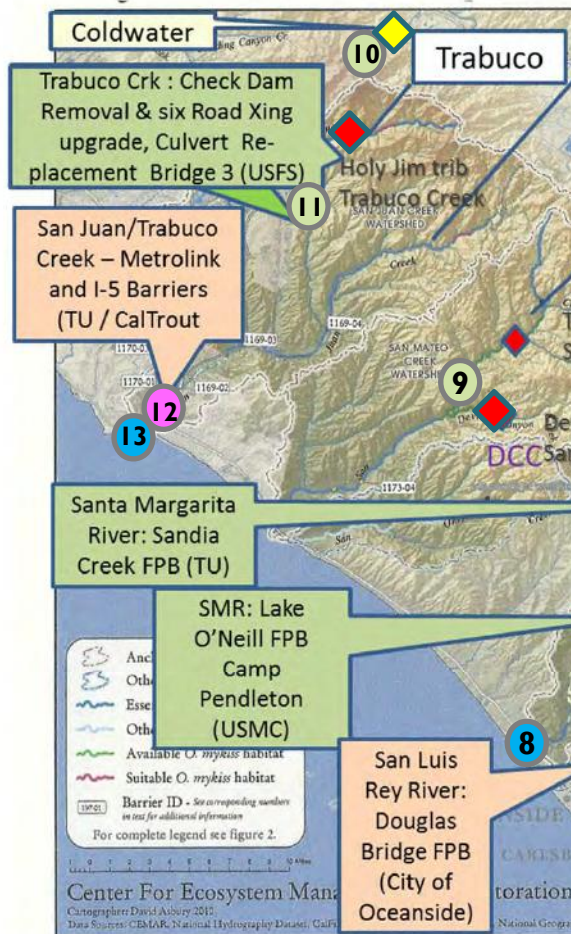
7 Steelhead Habitat Improvement in Santa Margarita Eco Reserve

Lead: CalTrout
Funded by Southern California –
Wetlands Recovery Project /
Earth Island Institute (2016)

-Perform trout habitat improvement
via non-native aquatic species and
vegetation removal; sediment
reduction with CCC, CDFW, others.



