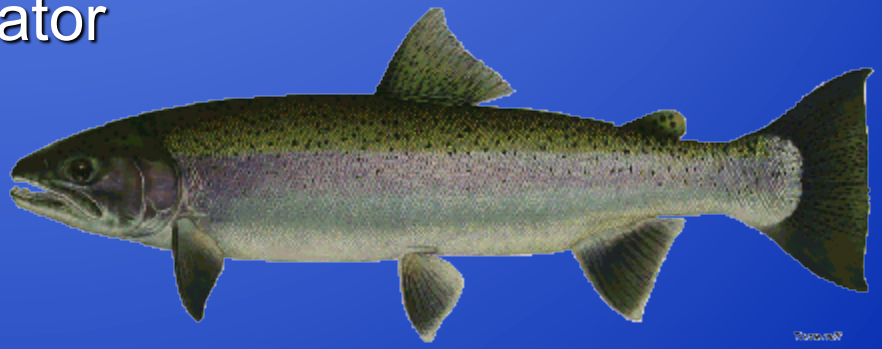
Southern California Steelhead 2023 5-Year Review & South Coast Steelhead

National Marine Fisheries Service

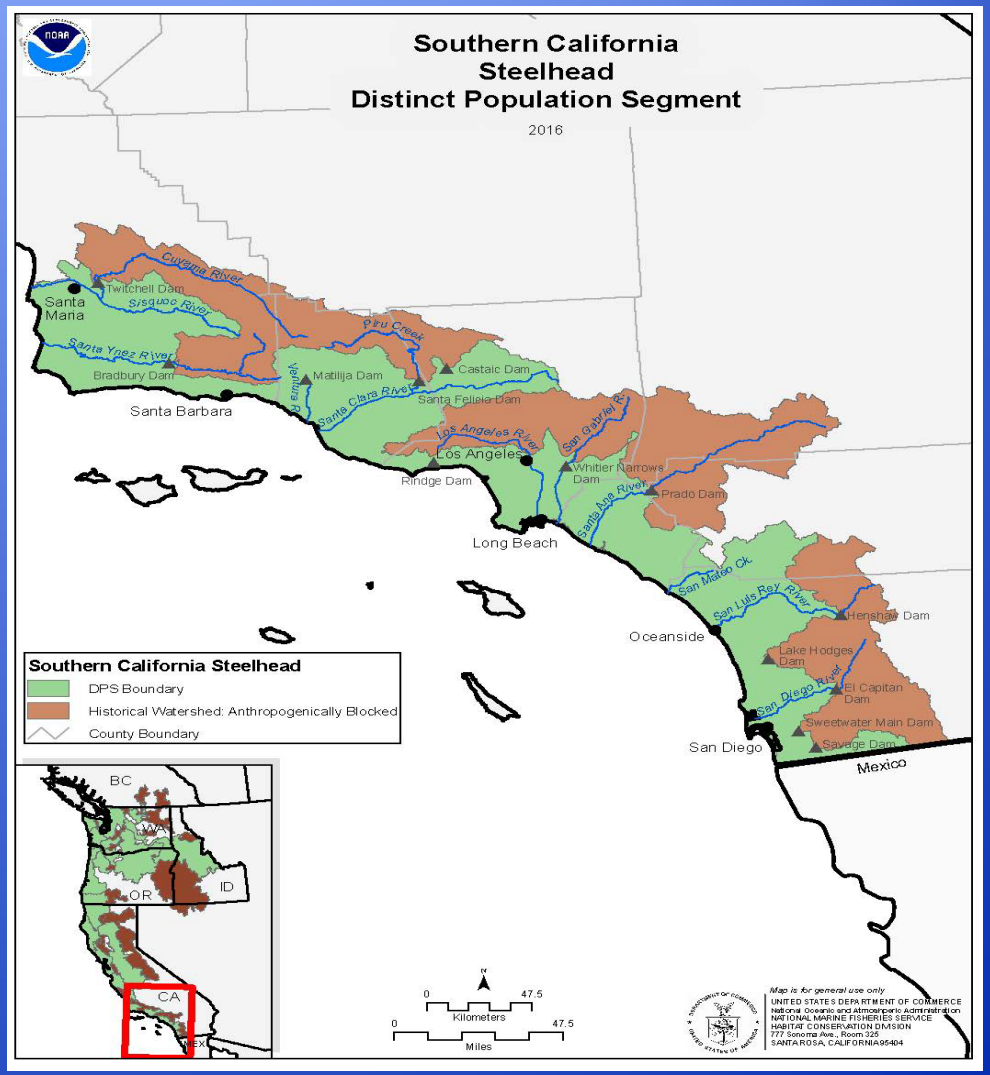
City of Goleta – Creek Week
September 27, 2024
Mark H. Capelli
Steelhead Recovery Coordinator



Introduction

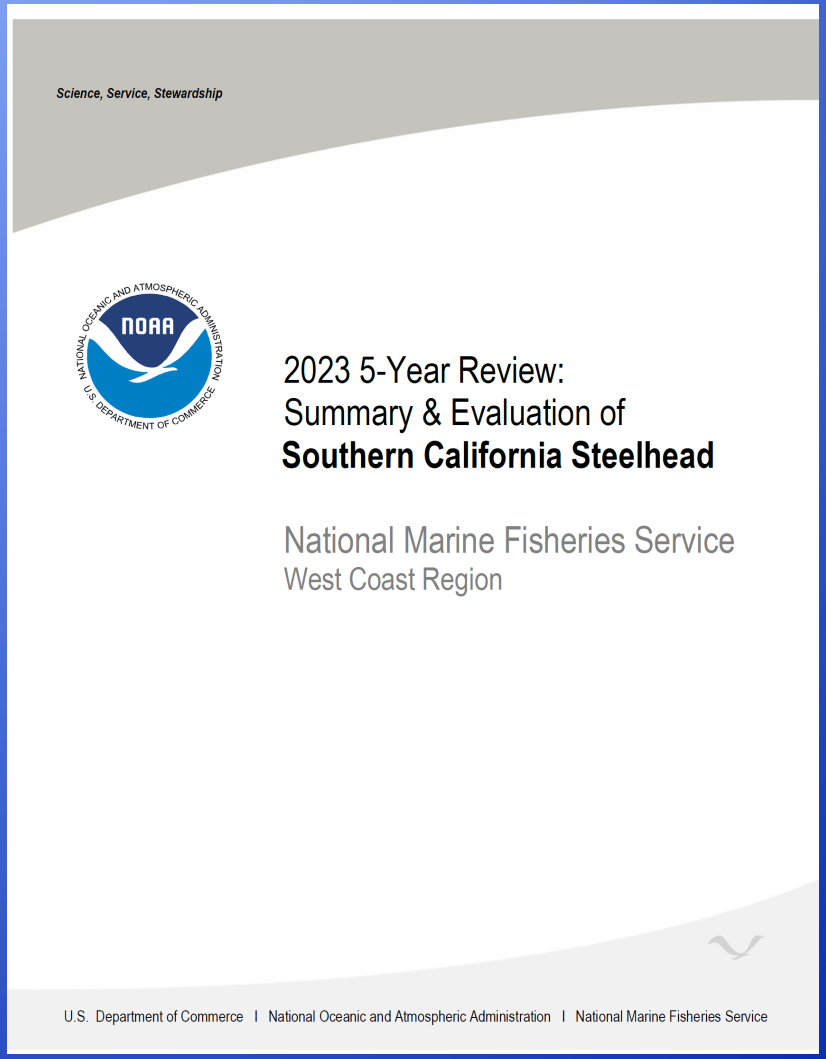
Southern California Steelhead DPS

Santa Maria River – Tijuana River



Introduction

- Summary & analysis of available Information
- Report on the species progress towards recovery
- Record of the process of the review
- Recommendation for the classification of the species



Part I: Scientific Assessment

Abundance

Biological Productivity

Biological Diversity

Spatial Distribution

Part I: Scientific Assessment

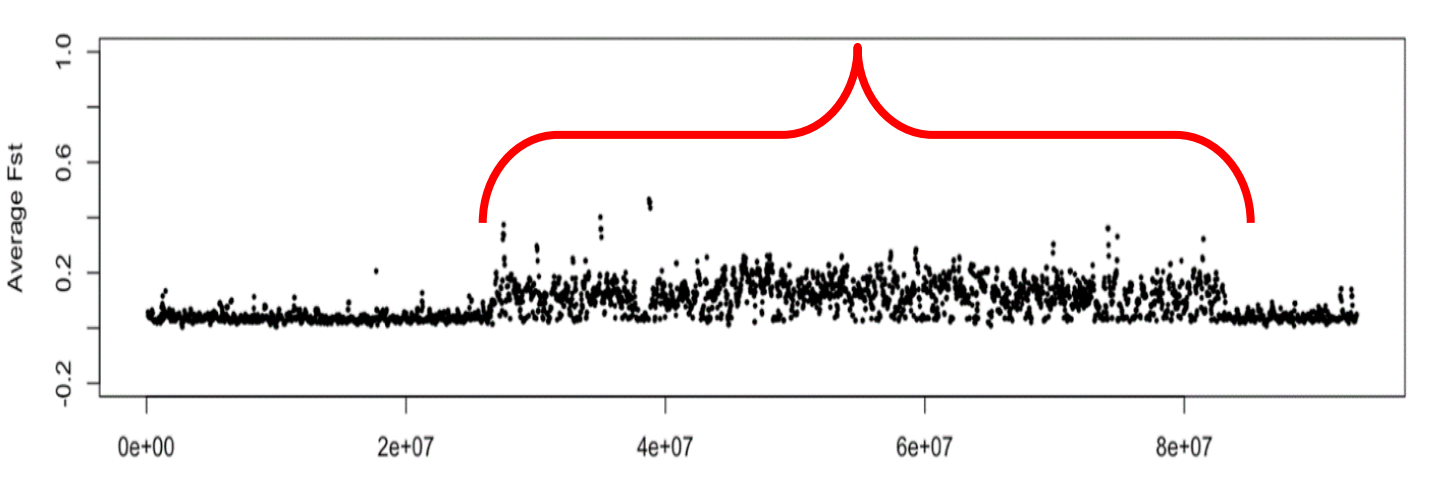
Recent Research

- Genomic basis of anadromy
- Relationship of anadromous/non-anadromous *O. mykiss*
- Stabilized population density at low abundance
- Steelhead dispersal to non-natal watersheds

Part I: Scientific Assessment

Genomic Basis of Anadromy/Residency: Omy5

Migration Associated Region

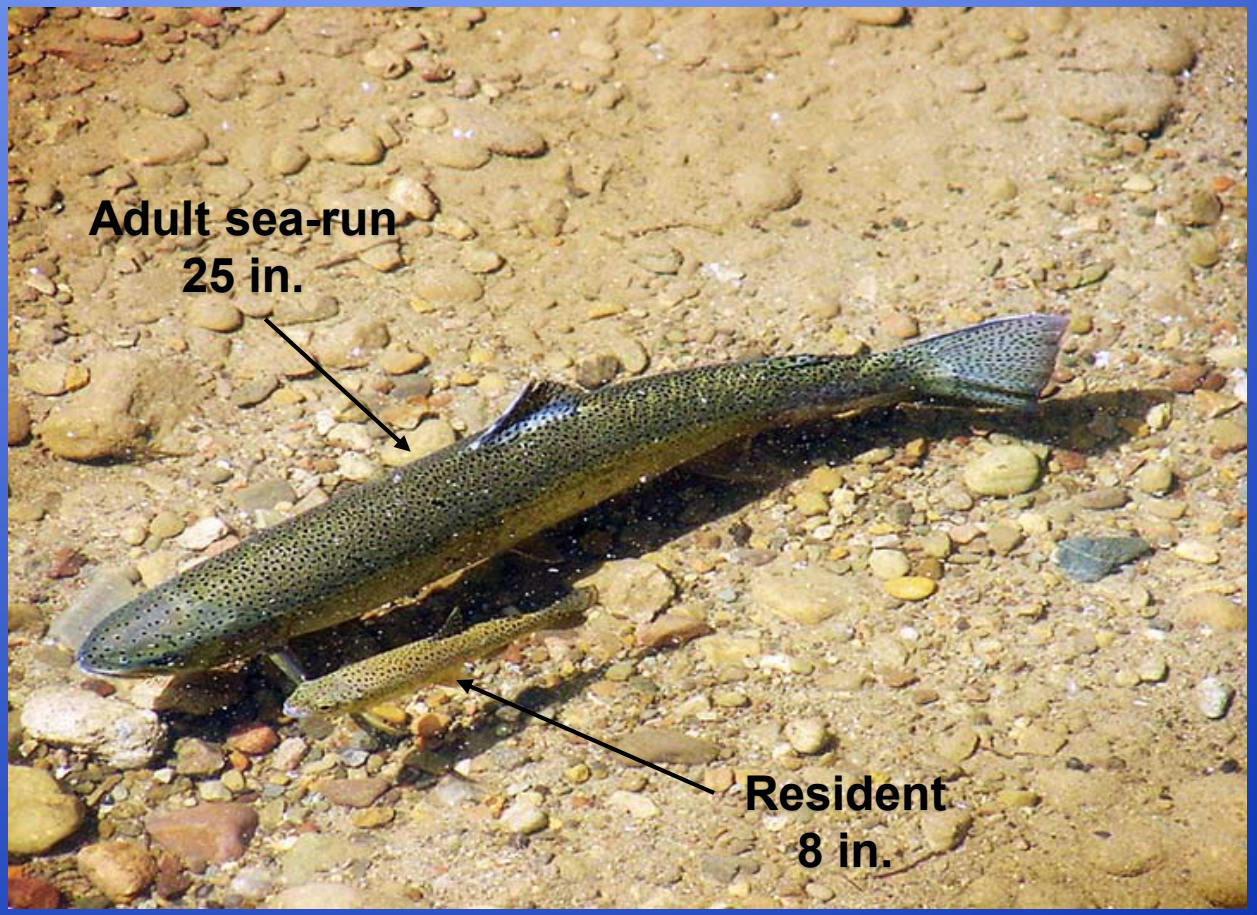


Massive double inversion complex of chromosome Omy5 > 50 million DNA base pairs, > 1000 genes. This complex acts as single locus, or supergene (adapted from Pearse, *et al.* 2019).

