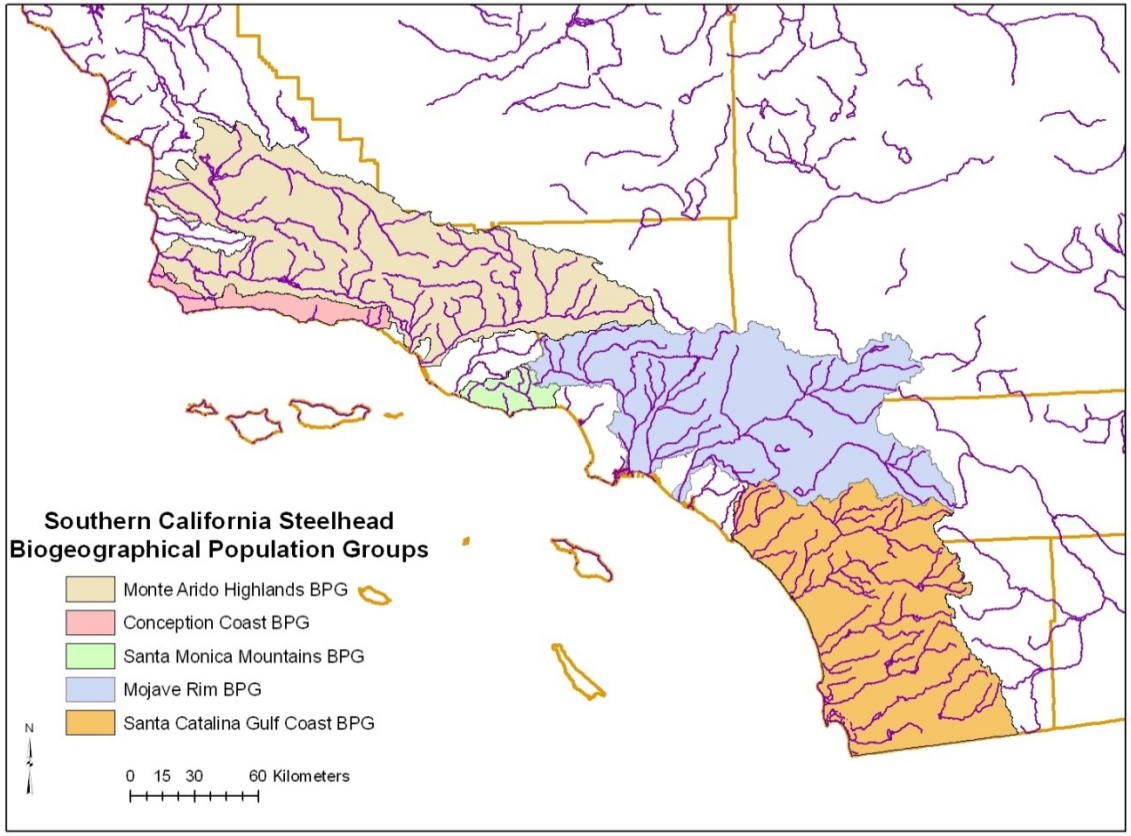
Research and Monitoring Endangered Southern California Steelhead: What is a Steelhead?