Projects - San Juan Creek/Coldwater



10

Native Trout Preservation:
Lead – Riverside Corona RCD

11

75+ Check Dam Removal; 9 out now
Lead – U.S. Forest Service

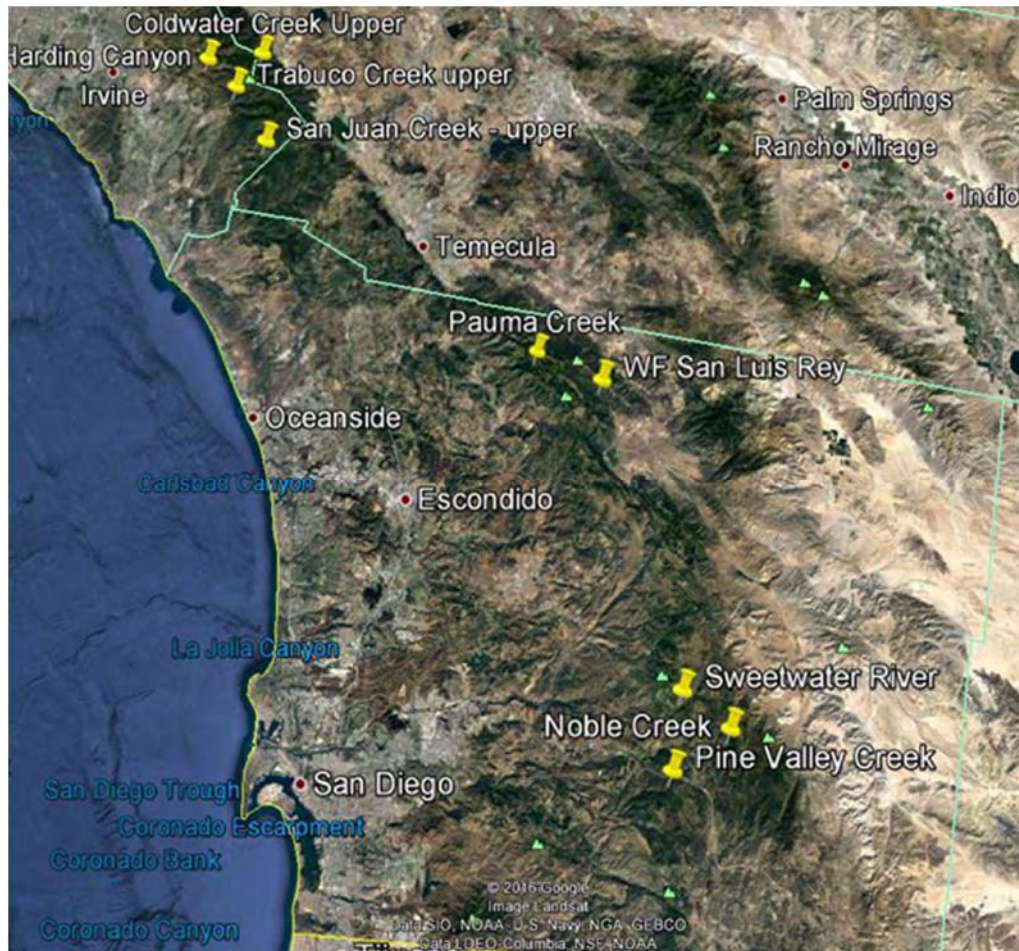
12

Fish Passage Barrier Removal
Interstate 5 and Metrolink bridges
Leads - CalTrout and Trout Unlimited

TRAFFIC STRUCTURES IN VICINITY OF I-5 CROSSING TRABUCO CREEK



Create New Native Populations



Use guidelines from NMFS Recovery Plan and State Plans to develop plan for creating new meta-populations for increased diversity and resilience. via in-stream and classic approaches.



Characterize Habitat



Optimize Habitat



Implement Plan

Contact Information



Photo Mark Capelli: Santa Margarita River headwaters. See NOAA full length article at: http://www.westcoast.fisheries.noaa.gov/stories/2016/02_08032016_.html



Sandra Jacobson, Ph.D.
South Coast Steelhead Coalition Coordinator
sjacobson@caltrout.org



It Takes a Watershed
Integrating Science, Policy, and Management to
Protect Strongholds, Restore Headwaters, and
Reconcile Landscapes

Steelhead Summit
October 27, 2016

San Luis Obispo Veteran's Memorial Center



1. CalTrout Projects and Model
2. Southern California Steelhead
3. CalTrout SoCal Region
4. CalTrout local Strategies & Coalition Project Update





1. CalTrout Projects

Established in 1971, California Trout is a nonprofit organization whose mission is to ensure there are abundant wild fish thriving in healthy waters for a better California.

We solve complex resources issues while balancing the needs of wild fish and people.





Our model of Work:

- California focused, embedded in **key geographies**, where wild fish influence communities
- Science based and **solution oriented**
- Credibility and trust provide opportunity to work with **diverse interests**
- Proof of concept project success, **establish precedent**, that can be scaled up



2. Southern California steelhead

100 years ago, Southern California was famous for its steelhead runs

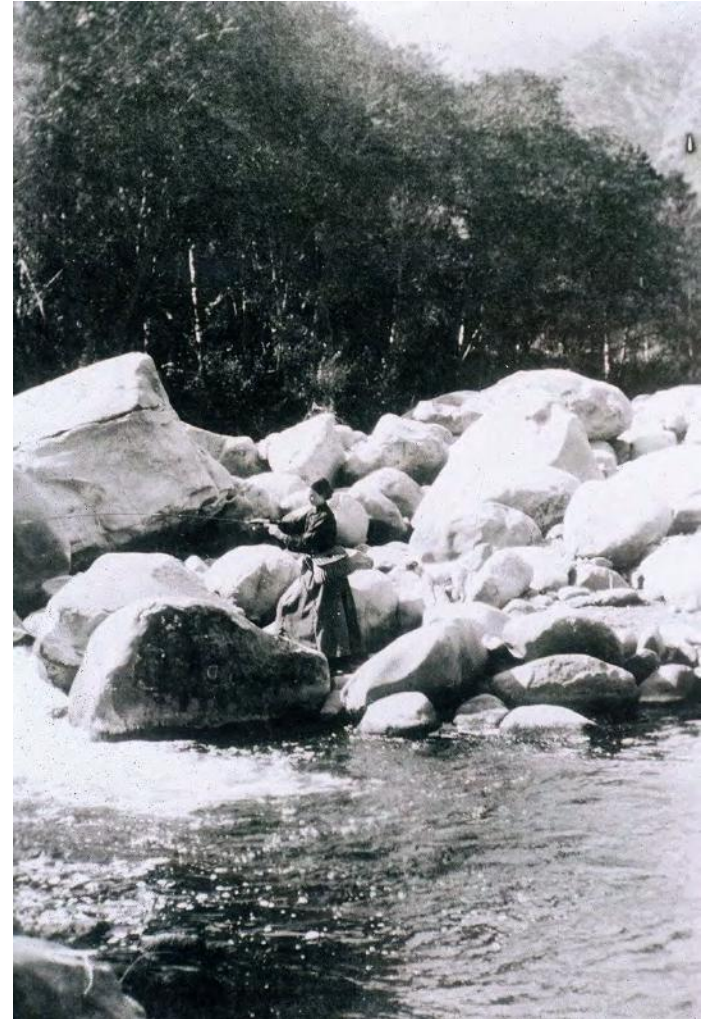
Santa Ynez River - ~ 11,000 adult fish

Santa Clara River - ~ 9,000 adult fish

Ventura River - ~ 5000 adult fish

Steelhead fishing in the region was enormously popular with men, women and children

Annual steelhead runs in Southern California have declined precipitously from 32,000-46,000 returning adults to less than ~500.