Part I: Scientific Assessment

Genomic Basis of Anadromy/Residency: Omy5

Southern California Steelhead



Maria Ygnacio Creek, Santa Barbara Co. 2017

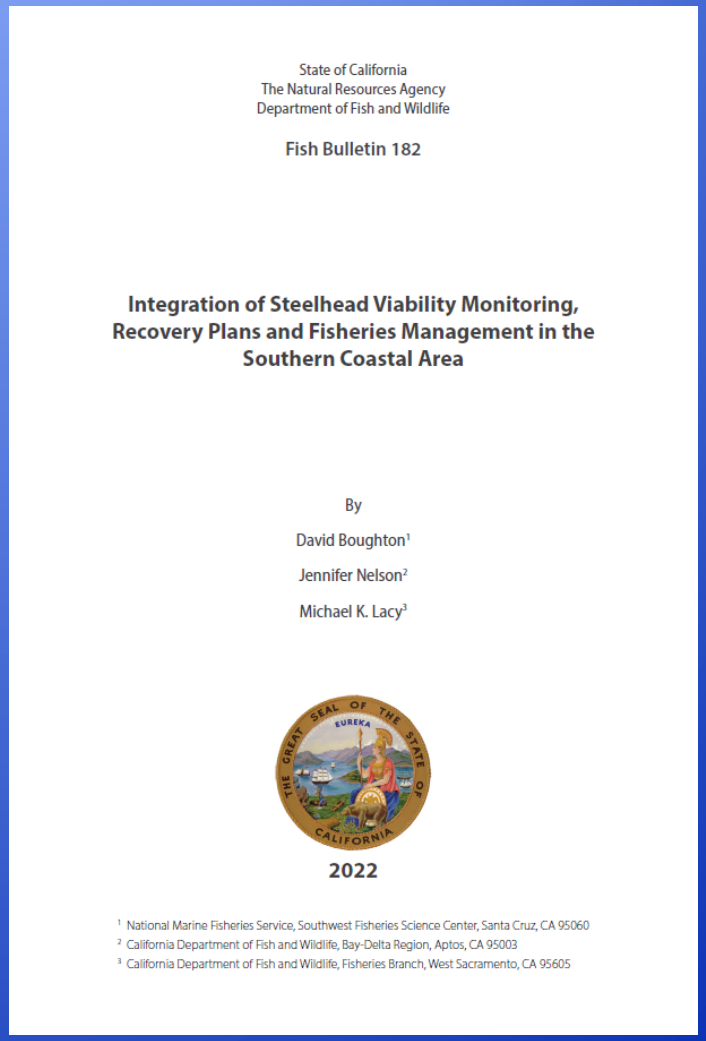
Part I: Scientific Assessment

1) Stratify sampling by “targets of estimation” identified in NMFS’ Southern California Recovery Plan

2) Conduct electrofishing surveys instead of snorkel surveys during the low-flow season

3) Modify the sampling frame to include “short reaches” for low-flow surveys

4) Incorporate an additional stage of sampling in the low-flow season to identify the proportion of habitat that is unsuitable due to lack of surface flow



State of California
The Natural Resources Agency
Department of Fish and Wildlife

Fish Bulletin 182

Integration of Steelhead Viability Monitoring, Recovery Plans and Fisheries Management in the Southern Coastal Area

By

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Jennifer Nelson[2]

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2022

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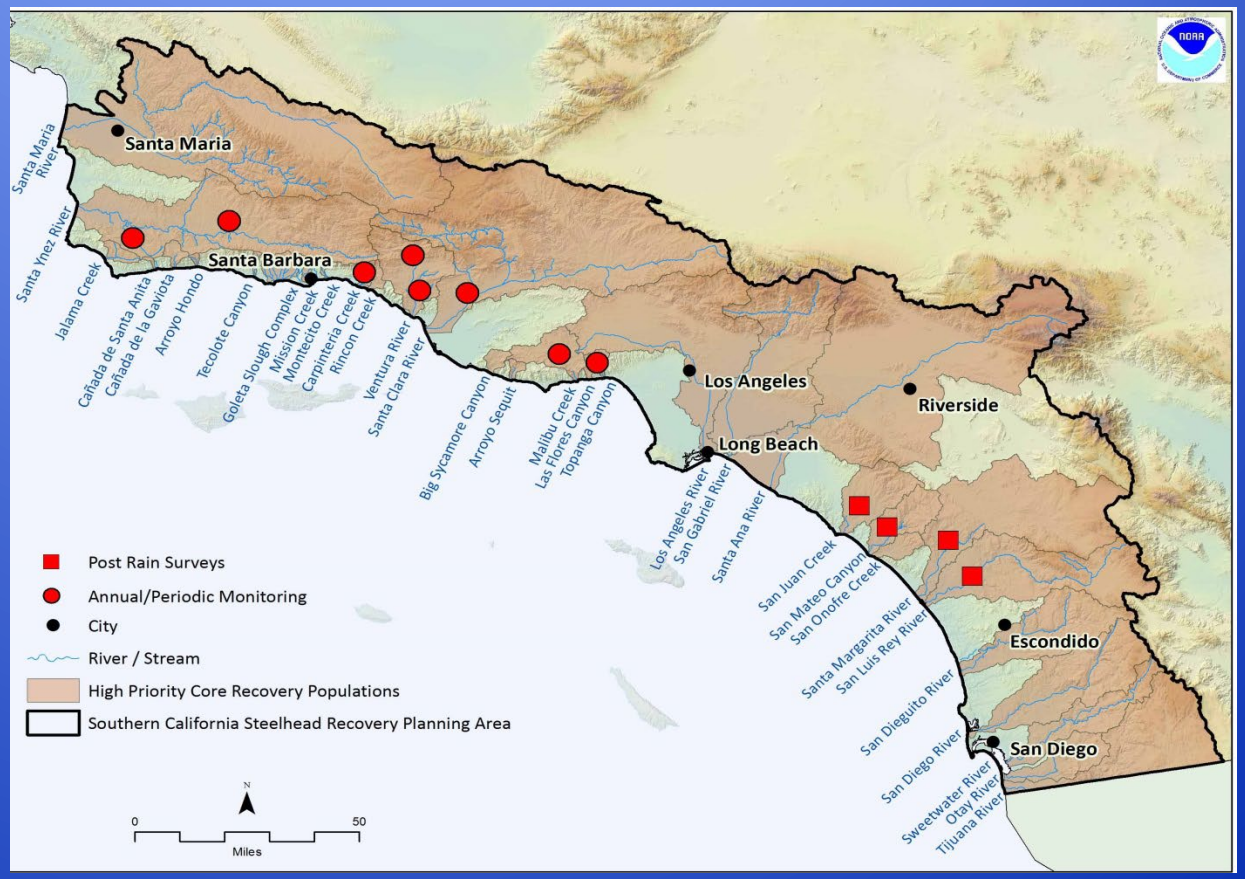
Part I: Scientific Assessment

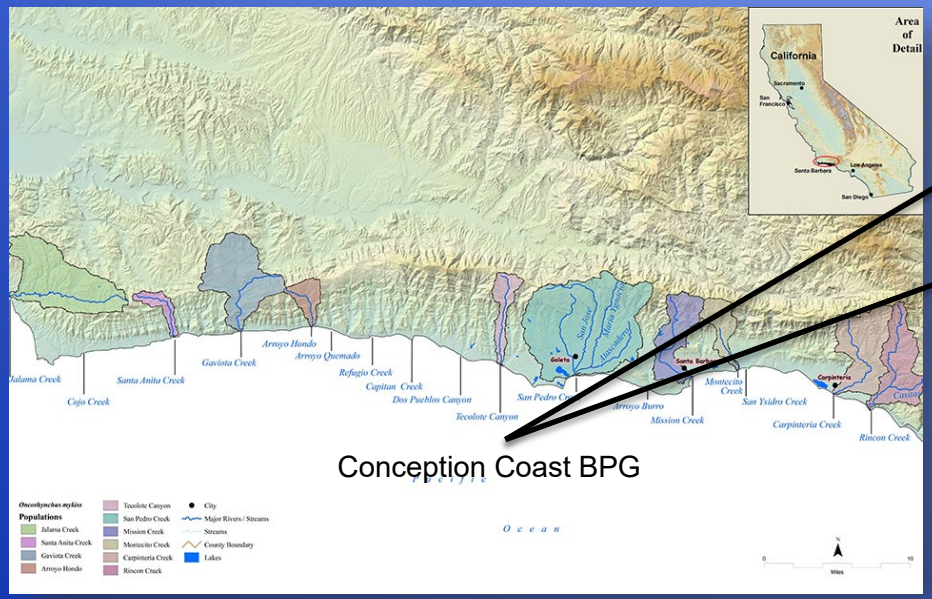
Current Monitoring/Surveying Efforts

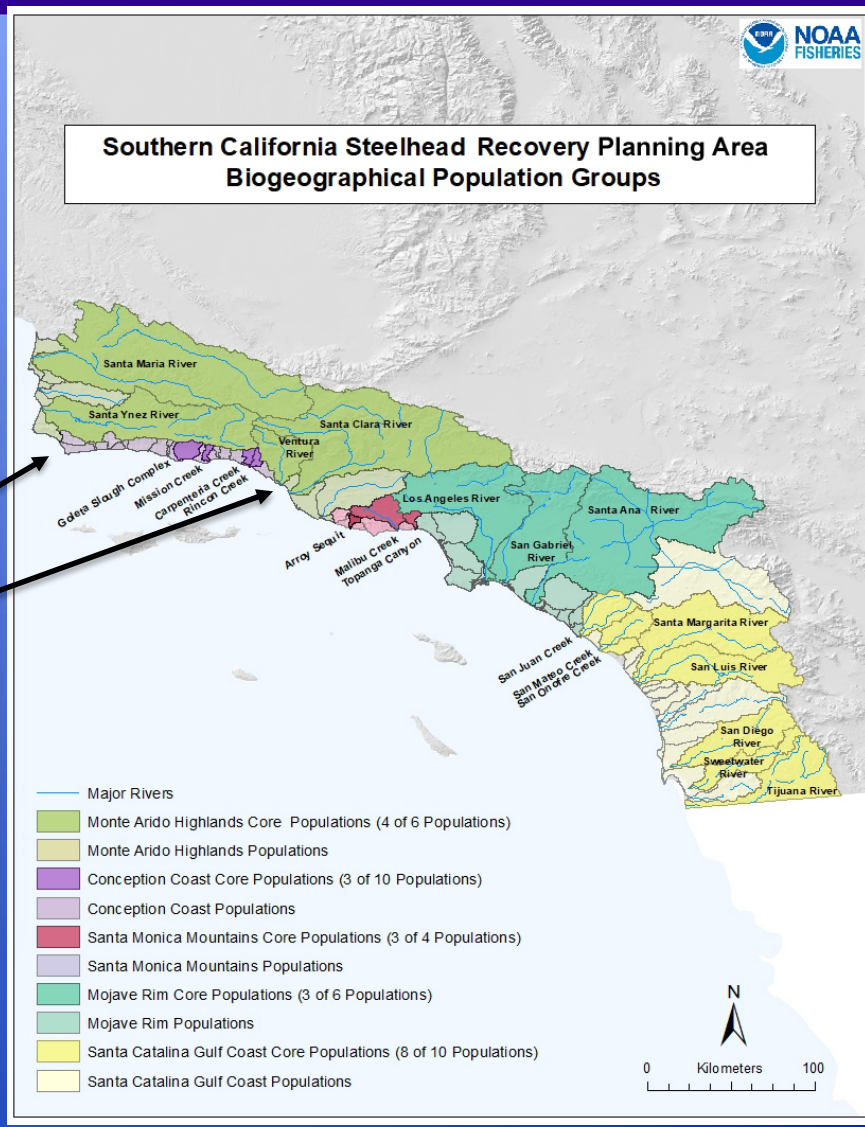
- Santa Ynez
- Carpinteria
- Ventura
- Santa Clara
- Malibu Creek
- Topanga Creek
- Sa Juan
- San Mateo
- Santa Margarita
- San Luis Rey



Part I: Scientific Assessment

Current Monitoring/Surveying Efforts





Phase I: Scientific Assessment

Adult Abundance & Trends

Selected steelhead bearing watersheds in Biogeographic Population Groups (BPG)

Target of Estimation	Yrs.	Full population estimate?	$\hat{S}$	Trend (SE)	*P*
Conception Coast BPG					
Carpinteria Creek[1]	3	No	0		
Monte Arido BPG					
Santa Ynez River	19	No	0	-0.0229 (0.0140)	0.12
Ventura River	12	No	0	-0.0577 (0.0178)	0.009
Santa Clara River[2]	13	No	0.75		
Santa Monica Mountains BPG					
Arroyo Sequit	15	No	0.5	0.0107 (0.0082)	0.22
Big Sycamore Canyon Creek	5	No	0		
Los Flores Creek	5	No	0		
Malibu Creek	15	No	0.25	-0.0170 (0.0158)	0.30
Solstice Creek	5	No	0		
Topanga Creek	19	No	0.5	-0.0074 (0.0087)	0.40
Trancas Creek	5	No	0		
Zuma Creek	5	No	0		
Mojave Rim BPG					
No population data available or reported					
Santa Catalina Gulf Coast BPG					
No population data available reported					