2016 PACIFIC COAST STEELHEAD MANAGEMENT MEETING

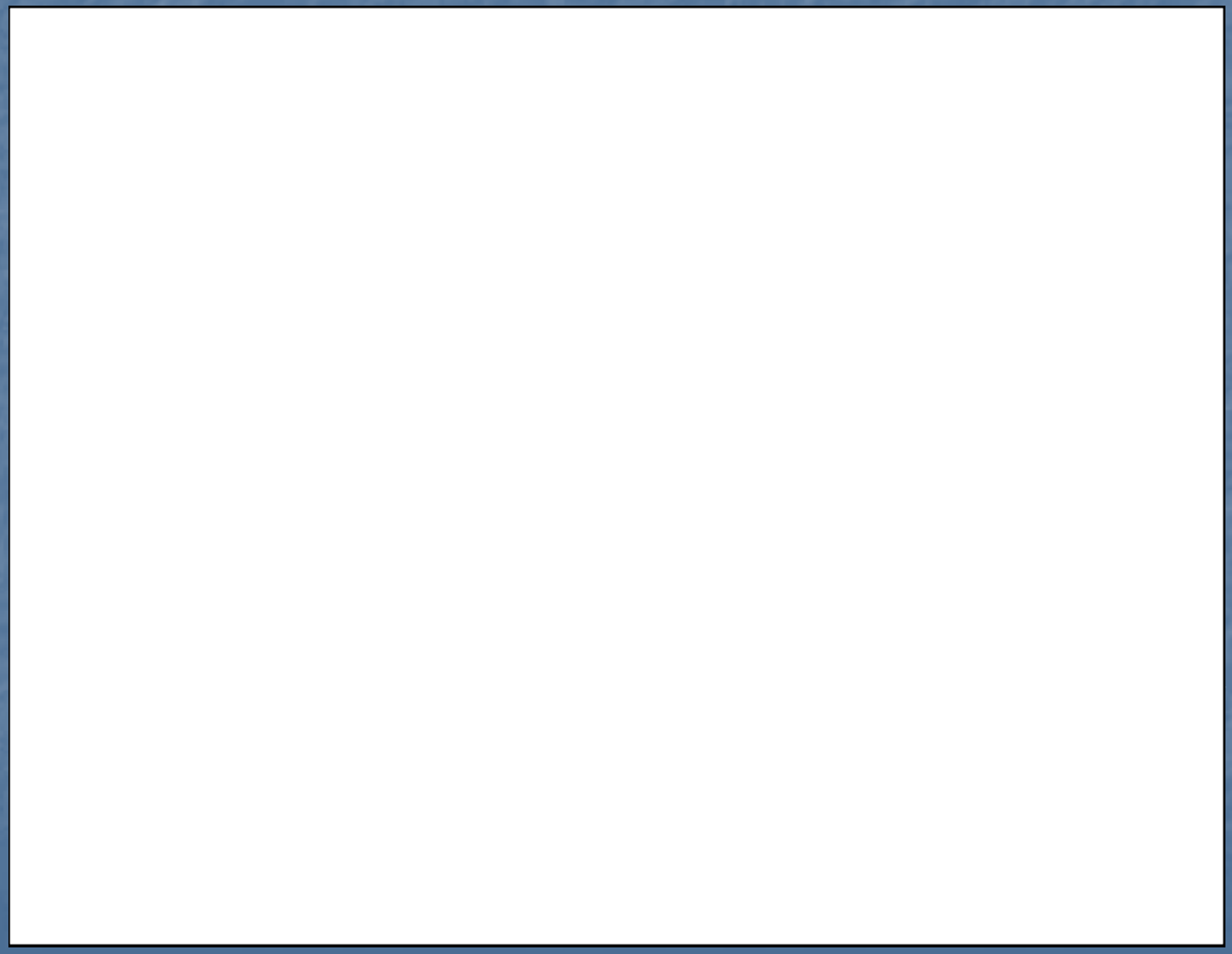
The People

- California Department of Fish and Wildlife:
  - Mary Larson, Senior Environmental Scientist, Supervisor
  - Dana McCanne, Environmental Scientist
  - Katherine McLaughlin, Environmental Scientist
  - Ben Lakish, Environmental Scientist
  - Mandy Wegmann, Scientific Aid
  - Andrea Dransfield, Scientific Aid
  - Terra Dressler, Scientific Aid
  - Paula Higginson, Scientific Aid
- Pacific States Marine Fisheries Commission:
  - Sam Bankston, Fishery Biologist II
  - Jean Tsai, Fishery Biologist
  - Thomas van Meeuwen, Fishery Biologist
  - Kyle Evans, Fisheries Technician