CALIFORNIA TROUT



FISH · WATER · PEOPLE

3. CalTrout SoCal Projects

The regional goal is to leverage CalTrout's sustained presence in SoCal to increase awareness of state water issues amongst SoCal legislators, establish legal precedent on important statewide fish and water issues, establish CalTrout as a leader on state/local fish and water issues, and empower local groups to restore Southern steelhead and its habitat.





4. CalTrout SoCal Strategies

- **Legislative Relations**

- Annual Casting Call in Sacramento
- In person meetings with legislators
- Site Visits
- Support letters for funding proposals
- Policy and Advocacy – Parks Bond AB2444, Source Water AB2480





- **Legal Precedent**

- Public Trust
- Fish and Game Code 5937
- Endangered Species Act
- FERC Relicensing – Santa Felicia Dam & South State Water Project





- **Empowering local action**

- Santa Clara River Steelhead Coalition
- South Coast Steelhead Coalition; co-chair Trout Unlimited
- Matilija Coalition (CDFW Prop 1 Grant Pending); co-chair Paul Jenkin





Santa Clara River Steelhead Coalition

Is a Southern California Regional Project of California Trout.

The Coalition is focused on endangered Southern California steelhead recovery in the Santa Clara River Watershed, which straddles Ventura and Los Angeles Counties.