Part I: Scientific Assessment

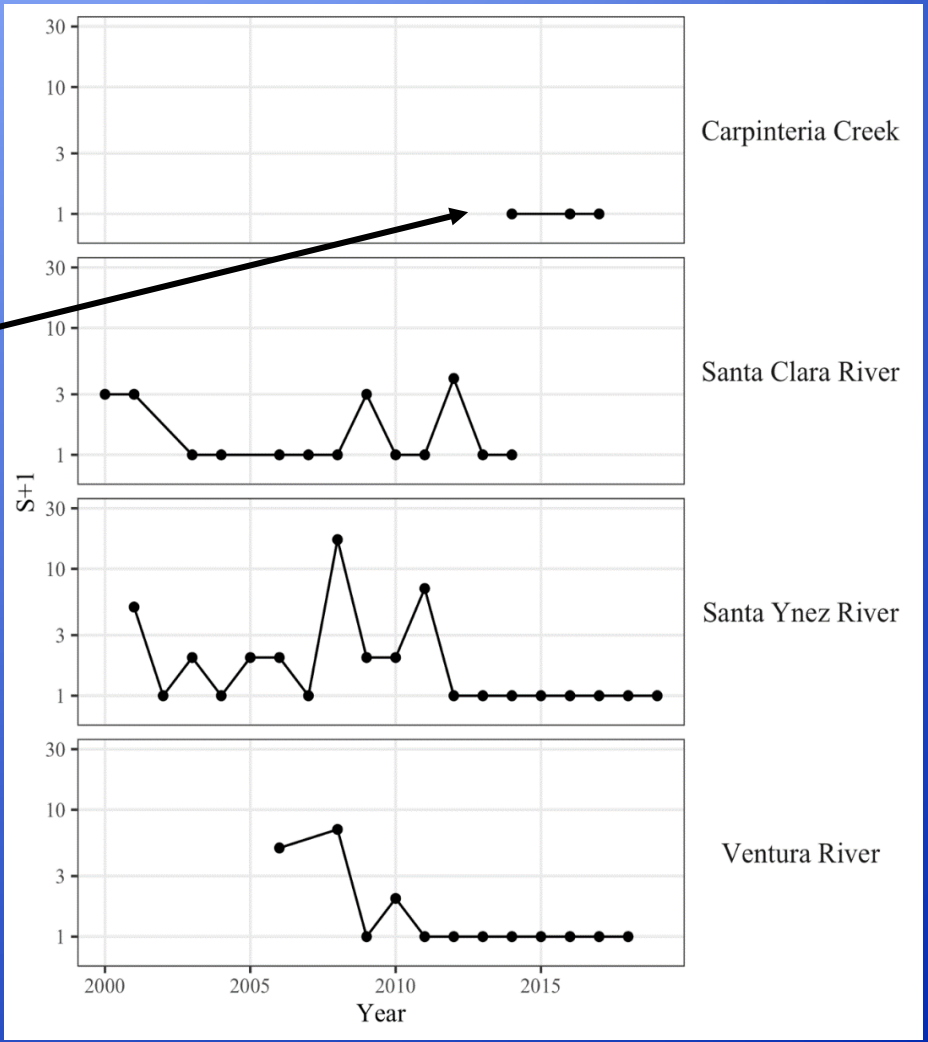
Adult steelhead counts

Conception Coast BPG:

- Carpinteria Creek

Monte Arido BPG:

- Santa Clara River
- Santa Ynez River
- Ventura River



Part I: Scientific Assessment

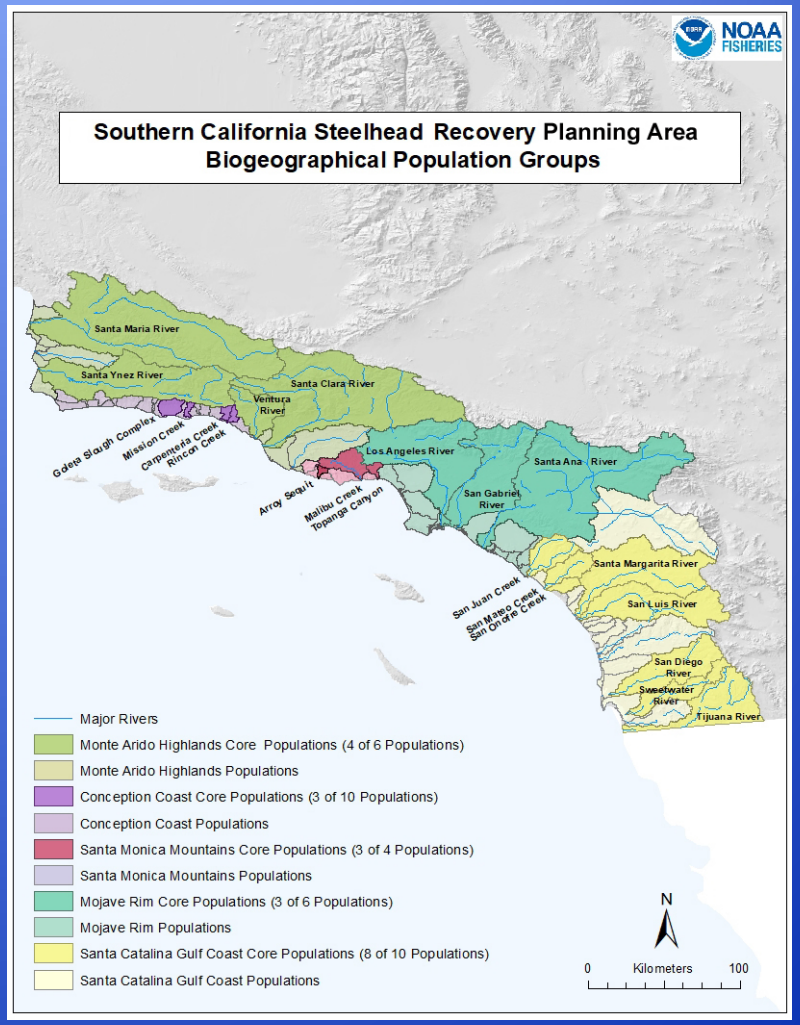
Summary Assessment

- Drought has resulted in a decline in all population metrics
- Most drought refugia are inaccessible due to fish pass barriers
- Significant steelhead genetic resources remain in isolated refugia (many above impassible barriers)
- Lack of access to upstream refugia habitat threatens anadromous form of *O. mykiss*
- Endangered species status should be retained

Part 2: 5-Year Review

Five Factor analysis of each BPG

1. Emergent and on-going habitat concerns
2. Population-specific habitat concerns
3. Specific protection & restoration measures
4. Key regulatory measures since 2016
5. Recommendations for future actions



Part 2: 5-Year Review

Five Factor Analysis

Identify:

1. Present or threatened destruction, modification or curtailment of habitat or species' range

2. Overutilization for commercial, recreational, scientific or education purposes

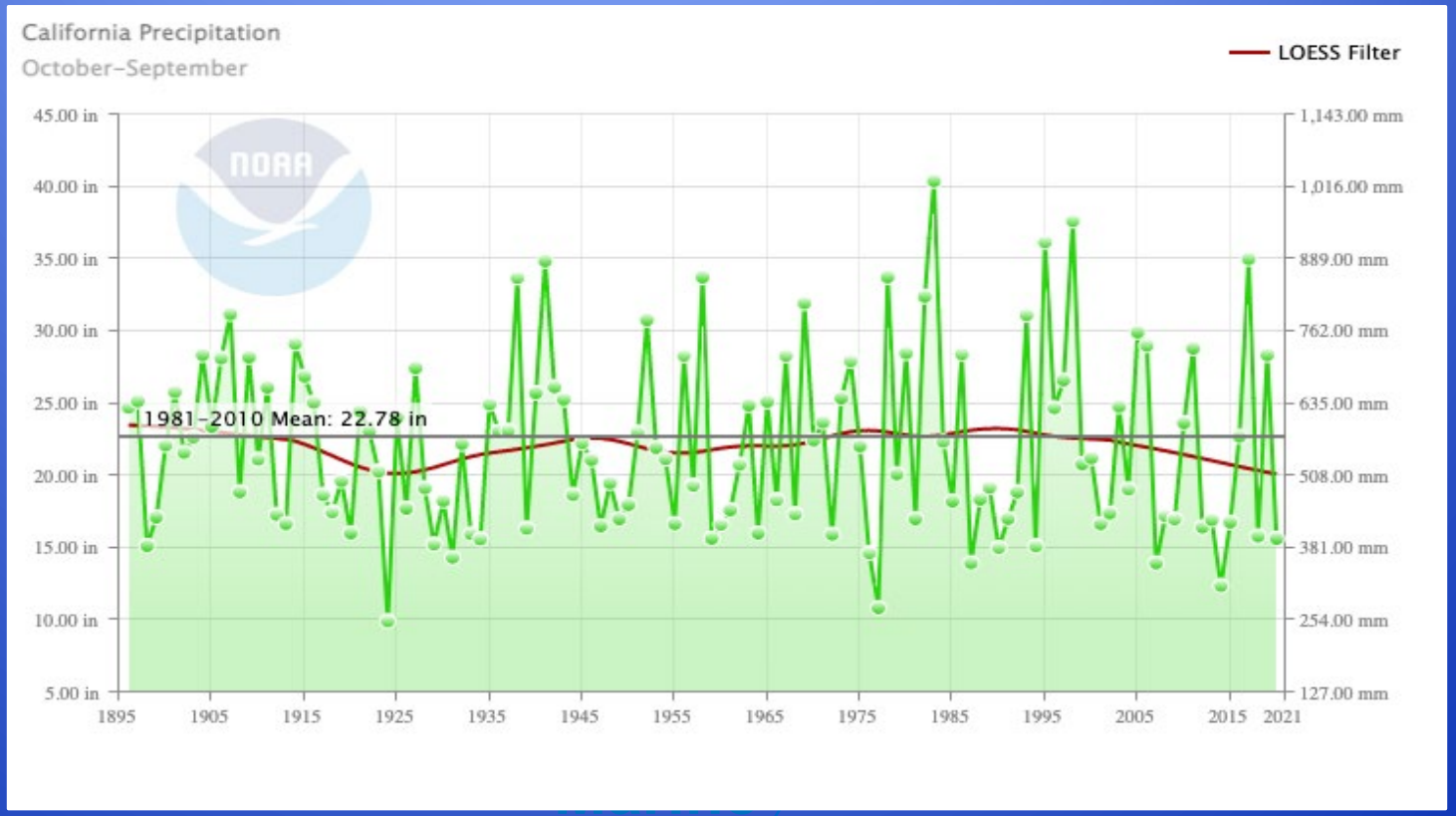
3. Disease or predation

4. Inadequacy of regulatory mechanisms

5. Other natural or man-made factors affecting the species continued existences

Part 2: 5-Year Review

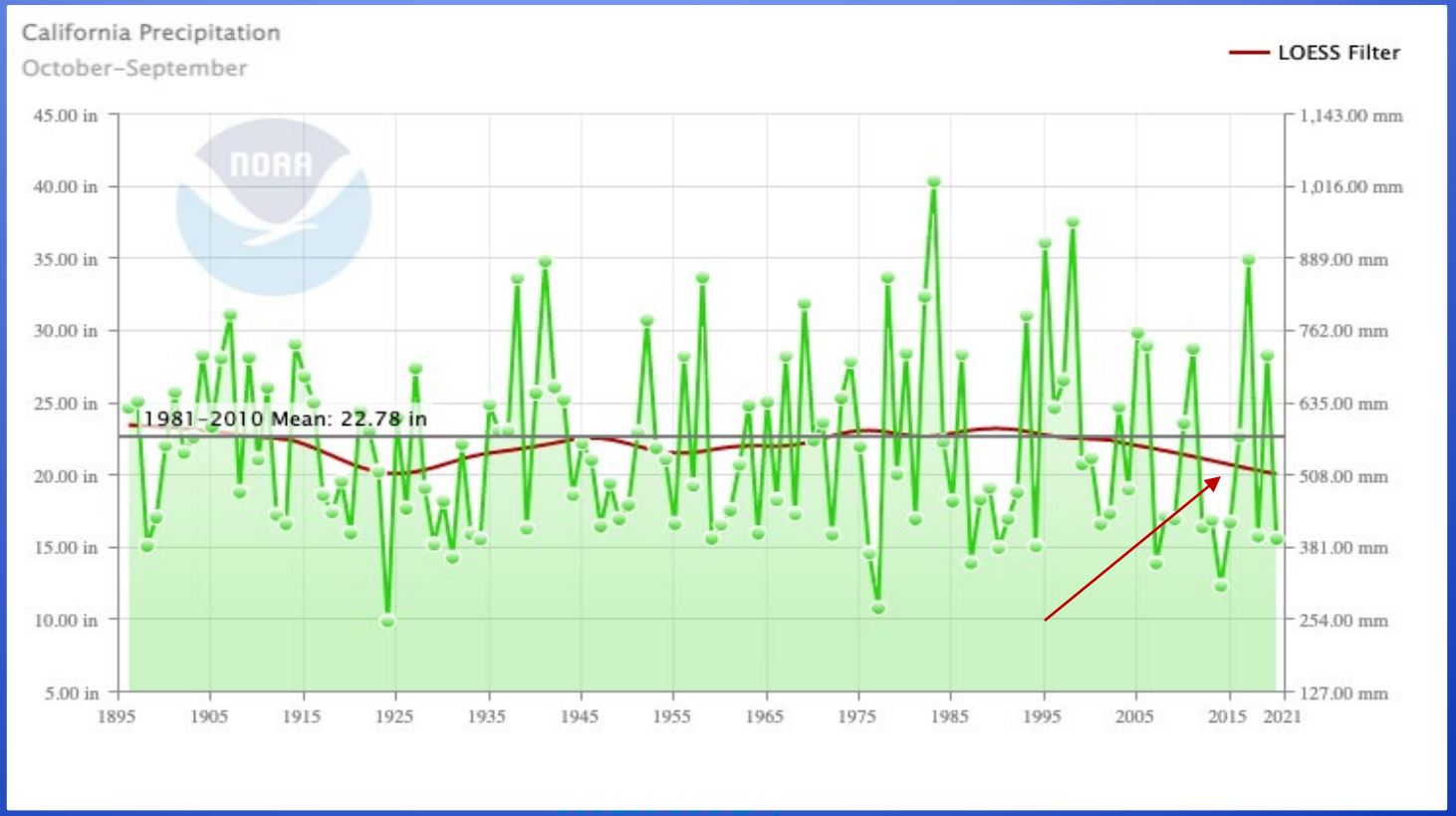
Drought



Water year (October-September) precipitation for California. The historical average for 1981-2010 is shown with the black horizontal line. Redline shows the average deviation from the historical average.

