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.
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
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
Current Estimated Adult Run-Size (2016)

- South-Central Coast: Uncertain
- Southern Coast: Uncertain
South-Central California Steelhead DPS

- Watershed Area: 6,727 sq. mi.
- Steelhead Watersheds: c. 38
- Stream Miles: 9,027
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 Steelhead DPS

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

- Less than 500 adults have been recorded annually

- Current annual run-size may be less than originally estimated

- Significant inter-annual variability
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

Photos: Kittleson Environmental Consulting

Pajaro River – Corralitos Creek
Monitoring Methodologies

- Rotary Screw Traps
- Visual Counts

Salinas River – Arroyo Seco
National Marine Fisheries Service

Monitoring Methodologies

Los Padres Dam – Carmel River

Steep Pass and Holding Pool
Monitoring Methodologies

Big Creek – PIT Tagging Project

Processor

Antenna Array

Photos: Thomas W. Williams, NOAA, Santa Cruz Laboratory
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

Photos: Resource Conservation District of the Santa Monica Mountains Stream Team
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. (smolitification probability)
- Genomic characterization in progress.

Southern California

“Typical” relationships among coastal O. mykiss populations.

- Geographic proximity.
- Clear, well supported relationships.
- Little influence of hatchery fish.

From Clemento et al. 2009
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

Change in Mean Annual Precipitation (%) from 1950-1979 to 2070-2999

Map shows "middle" change from 112 projections.

Data from: "Bias-Corrected and Downscaled WCRP CMIP3 Climate Projections"
Projected Climate Change

Change in Mean Annual Temperature (°F) from 1950-1979 to 2070-2999

Regional Difference
Current Drought

Drought 212 - ?

Malibu Creek

Photo: Resource Conservation District of the Santa Monica Mountains Stream Team
Current Drought

Malibu Creek

Drought 212 - ?

Photos: Resource Conservation District of the Santa Monica Mountains Stream Team
Current Drought

O. mykiss
Relocation

Topanga Creek

Photos: Resource Conservation District of the Santa Monica Mountains Stream Team
South-Central Recovery Actions

San Clemente Dam
South-Central Recovery Actions

San Clemente Dam

Removed
Southern California Recovery Actions

Matilija Dam
Southern California Recovery Actions

Planned Removal
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


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

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

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
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

- Coldwater
- Trabuco Creek: Check Dam Removal & six Road Xing upgrade, Culvert Replacement Bridge 3 (USFS)
- San Juan/Trabuco Creek – Metrolink and I-5 Barriers (TU / CalTrout)
- Santa Margarita River: Sandia Creek FPB (TU)
- SMR: Lake O’Neill FPB Camp Pendleton (USMC)
- San Luis Rey River: Douglas Bridge FPB (City of Oceanside)

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.
Projects Underway – San Luis Rey

1. 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
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
Steelhead Habitat Improvement in Santa Margarita Eco Reserve

Lead: CalTrout

-Perform trout habitat improvement via non-native aquatic species and vegetation removal; sediment reduction with CCC, CDFW, others.
Native Trout Preservation:
- Lead – Riverside Corona RCD

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

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

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

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Members
Coalition Participants include:
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
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.
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

*12*th *Street Infiltration Gallery*
- Drought CDFW

*Santa Clara River Steelhead Coalition*
- National Forest Foundation
- CDFW & NOAA
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

– 1\textsuperscript{st} Phase is the elevation/stabilization of the creek bed below Harvey Diversion on the Santa Paula Creek with “H Beams”

– 2\textsuperscript{nd} 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 Restoration of riparian Corridor.
- Approx. $500,000
- 800 AFY saving
- Restoring 30-50 acres
12th Street Infiltration Gallery
Immediate Priorities Identified for 2017

• Implementation of existing projects
• Expand 12\textsuperscript{th} 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
Rose Valley Lakes System Design Alternatives Assessment for managing non-native species

- Assessment and 65% Design
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

Upcoming:
Water Talks Program (Dec 2016-May 2017)
Thank You!

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