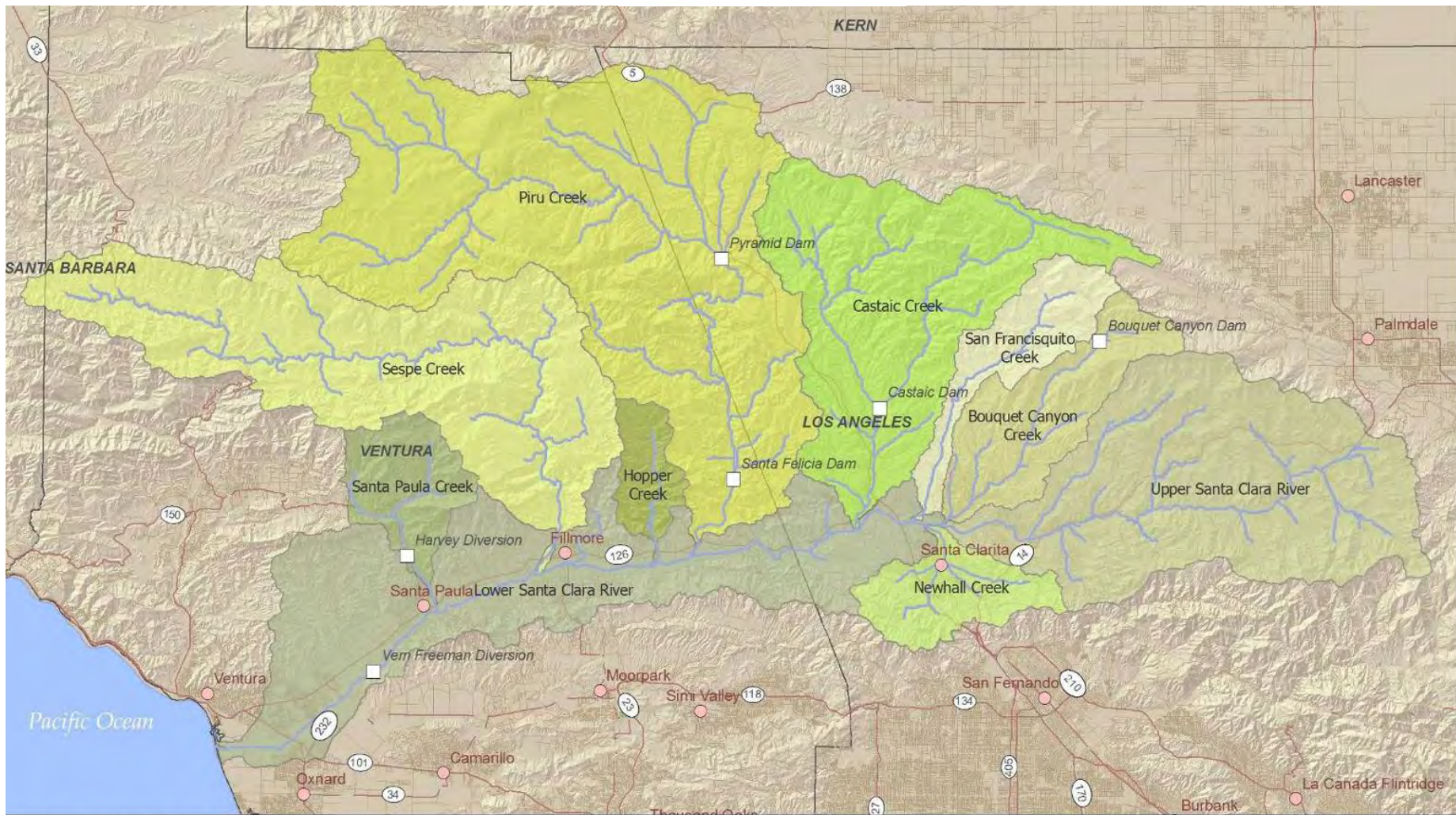


Coalition Participants include:

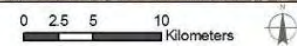


Stillwater Sciences





□ Major dams and diversions ● City/Town





Project Update:

- Meet quarterly, coordinate, collaborate
 - Draft Charter
- Capacity Building
- Implement our Strategic Plan 2013-2017
- Outreach, Education and Community Engagement Plans
 - finalized key messaging
 - fact sheets and speakers for Water Talks Program
- Workplan/Implementation Schedule
 - Restoration Projects
 - Outreach and Participatory Events
 - Research needs
 - Fundraising



Friends of the Santa Clara River

Sisar Creek Design Alternatives Assessment for steelhead passage

Assessment and 60% Design



Santa Paula Creek Sub-Watershed
Within the Santa Clara River Watershed.





Friends of the Santa Clara River

Supported by CalTrout, FoSCR has contracted with NHC for the following tasks:

- Field reconnaissance and Site Survey (Aug/Sept 2016)
- Existing conditions analysis
- Alternatives Evaluation
- Feasibility Report and Design
- Overall Coordination and Project Management

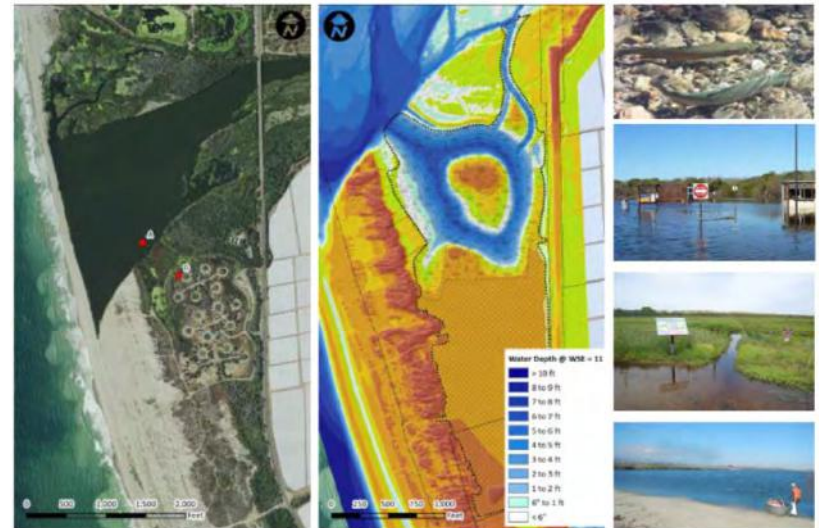




Santa Clara River Estuary Habitat Restoration and Enhancement Feasibility Study

Feasibility Study to expand and enhance approx. 15-35 acres (42 acres)

Provide lagoon, side channel, contiguous wetland, and/or additional upland riparian habitat within the McGrath State beach and Campground.




California Department of Fish and Wildlife
Fisheries Restoration Grant Program Agreement # P1350015
August 7, 2015