Part 2: 5-Year Review

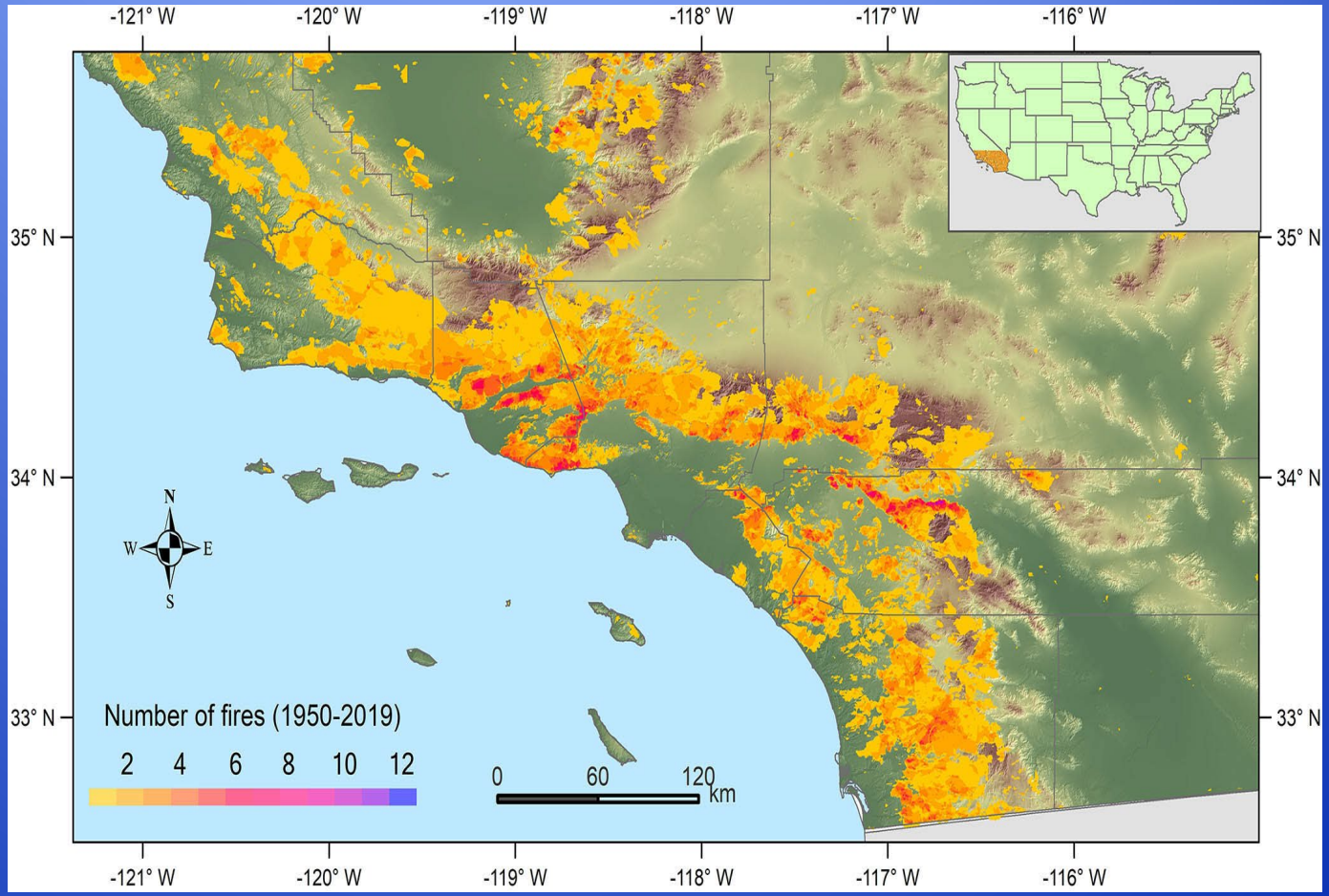
Drought



Water year (October-September) precipitation for California. The historical average for 1981-2010 is shown with the black horizontal line. Redline shows the average deviation from the historical average.

Part 2: 5-Year Review

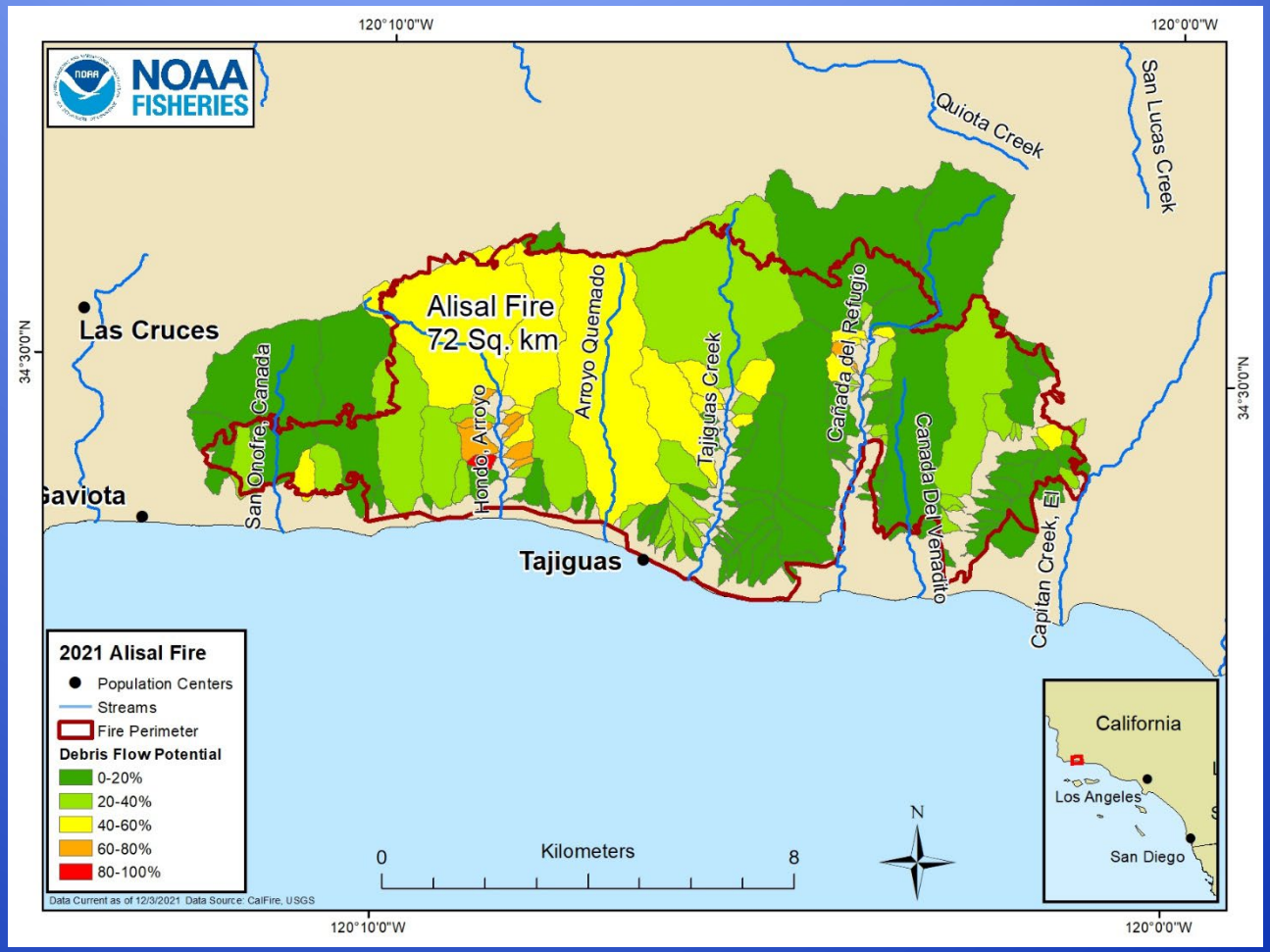
Wildfires



Total number and distribution of recorded wildfires in southern California from 1950-2019.