Southern California Steelhead DPS Five BPGs



Existing and Proposed* LCS sites

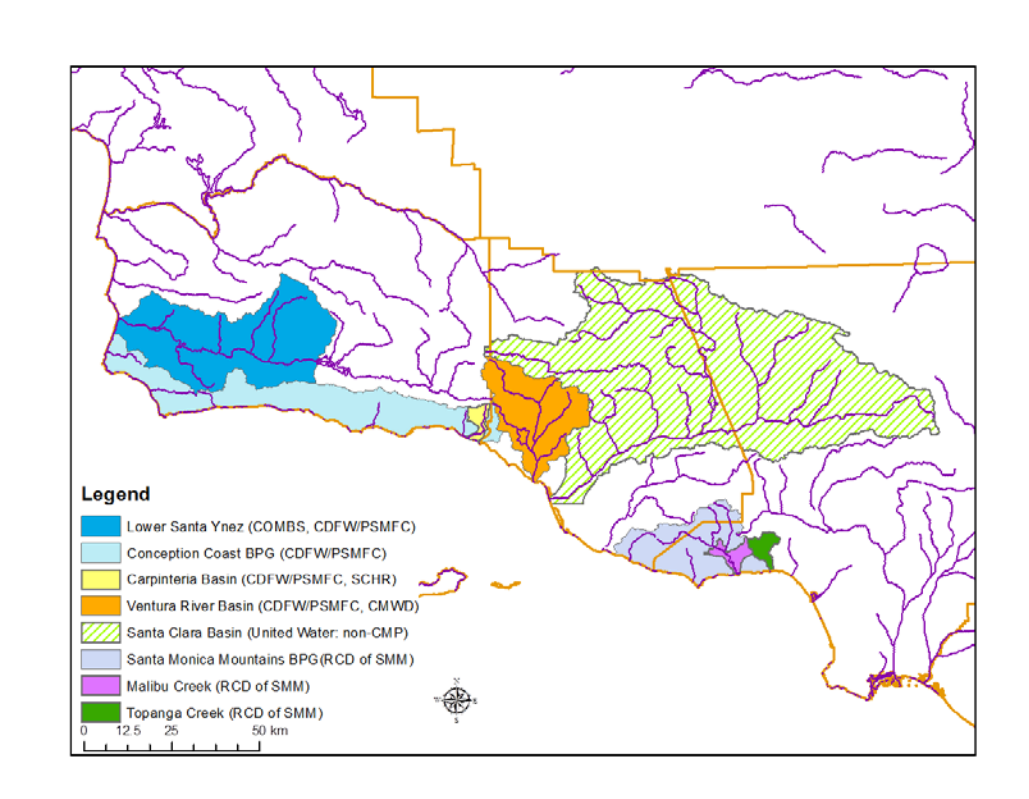


*Proposed in Southern California Steelhead Recovery Plan (NMFS,2012)

Current monitoring efforts

Lower Santa Ynez
Conception Coast
- Carpinteria Basin

Ventura
Santa Clara (non-CMP)
Santa Monica Mountains:
- Malibu Creek
- Topanga Creek



Fish Bulletin 180
Southern Monitoring Area

- Adult escapement
- Juvenile rearing distribution
- Life-cycle monitoring stations
- Research

NMFS Recovery Plan
Four Population-Level Recovery Criteria

- Mean annual run size (extinction risk <5% over 100 years)
- Ocean conditions (Run size criterion met during poor ocean conditions)
- Spawner Density
- Anadromous Fraction (N=100% of mean annual run size)

Viable Salmonid Populations

- Population Size
- Population growth rate (productivity)
- Spatial Structure
- Diversity

NMFS Recovery Plan
Research Needs

- Population Monitoring in core watersheds
  - Rearing juveniles
  - Smolt out-migration
  - Adult escapement
- Research efforts in core watersheds to develop more refined biological recovery criteria

NMFS Recovery Plan
Research Focus Areas (Chapter 6)

- Reliability of migration corridors
- Productivity of freshwater tributary nursery areas
- Evaluation of role of seasonal lagoons
- Productivity of freshwater mainstem habitats
- Roles of intermittent freshwater habitat for both spawning and rearing
- Spawner density as an indicator of population viability
- Relationship between anadromous and non-anadromous forms and population structure and viability
- Dispersal rate between individual populations

Life Cycle Monitoring Stations

- LCS must be able to:
  - Estimate escapement
  - Estimate marine survival
  - Estimate freshwater survival
  - Assess spawning success
  - Juvenile rearing success (over-summering and winter growth and survival rates)
  - Investigate major life history traits

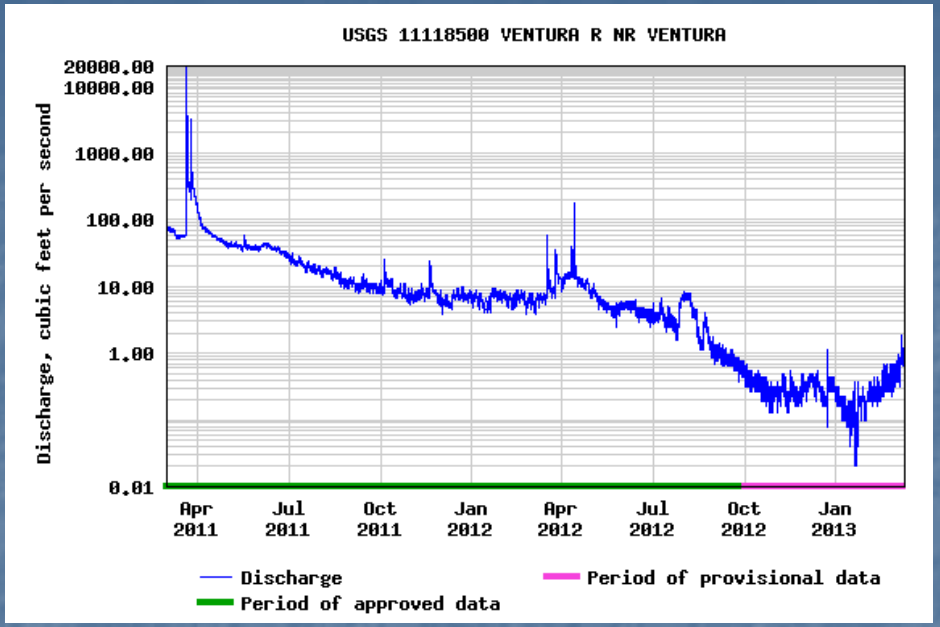
Investigate major life history traits from the Recovery Plan