Matilija Dam Ecosystem Restoration Project

PROJECT OBJECTIVES

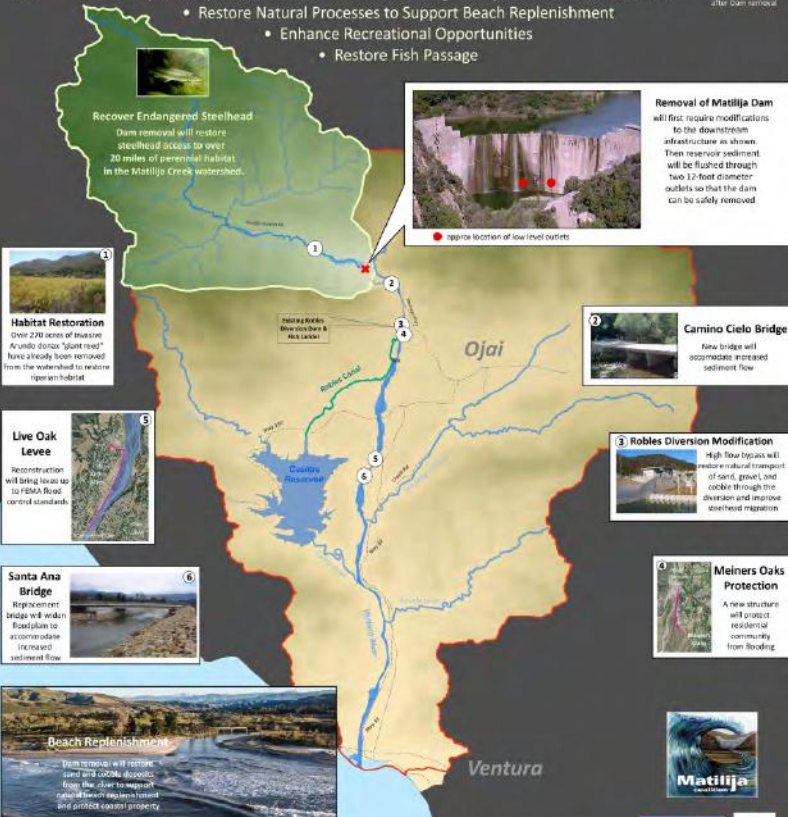
- Improve Aquatic and Terrestrial Habitat Along Matilija Creek and Ventura River
- Restore Natural Processes to Support Beach Replenishment
- Enhance Recreational Opportunities
- Restore Fish Passage




Recover Endangered Steelhead
Dam removal will restore steelhead access to over 20 miles of potential habitat in the Matilija Creek watershed.




Removal of Matilija Dam
will first require modifications to the downstream infrastructure as shown. These reservoir sediment will be flushed through two 12-foot diameter outlets so that the dam can be safely removed.







Habitat Restoration
Over 270 acres of invasive Arcadio dune "spartan" have already been removed from the watershed to restore riparian habitat.




Live Oak Levee
Reconstruction will bring levee up to FEMA Flood control standards.




Santa Ana Bridge
Replacement bridge will widen floodplain to accommodate increased sediment flow.




Robles Diversion Modification
High flow bypass will restore natural transport of sand, gravel, and cobble through the diversion and improve steelhead migration.




Camino Cielo Bridge
New bridge will accommodate increased sediment flow.



Meiners Oaks Protection
A new structure will protect residential community from flooding.



Beach Replenishment
Beach nourishment will narrow sand and cobble deposits from the river to support riparian forest residents and protect coastal property.



CalTrout is a long-standing member of the Matilija Coalition in Ventura County.

We have a organizational support grant pending with CDFW Prop 1. This is in partnership with Paul Jenkin, and we have secured \$30,000 in match from Patagonia.



- **Building Community Presence through on the ground projects**

- Harvey Diversion Fish Passage Restoration Project (Phase I)*

- CDFW'S Oil Spill Prevention and Response Fund
- Santa Clara River Trustee Council
- State Coastal Conservancy

- Invasive Non-Native Plant Management - Habitat Restoration & Ecosystem Enhancement Project*

- Dept. of Water Resources
- Santa Clara River Trustee Council

- 12th Street Infiltration Gallery*

- Drought CDFW

- Santa Clara River Steelhead Coalition*

- National Forest Foundation
- CDFW & NOAA

CALIFORNIA TROUT



FISH · WATER · PEOPLE

Santa Monica Mountains Steelhead
Habitat Assessment Final
Project Report

January 18, 2006



Submitted to:
California Department of Fish and Game
and California Coastal Conservancy -
Santa Monica Bay Restoration Project

Submitted by:
California Trout, Inc.
870 Market Street, Suite 528
San Francisco, CA 94102

SOUTHERN CALIFORNIA
STEELHEAD
RECOVERY PLAN



Southwest Regional Office
National Marine Fisheries Service
Long Beach, CA

January 2012

Santa Clara River Steelhead Trout:
Assessment and Recovery Opportunities



December 2005

Prepared By:

Matt Stoecker

STOECKER ECOLOGICAL
NATURAL RESOURCE ASSESSMENT AND RESTORATION SERVICES

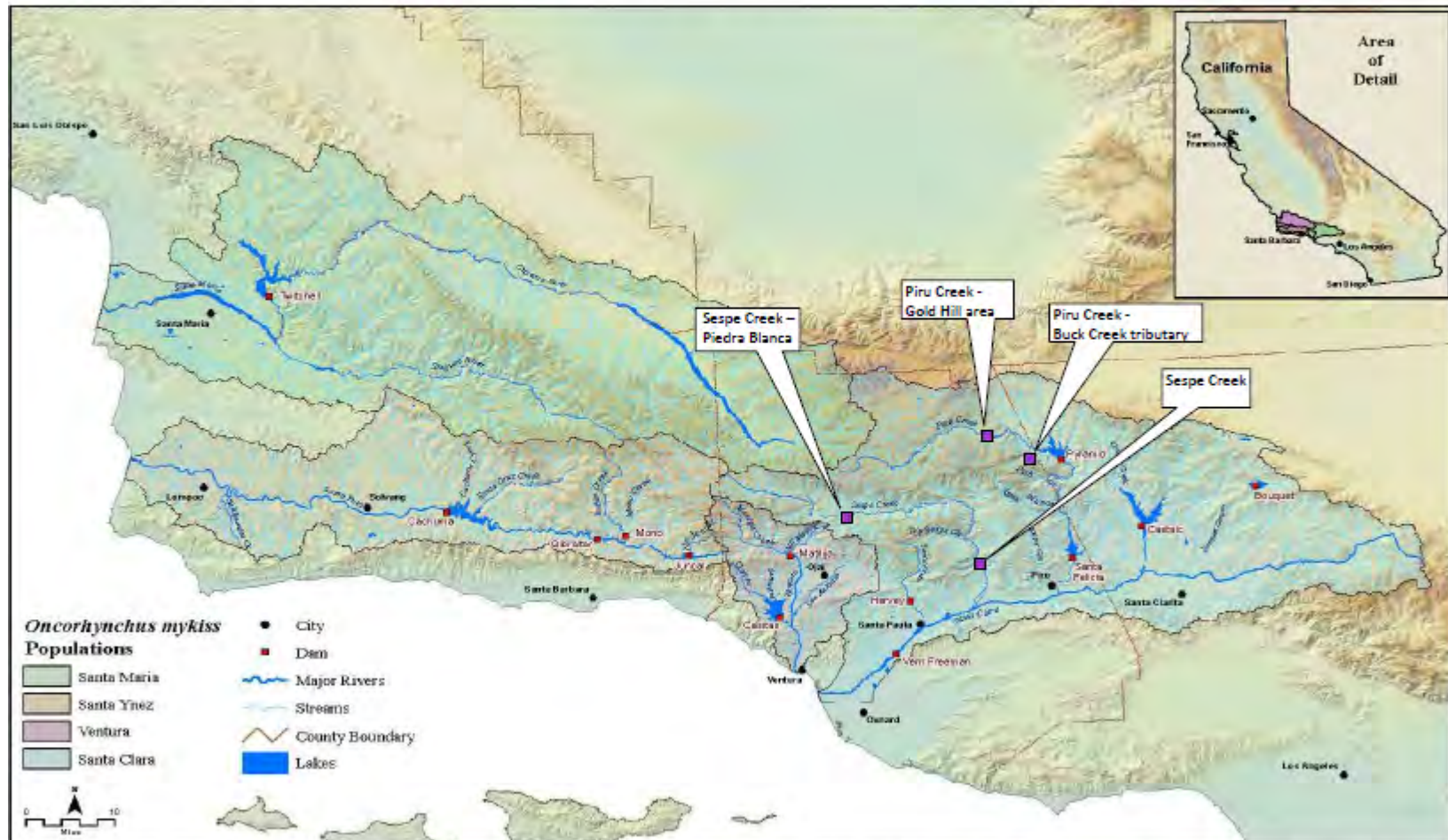
and

Elise Kelley, Ph.D.

University of California, Santa Barbara

Prepared For:
The Santa Clara River Trustee Council and The Nature Conservancy

Northern End of Southern California RT Genetics Study Area (Monte Arido Highlands BPG):
 Piru Creek and Sespe Creek, tributaries of Santa Clara River



Map generated by Hunt and Associates for the 2008 Southern California Coast Steelhead Recovery Planning Area report for NOAA / NMFS (Mark Capelli, lead) and annotated to show results of Southern California rainbow trout tissue genetic analysis (Dr. Carlos Garza lab, NOAA Southwest Fisheries Science Center) for Trout Unlimited –San Diego study funded by Cal. Dept. of Fish and Wildlife, Grant Agreement P0950015.



Harvey Diversion Fish Passage Restoration Project

- 1st Phase is the elevation/stabilization of the creek bed below Harvey Diversion on the Santa Paula Creek with “H Beams”
- 2nd Phase is the notching of the Diversion (i.e., removal of the Diversion down to the creek bed) and extension of the creek bed stabilization further below Diversion