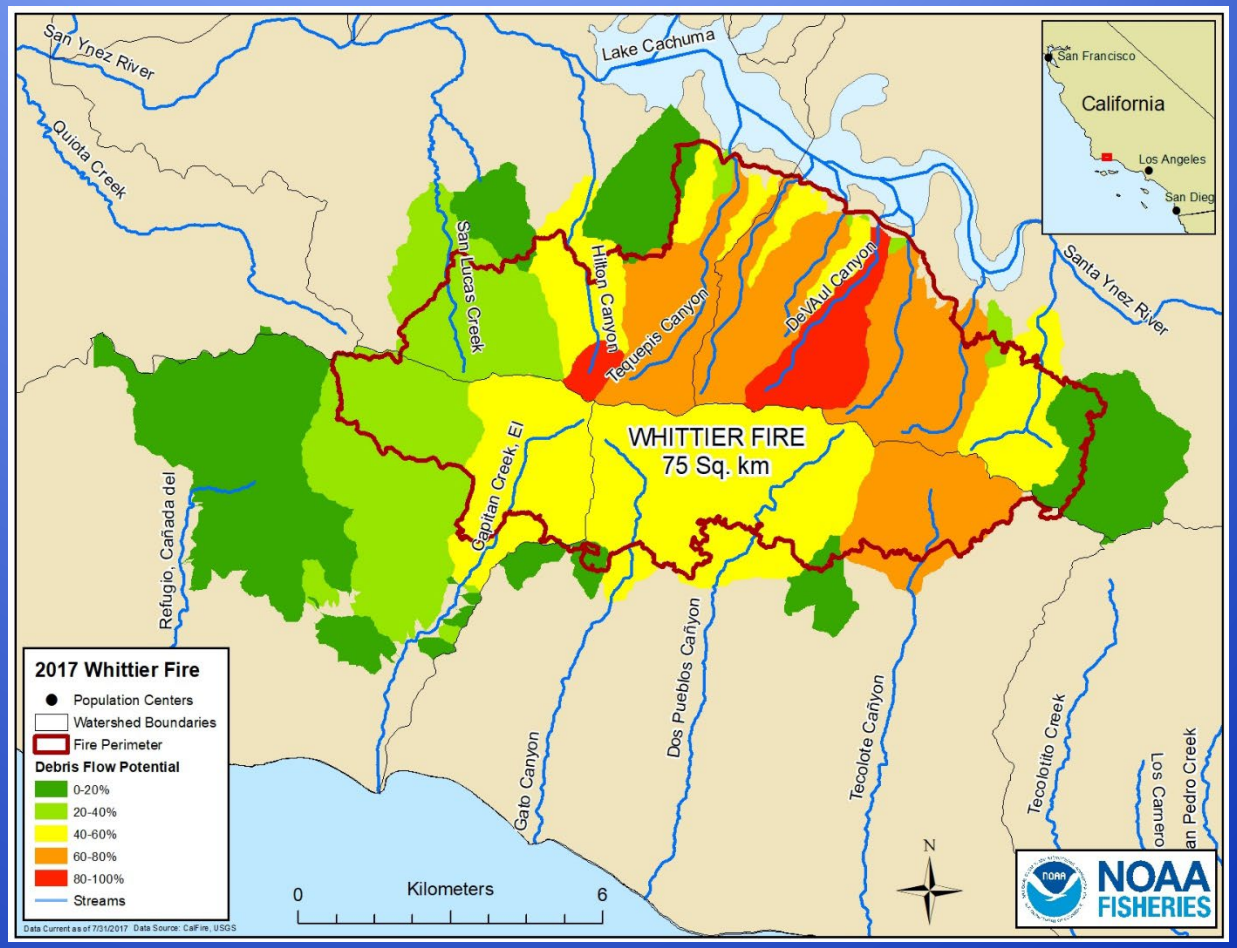
Part 2: 5-Year Review

Alisal Fire 2021



Part 2: 5-Year Review

Whittier Fire
2017



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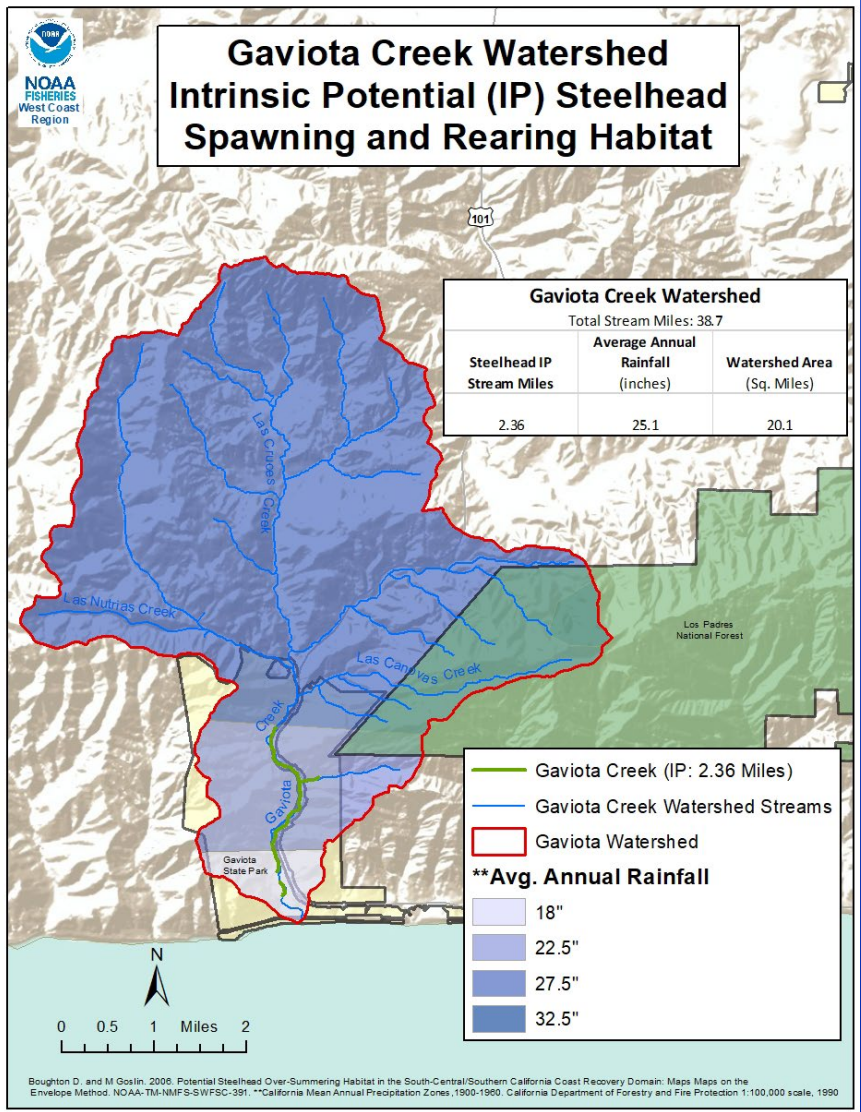
Gaviota Creek Watershed



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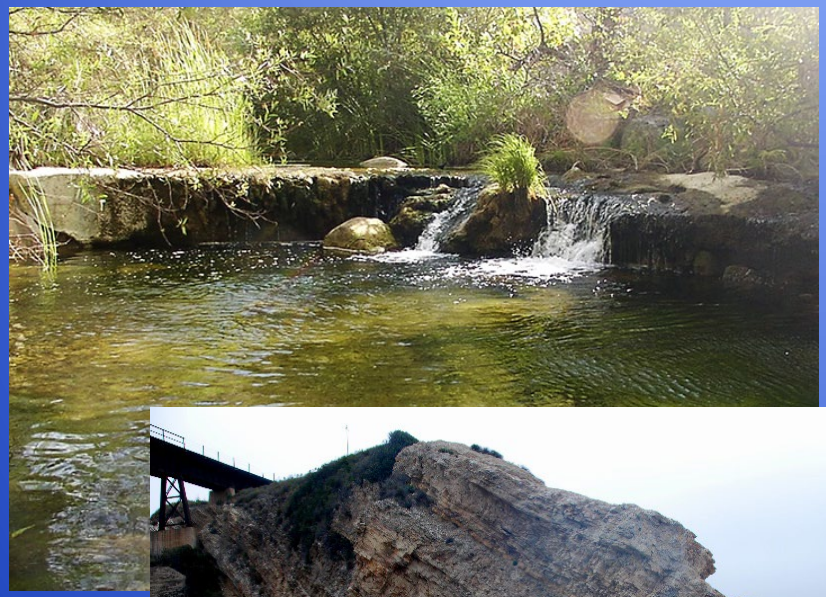
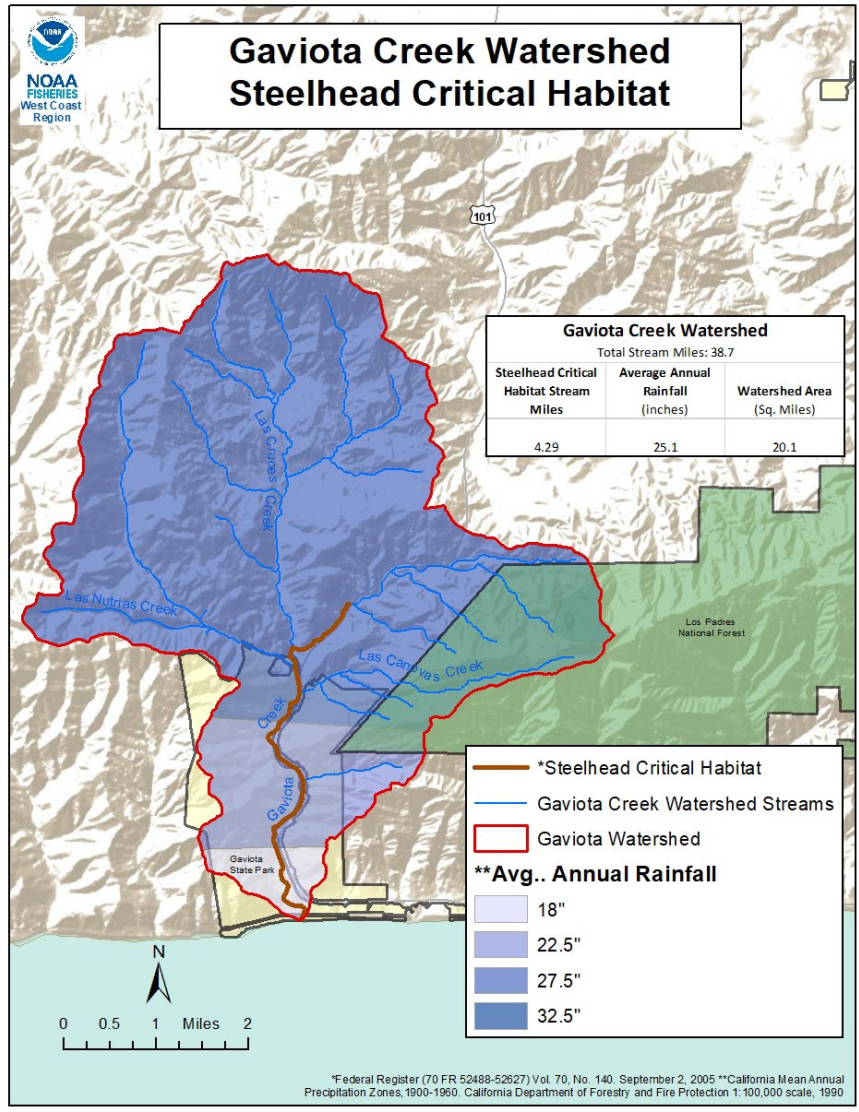
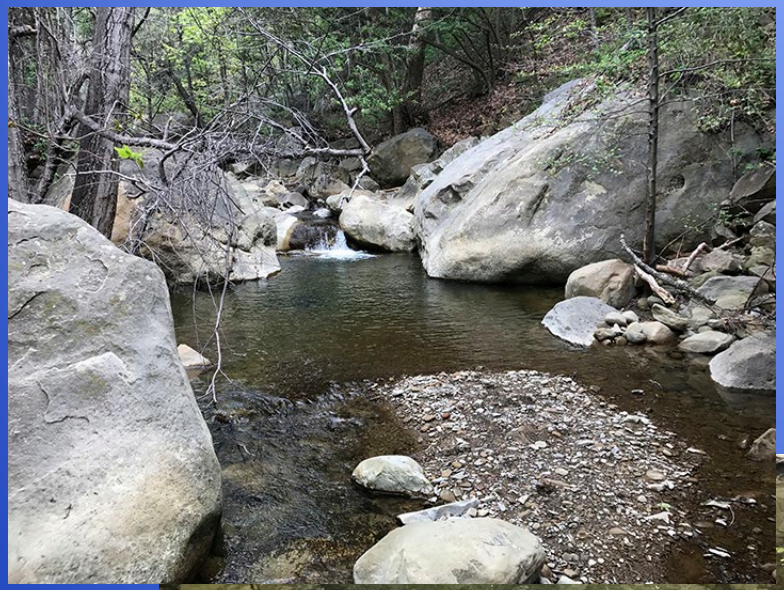
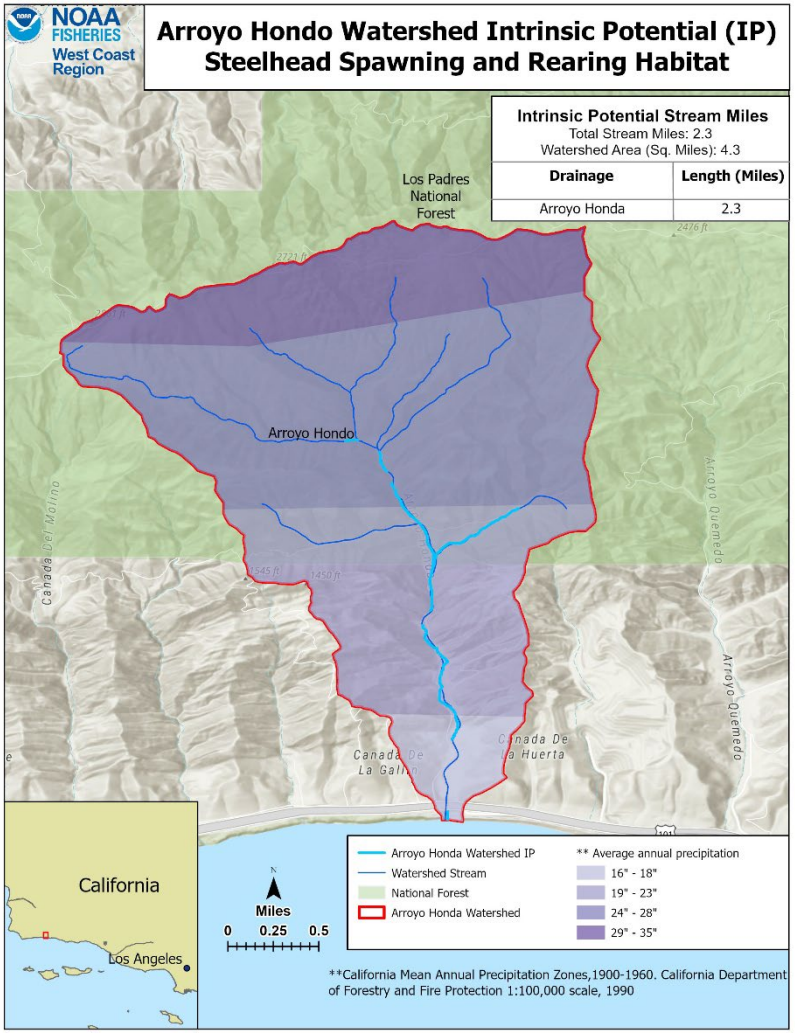