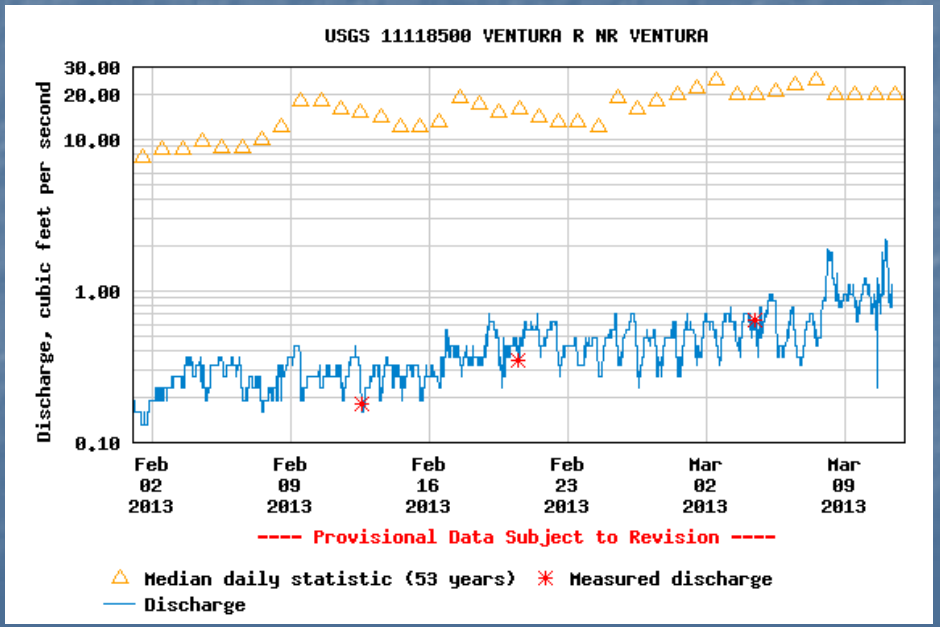
- Anadromy/resident relationship
- Sex ratio
- Age and size structure
- Habitat utilization patterns
- Emigration age (*size*) and timing
- Maturation patterns
- Run-timing
- Physiological tolerances