*Artistic rendering at
Harvey Diversion*



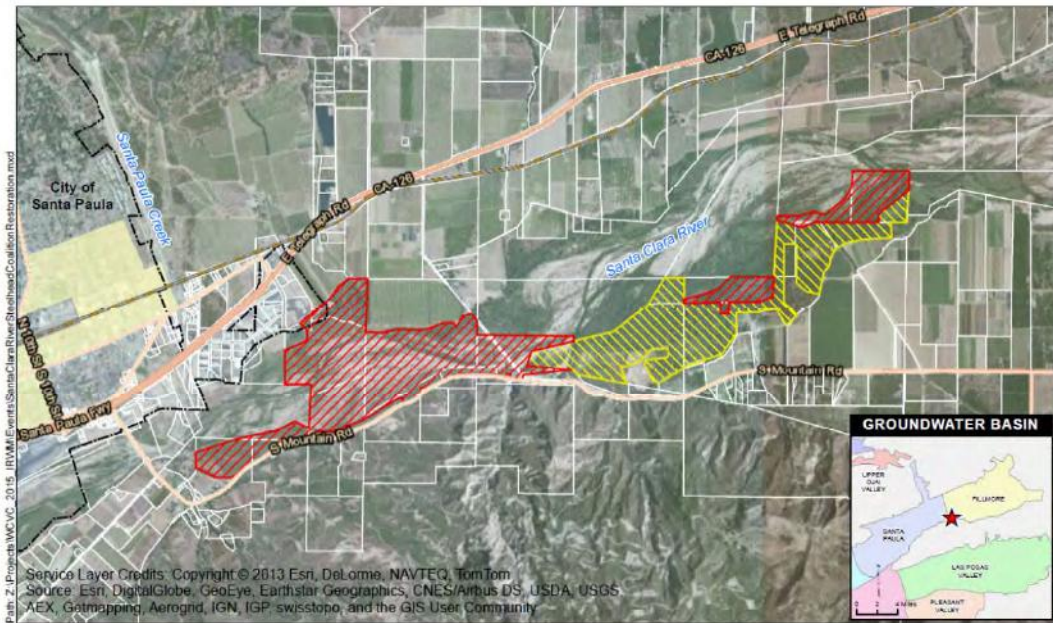
Current condition





Santa Clara River Habitat Restoration and Ecosystem Enhancement Project

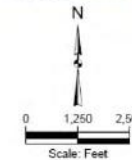
- DWR IRWM Project for *Arundo donax* removal and a Restoration of riparian Corridor.
- Approx. \$500,000
- 800 AFY saving
- Restoring 30-50 acres



Legend

- Proposed Restoration Areas and Monitoring Locations for 2015 IRWM Implementation Grant
- Restoration Areas of Proposition 84, Rd 2

Disadvantaged Communities

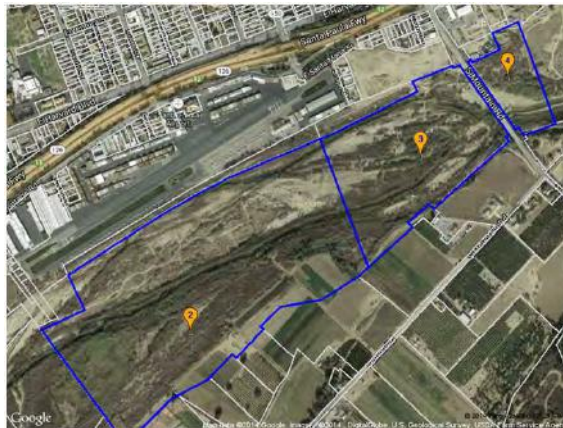


Kennedy/Jenks Consultants
 Watersheds Coalition of Ventura County
 2015 IRWM Implementation Grant
 Ventura County, California