Arroyo Hondo Watershed





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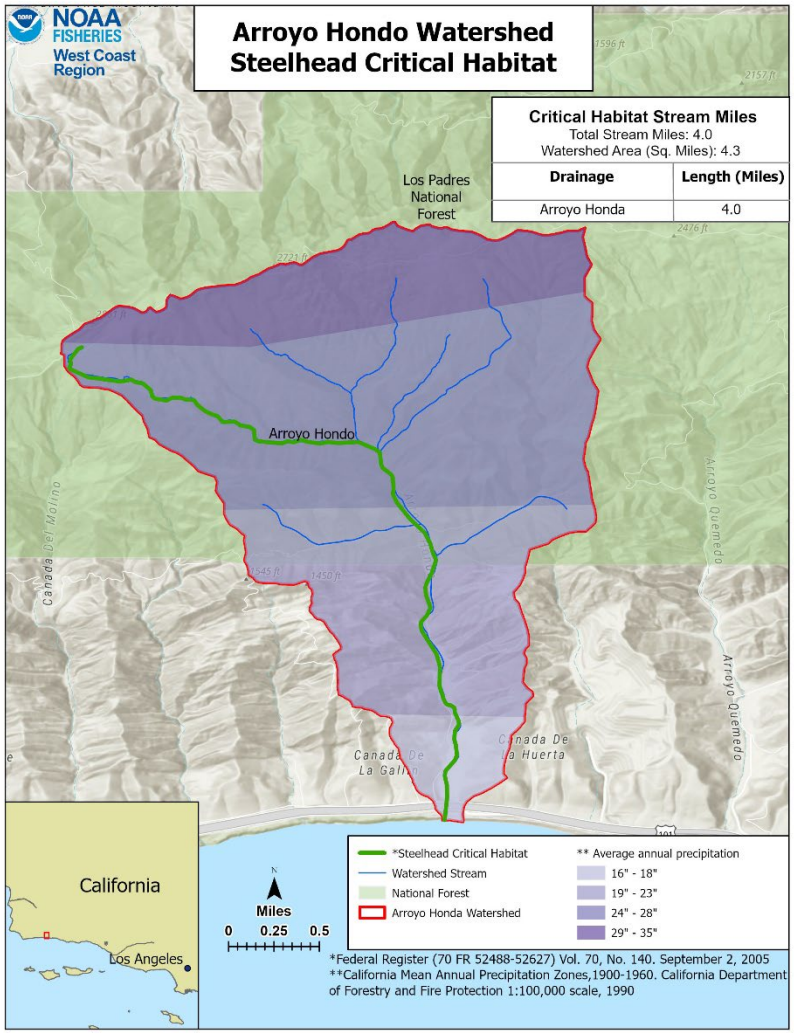
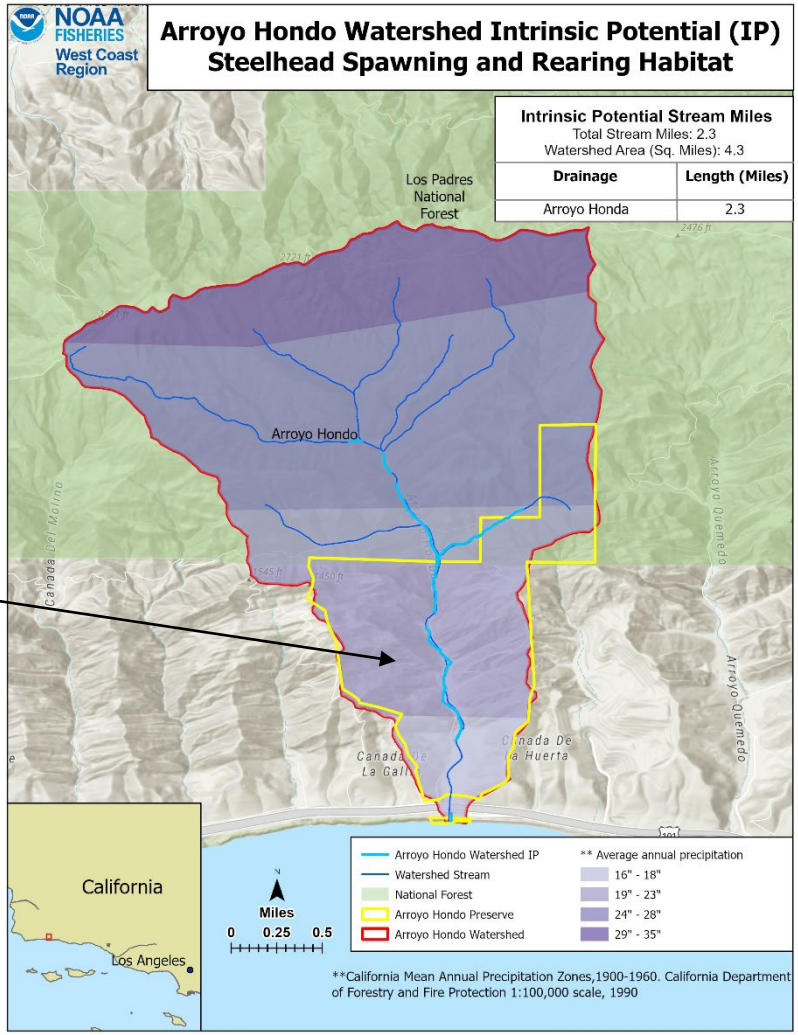


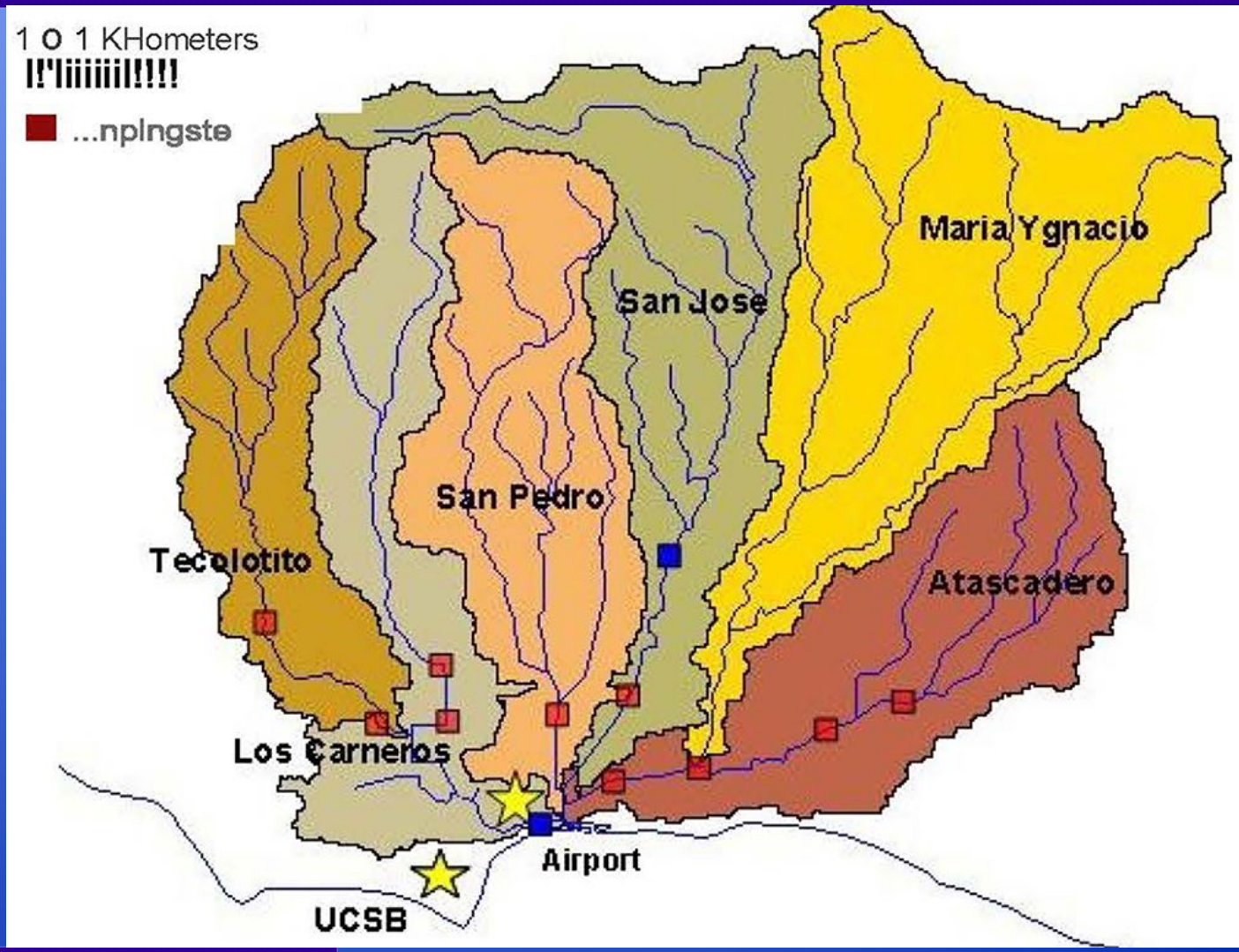
Arroyo Hondo Watershed

Arroyo Hondo Preserve



Goleta Slough Watershed and Sub-Watersheds

Goleta Slough Watershed



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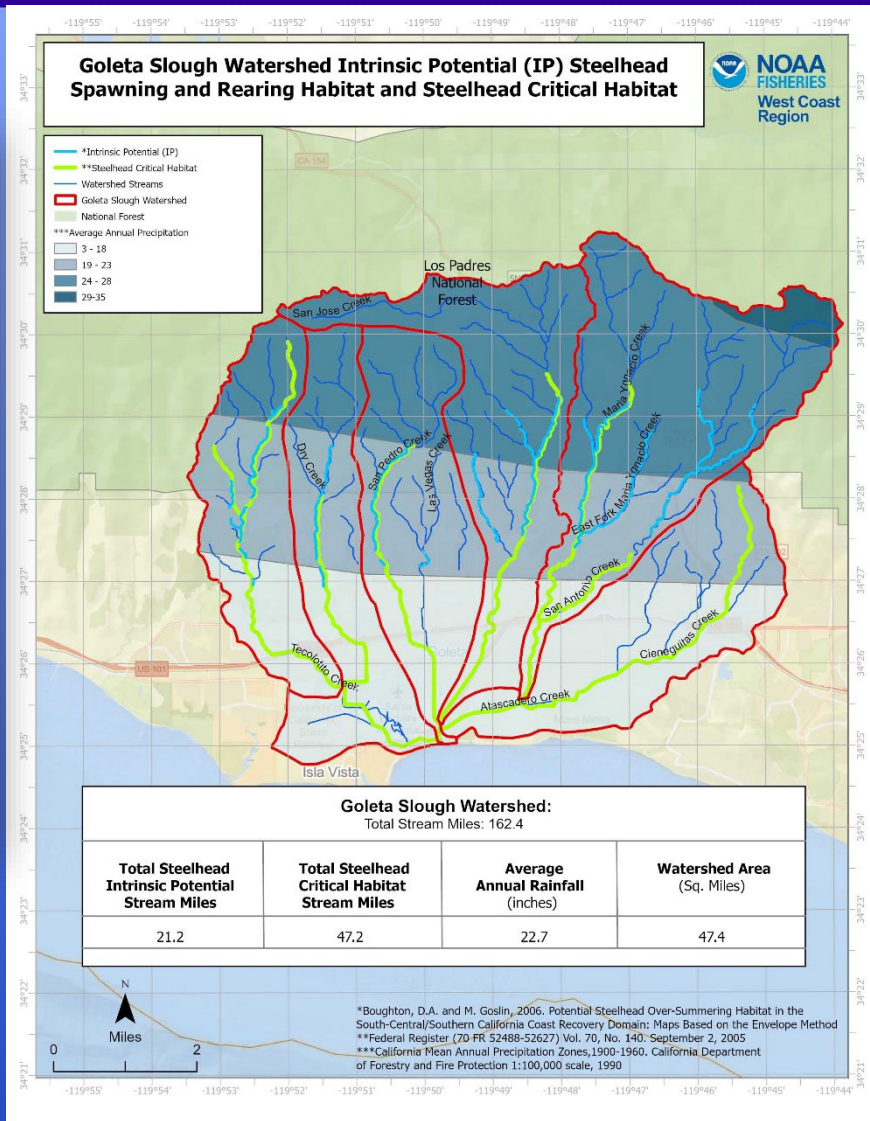
Goleta Slough Watershed



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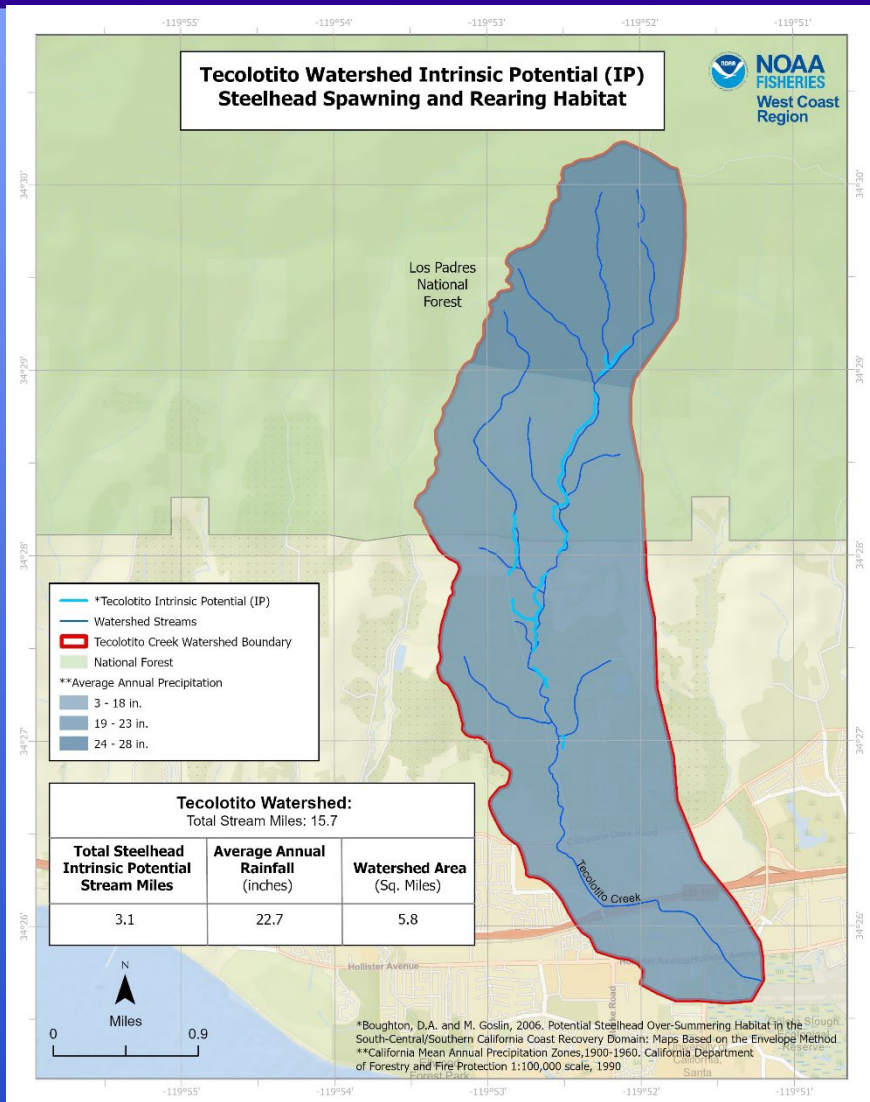
Goleta Slough Watershed –Tecolotito Creek