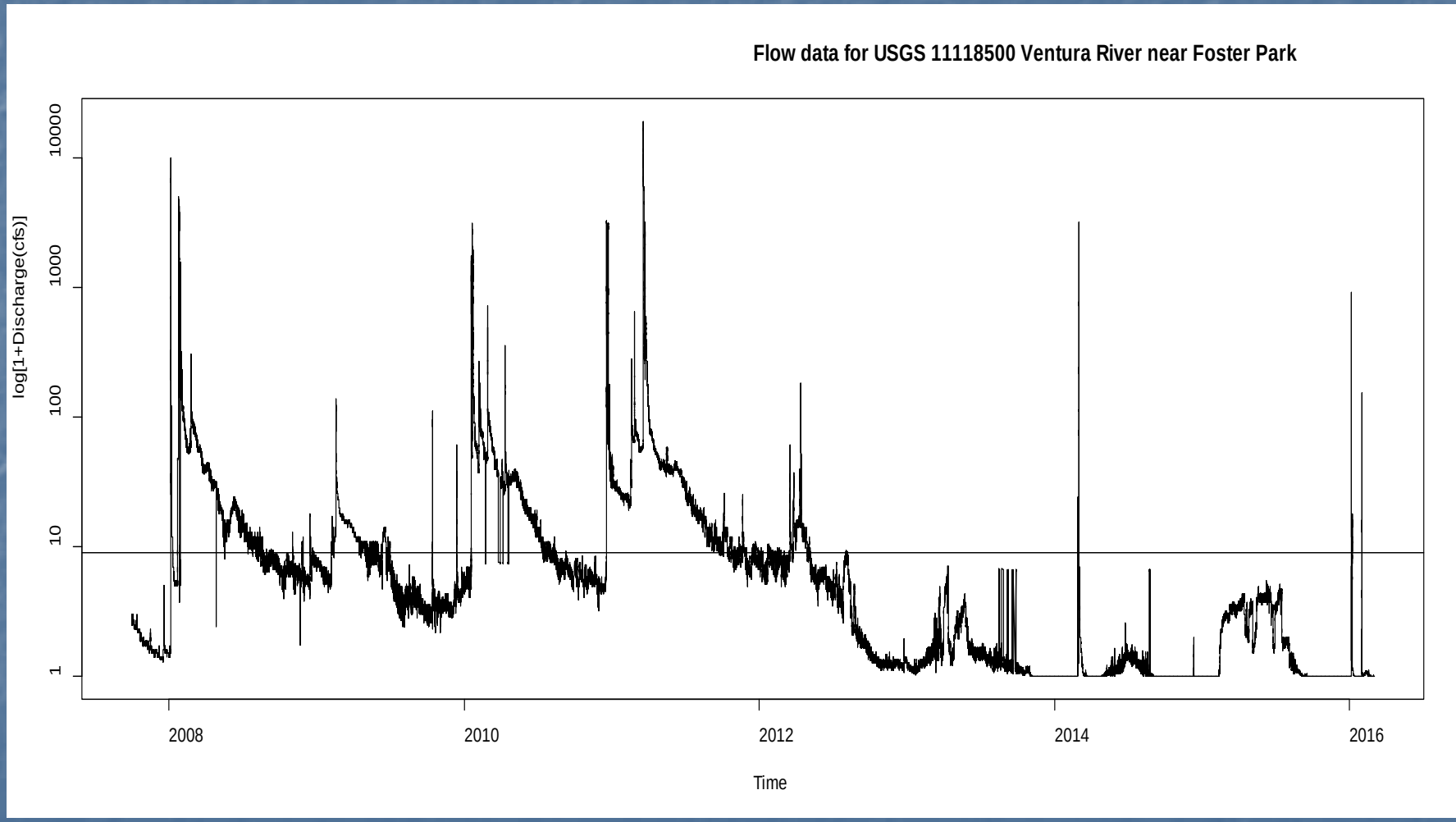
Life Cycle Monitoring Stations Initial steps

- DIDSON
  - Required for LCS
  - Adult steelhead counts coming in
  - Smolts leaving
- Redd surveys
  - All reaches in Carpinteria, Ventura, Topanga
  - Large Basins?
- Summer rearing
  - All reaches in Carpinteria, Ventura, Topanga
  - Large Basins as much as funding allows
  - Snorkel where conditions permit, otherwise efishing only
  - Calibrate snorkel counts with efishing and multi-pass dive counts
  - Lengths, scales, and genetic samples from a sample of handled fish

Problem getting started:
Not much rain






Flow data for USGS 11118500 Ventura River near Foster Park
log[1+Discharge(cfs)]
10000
1000
100
10
1
2008
2010
2012
2014
2016
Time