Santa Clara River Steelhead Coalition Restoration
 July 2015



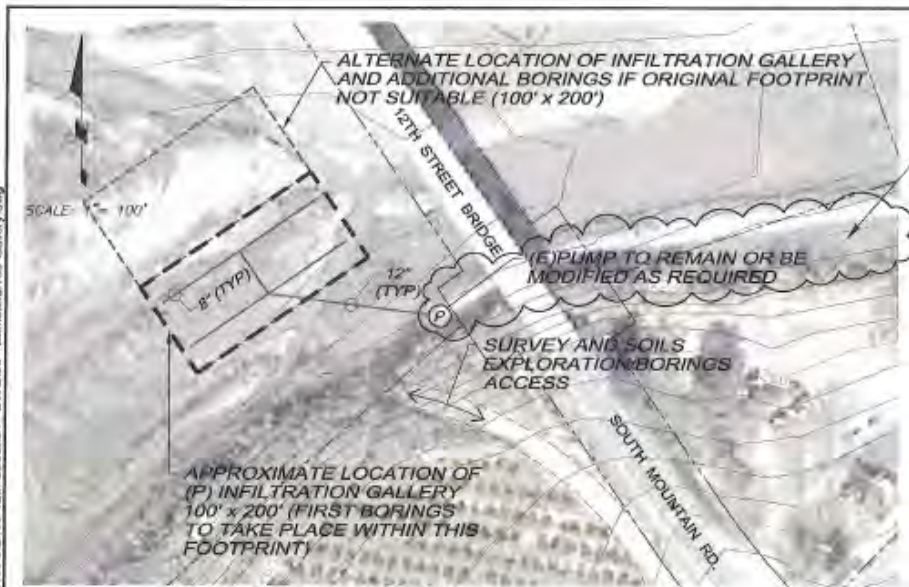
12th Street Infiltration Gallery



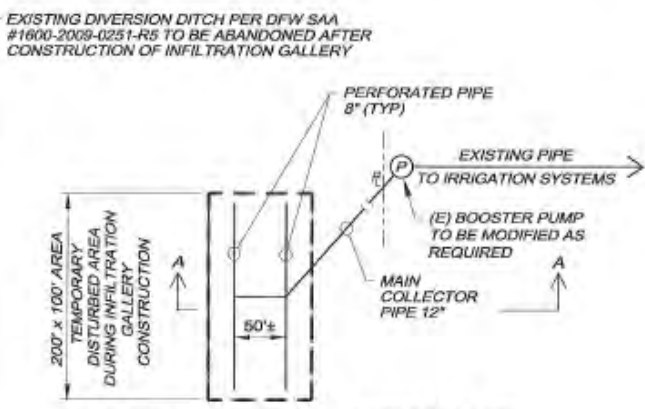
CALIFORNIA TROUT



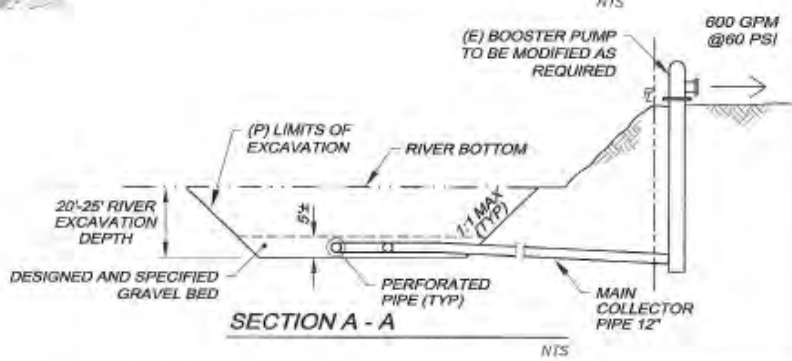
FISH · WATER · PEOPLE



CONCEPTUAL SITE PLAN
SHOWING PROPOSED SOILS EXPLORATION/BORINGS SCALE: 1" = 100'



INFILTRATION GALLERY SYSTEM PLAN



SECTION A - A

PRELIMINARY



WREA
WATER RESOURCE ENGINEERING ASSOCIATES
1000 S. GARDEN ST. SUITE 200
SANTA ANA, CA 92705 (714) 261-1111

SAA AMENDMENT EXHIBIT
AGREEMENT 1600-2009-0251-R5

12TH STREET
INFILTRATION GALLERY
SANTA PAULA, CA

SHEET 1
OF 1
JOB NO. 2189

Drawing name: N:\Projects\12109\12109-12th Street\04 - DWG\003 - Exhibit\118 Gallery.dwg Plot date: May 24, 2013 - 12:58pm



Immediate Priorities Identified for 2017

- Implementation of existing projects
- Expand 12th Street Infiltration Gallery
- CMP Santa Clara River Basin monitoring project
- Rose Valley Lakes System Design Alternatives Assessment for managing non-native species
- Sisar Creek to 100% Design
- Water Talks
- Coalition Renewal



CMP Santa Clara River Basin monitoring project

Sample Frame Development
2 Years of Implementation

CMP Santa Clara River Basin Monitoring Project
Topographic Map





Rose Valley Lakes System Design Alternatives Assessment for managing non-native species

- Assessment and 65% Design



Rose Valley Lakes System
Design Alternatives Assessment Project
Topographic Location Map



Legend

- Santa Clara River Watershed

World Latitude and Longitude Grids

DEGREES

- N
- Y

- BC Steelhead Critical Habitat 200501
- BC Steelhead Distribution 200508
- California_Small_Watersheds_(HUC12)







Outreach & Community Engagement

Steelhead Science for Anglers, April 2016

World Fish Migration Op-Ed, May 2016

CalTrout Gala, May 2016

EDC TGIF, September 9, 2016

Coastal Cleanup Day, September 17, 2016

- CalTrout & Sierra Club at TNC SCR

Gateway Site

- 75 volunteers

- 648 lbs. trash

Santa Clara River Parkway Conference,
September 24, 2016

Steelhead Summit, October 27-28, 2016.

Upcoming:

Water Talks Program (Dec 2016-May 2017)





Thank You!

Candice Meneghin
Santa Clara River Steelhead Coalition Chair
Conservation Manager, Southern California Region
(805) 665 6203
(310) 890 2834
cmeneghin@caltrout.org



@SCRSC - Santa Clara Steelhead



Santa Clara River Steelhead Coalition

www.caltrout.org/regions/southern-california-region/santa-clara-river/scrsc