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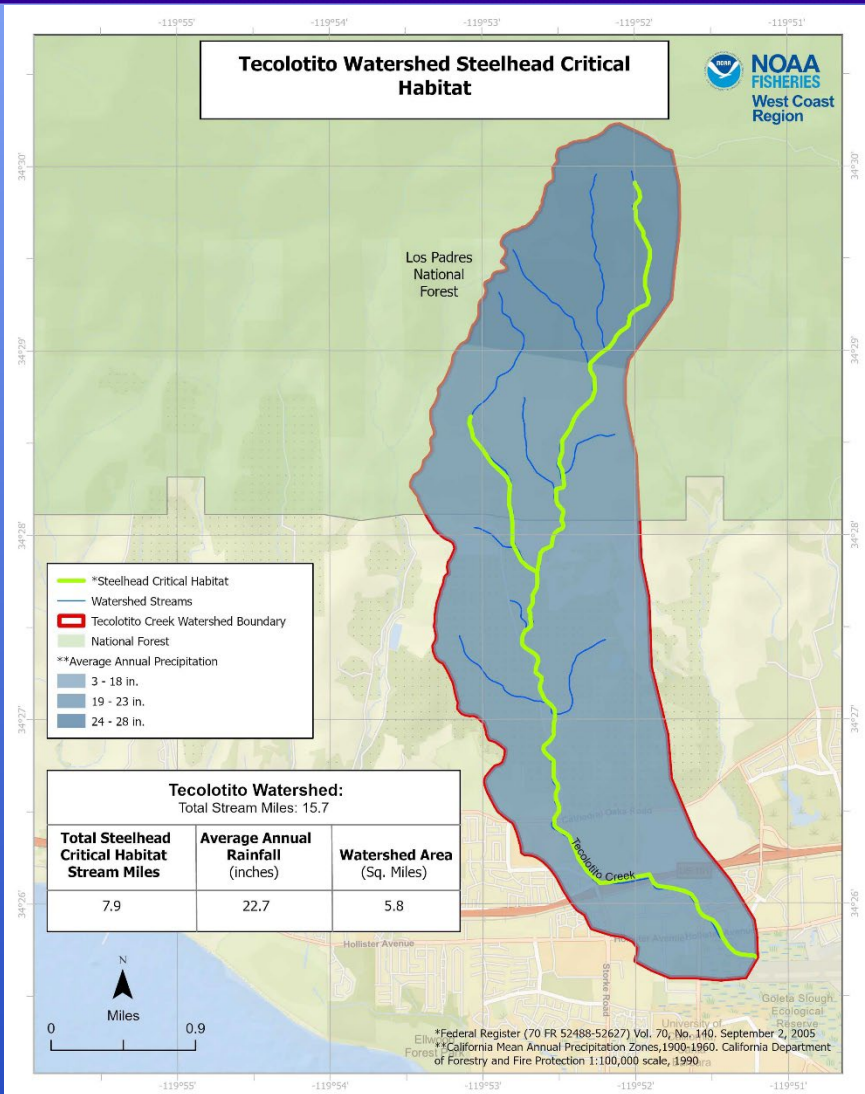
Goleta Slough Watershed – Tecolotito Creek



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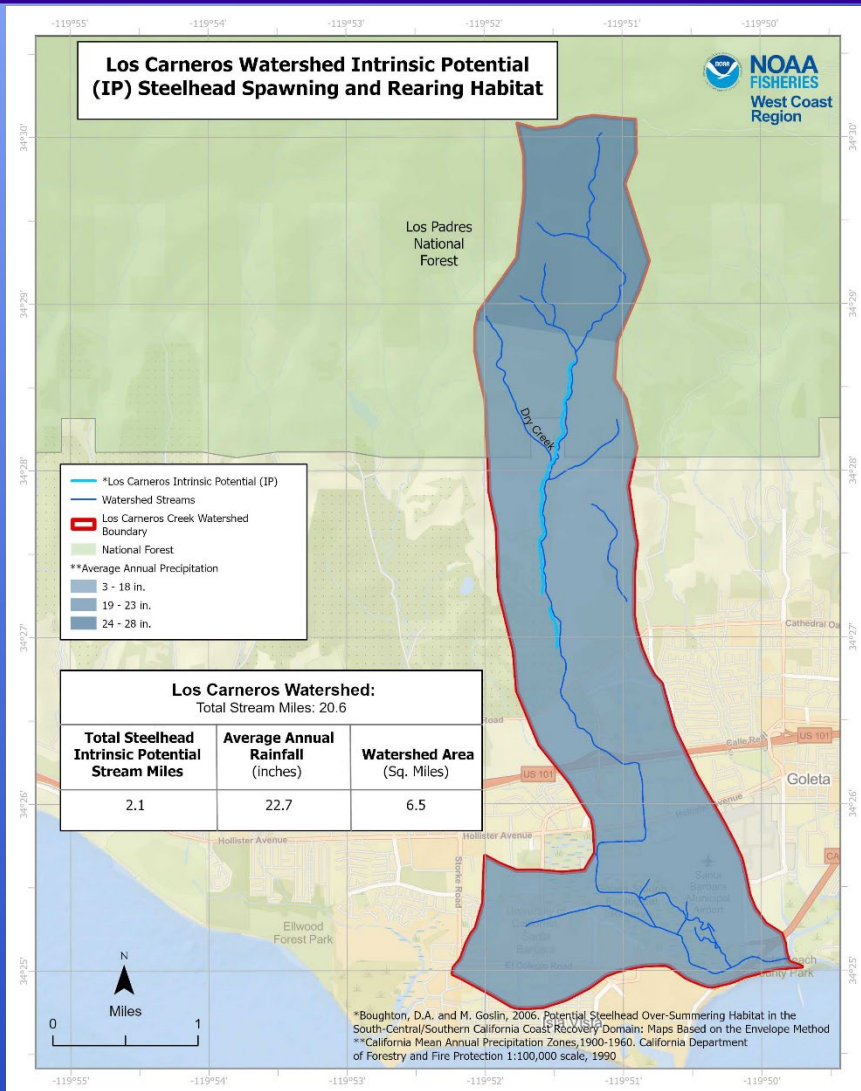
Goleta Slough Watershed – Los Carneros Creek



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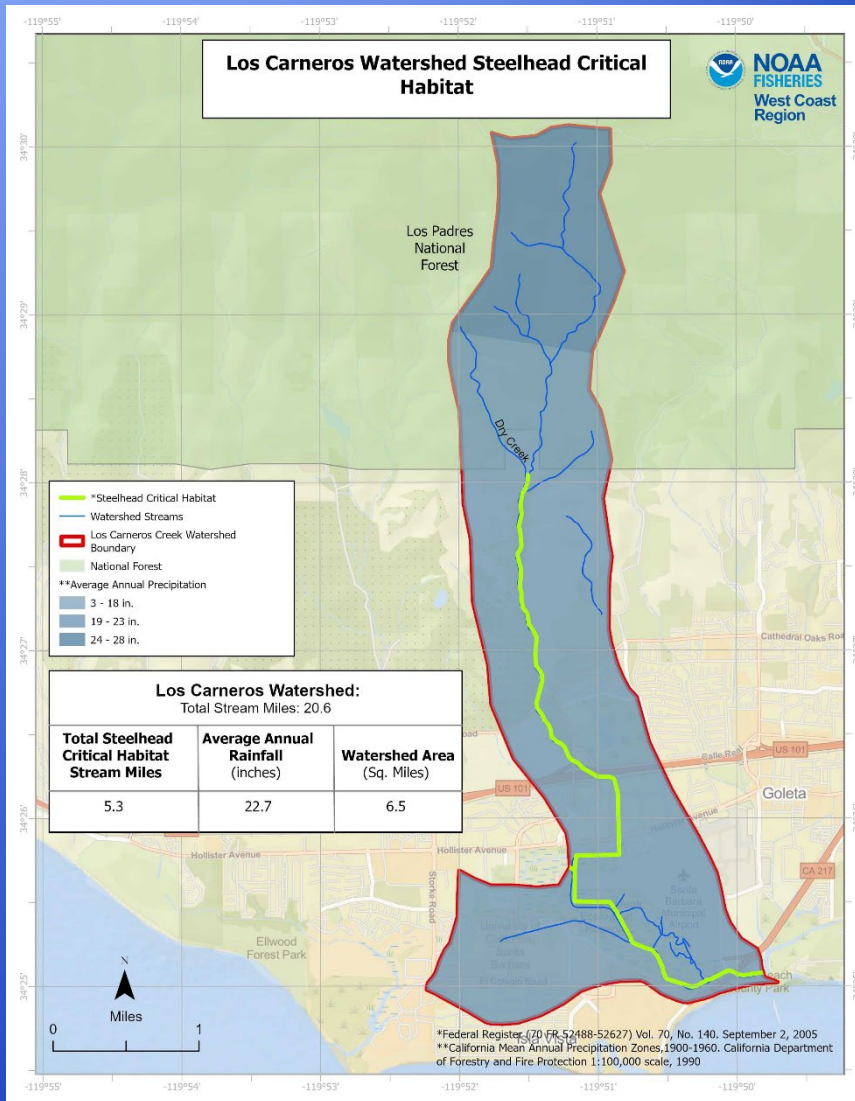
Goleta Slough Watershed – Los Carneros Creek



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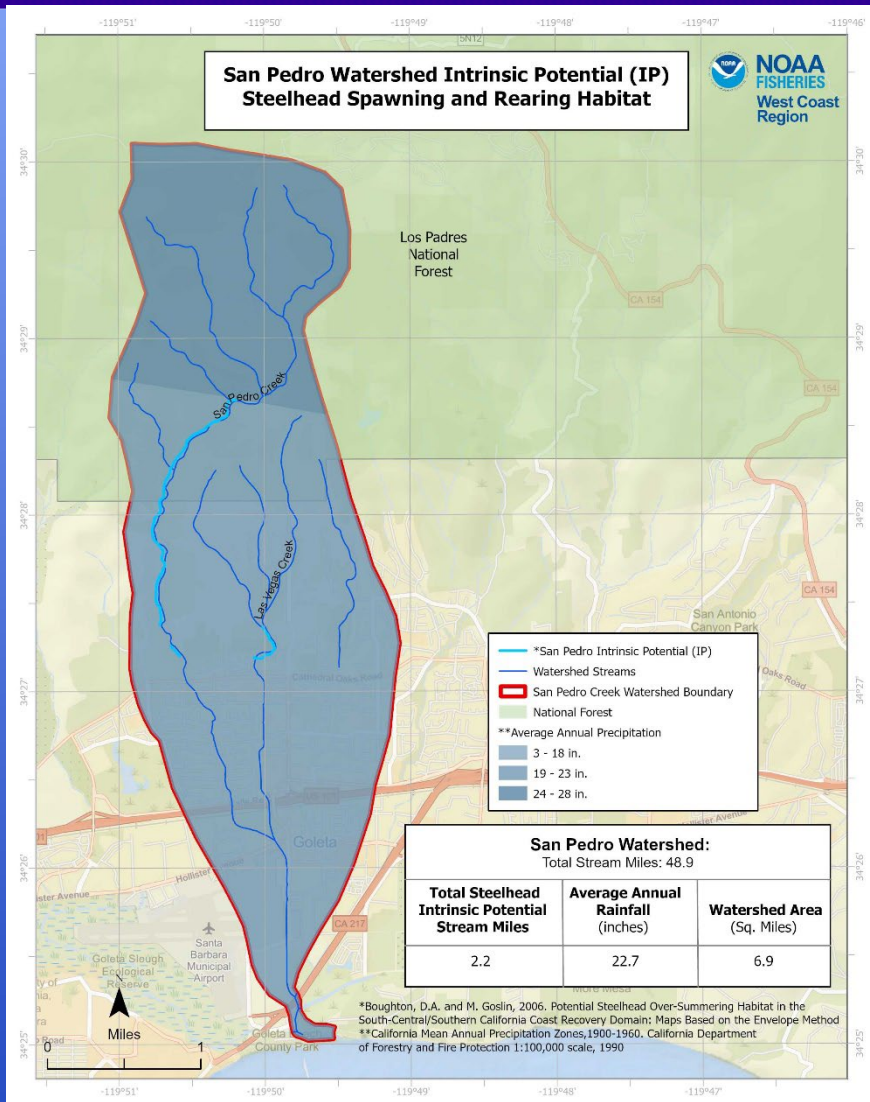
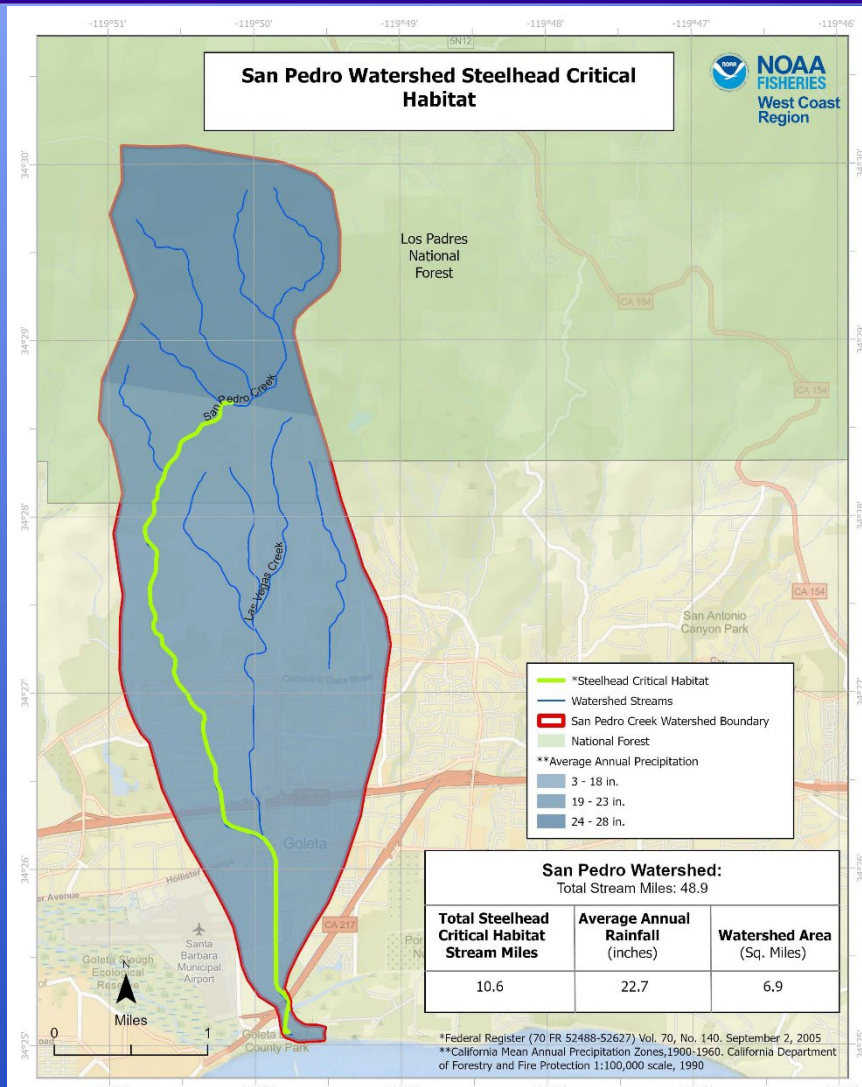
Goleta Slough Watershed - San Pedro Creek