Observed Number of Steelhead 1994 - 2015

BPG:	Monte Arido Highlands				Conception Coast					Santa Monica Mountains			Santa Catalina Gulf Coast					
Location	Santa Ynez River	Ventura Casitas Water District - Robles	Ventura	Santa Clara Freeman Diversion	Goleta Slough Maria Ygnacio Creek	Goleta Slough Atascadero Creek	Goleta Slough San Pedro Creek	Mission Creek	Carpinteria Creek	Conejo Creek**	Malibu	Topanga	San Juan Creek	San Mateo Creek	Santa Margarita River	San Luis Rey River	Los Penasquitos Creek	TOTAL DPS
CORE Ranking	1	1	1	1	1	1	1	1	1	Not listed	1	1	1	1	1	1	Not listed	
YEAR																		
1994				1														1
1995	0			1														1
1996	0			1														1
1997	2			0														2
1998	1			0														1
1999	3			1														4
2000	0			2	1													3
2001	4			2								2		2				10
2002	0			0				2				0						2
2003	1			0								0		1				2
2004	0			0				4				0						4
2005	1			0								0	2					3
2006	1	4		0				2			1	1						9
2007	0	0	2	0				3			2	2	1			2		12
2008	16	6		2*	1		1	13	3		4	2	1					49
2009	1	0		1							1	1			1			5
2010	1	1		0		2					2	1						7
2011	9	0		0							2	0						11
2012	0	0		2							3	1	1				1	8
2013	0	0		0		2				1	3	0						6
2014	0	0		0							5	0						5
2015	0	0		0							1	0						1
TOTAL:	40	11	2	13	2	4	1	24	3	1	24	10	5	3	1	2	1	147
Source	Tim Robinson	Scott Lewis	Mark Capelli	Mike Booth, Steve Howard	Mark Capelli	Mark Capelli	Mark Capelli	Mark Capelli	Mauricio Gomez	Tim Hovey	Rosi Dagit	Rosi Dagit	George Sutherland, CDFW	George Sutherland, CDFW	*McVay, Dickinson, NMFS via George Sutherland*	Dave Kajtaniak, CDFW	CDFW	

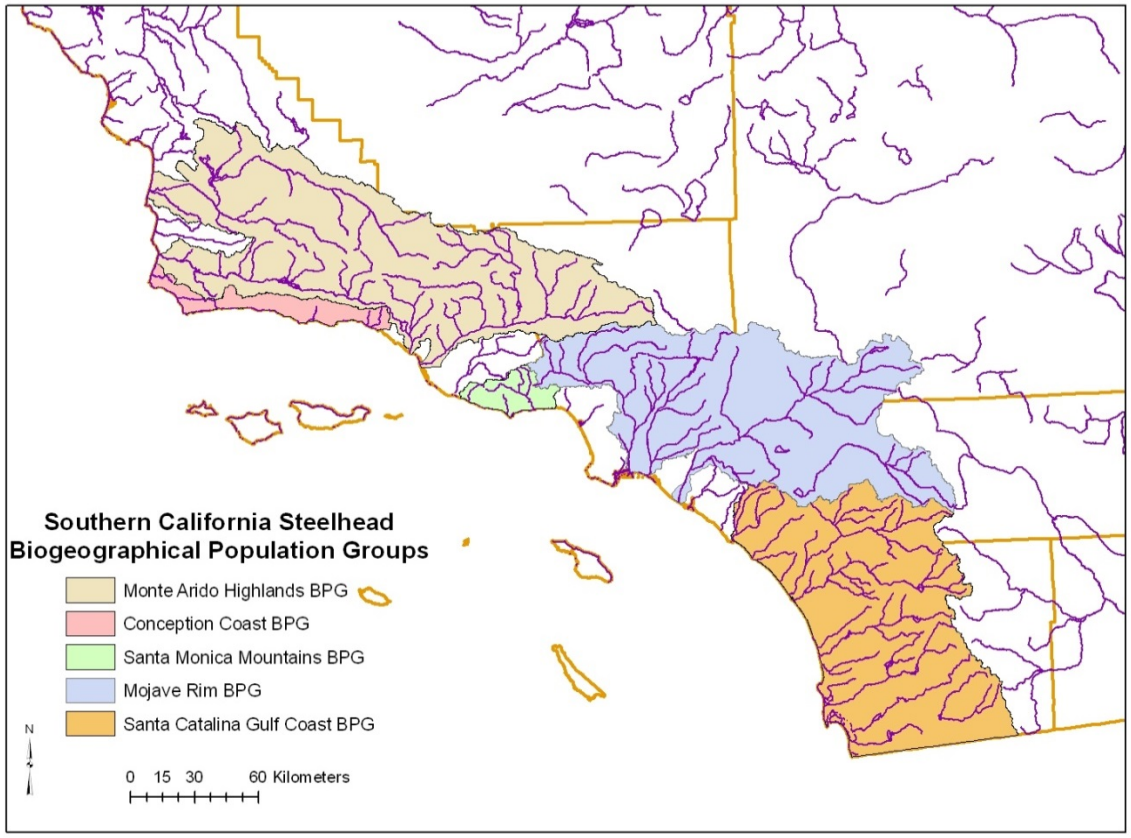
* 1 Hatchery steelhead

How do you know if a particular *Oncorhynchus mykiss* is a steelhead or resident fish?

Steelhead – an *O. mykiss* that has gone to the ocean, will go to the ocean, or has a parent that was a steelhead

60 cm resident trout Ventura River

Where are the resident fish?



Questions or Comments?

Thank you:

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