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

**Instream Flow Needs for Improving for Steelhead Recovery**

Part 1

**(Slide 4)** *Assessing Instream Flow Needs for Steelhead in Coastal California Creeks*
Ethan Bell, Aquatic Ecologist, Stillwater Sciences

**(Slide 38)** *Creative Water Transactions to Enhance Streamflow*
Matt Clifford, JD, California Water Project, Trout Unlimited
ASSESSING INSTREAM FLOW NEEDS FOR STEELHEAD IN COASTAL CALIFORNIA

Ethan Bell
INTRODUCTION

• Central California is experiencing prolonged, extreme, drought.

• Interest in protecting and enhancing instream flows for coastal steelhead populations.

• Our goal is to identify watershed-specific flow requirements for steelhead.
1. Develop appropriate metrics to measure flow requirements for steelhead
2. Implement methods to estimate flow requirements
   1. CDFW Critical Riffle SOP
   2. PHABSIM
   3. Habitat Criteria Mapping
   4. Regional methods
MEASURABLE METRICS

- Steelhead biology
  - Minimum flows to grow in spring
  - Minimum flows to survive in summer
  - Fish migration during winter and spring

- Water Depth
- Water Velocity
Methods
-Fish Passage-

CDFW Critical Riffle SOP

Transect
• Adult >0.7 ft deep
• Juv >0.3 ft deep
• >25% of total width
• >10% of the continuous width
Methods
-Fish Passage-

CDFW Critical Riffle SOP

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Methods
-Fish Passage-

Obstacle assessment

CDFW guideline
“depth of a pool > 1.25 times jump height”
**PHABSIM**

*Physical Habitat Simulation Modeling*

- Study Sites
- Transect selection
- Hydraulic data
- Calibration flows
- Habitat Suitability Criteria (HSC)
Habitat Criteria Mapping (HCM)

- Study sites
- Flow selection
- Habitat Suitability Criteria
- Habitat mapping

![Diagram showing different flow rates](image)
HABITAT CRITERIA MAPPING

Total Available Habitat Area (x1,000ft²) vs. Flow (cfs)
Santa Maria River

Upstream passage events one or two years per decade

Downstream steelhead passage about one-half of all years
San Gregorio Creek

- Age 1+ steelhead rearing habitat during summer.
Pismo Creek

- Habitat segregation
- Fish Passage
- Age 1+ steelhead rearing habitat during spring
Goleta Slough Tributaries

- Fish passage obstacles
- Age 1+ spring
SUMMARY

- CDFW fish passage SOP works well.
- HCM works well and is consistent with PHABSIM.
- In small coastal streams, a little bit of water can be sufficient to provide suitable habitat.
- A little bit of water is hard to find in many streams.
- Age 1+ juveniles most sensitive life-stage.
- Fish passage and instream flows are related.
Instream flows support additional environmental factors
- Geomorphic function
- Lagoon habitat
- Other species, including tidewater goby

Water temperature
Coastal San Luis Resource Conservation District, Upper Salinas-Las Tablas Resource Conservation District, San Luis Obispo County, David Boughton (National Marine Fisheries Service), Central Coast Salmon Enhancement, Department of Water Resources, the Integrated Regional Water Management program, California Department of Fish and Wildlife, Trout Unlimited, American Rivers, and San Mateo County Resource Conservation District.

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Water Transactions to Enhance Instream Flow in Coastal California - Matt Clifford, Staff Attorney, Trout Unlimited
Water is locally-sourced
Project Elements:

- Alternative source of water for dry season
- Incentive for water user to change water management
- Means of enforcing management changes
- Water rights and other permitting
- Funding
Need to have:

• alternative source of water for dry season
• **incentive** for water user to **change** water management
• Means of **enforcing** management changes
• **water rights**/ **permitting**
• Funding
Figure 21. Comparison of average annual rainfall, streamflow, and human water need in the Grape Creek watershed.
Tanks:

• Usually for domestic use
• Typical size: 40k – 80k gal.
• Typical cost: $70k – $110k
• Largest to date: 180k gal.
• Usually permitted via SDU Storage
Other Sources of Dry Season Water

- Rainwater
- Groundwater
- Conservation/Efficiency
Incentives

Why am I doing this?
Enforcement
Water Rights Changes
Grant Sources

- Prop 1
- CA Dept. of Fish and Wildlife
- NOAA
- NRCS
- USFWS
- IRWMP
- NRCS (Farm Bill funds)
- Water Districts
- Coastal Conservancy
- Private foundations
Sample Project – Little Arthur Creek

Series of residential tanks on key Steelhead tributary of Upper Pajaro
Example – Pescadero/ San Gregorio Creeks

• Important steelhead/ coho tributaries on San Mateo Coast
• Water use dominated by a few large high-value farms
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