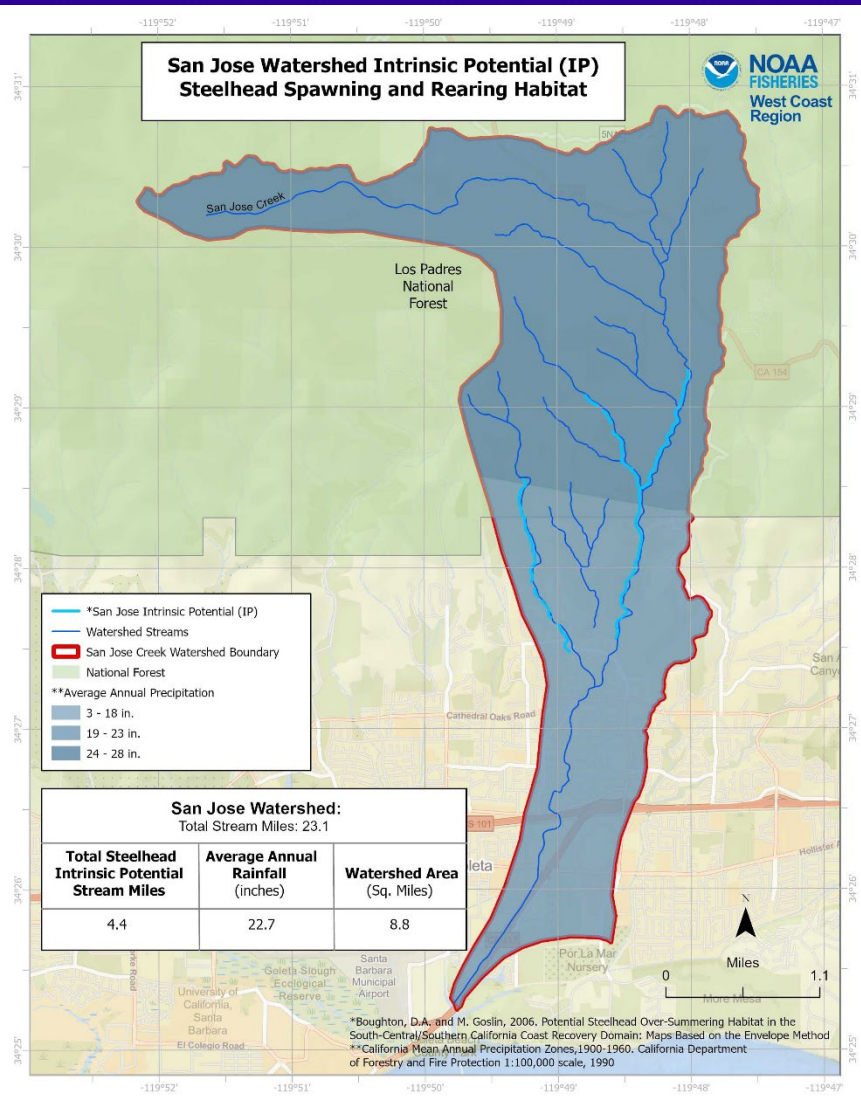


Goleta Slough Watershed – San Pedro Creek

Confluence of San Pedro and Las Vegas Creeks

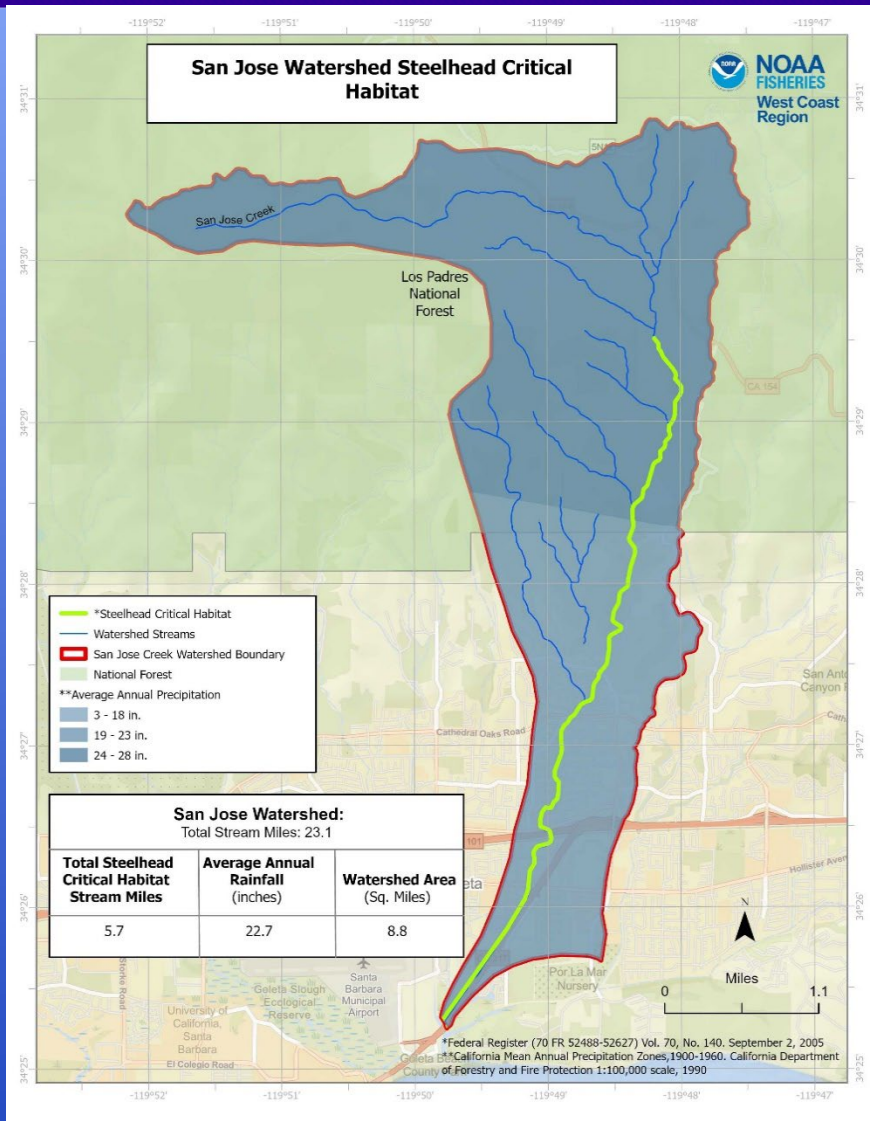


Goleta Slough Watershed – San Jose Creek



Goleta Slough Watershed – San Jose Creek

San Jose Creek Flood Control Channel



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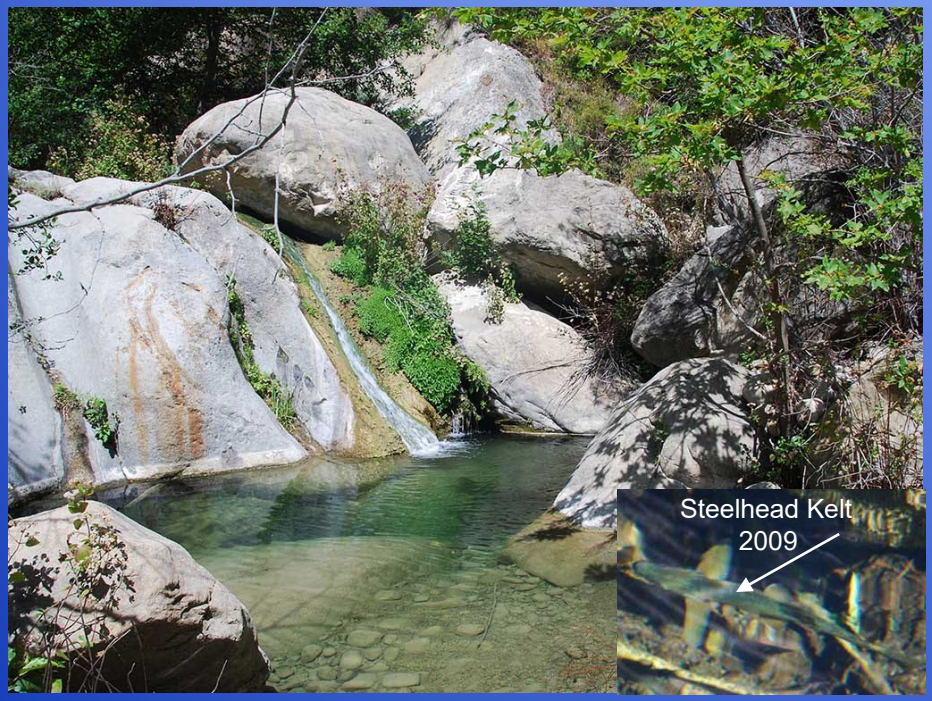
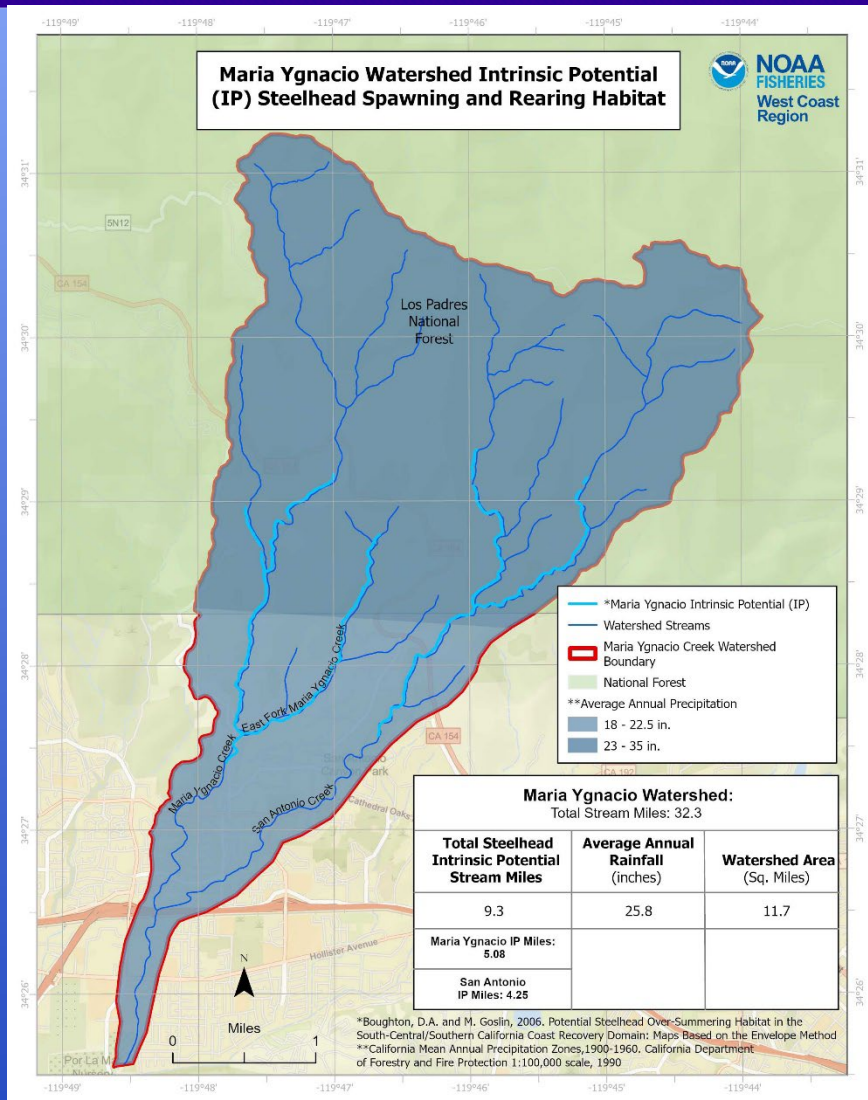
Goleta Slough Watershed – Maria Ygnacio Creek





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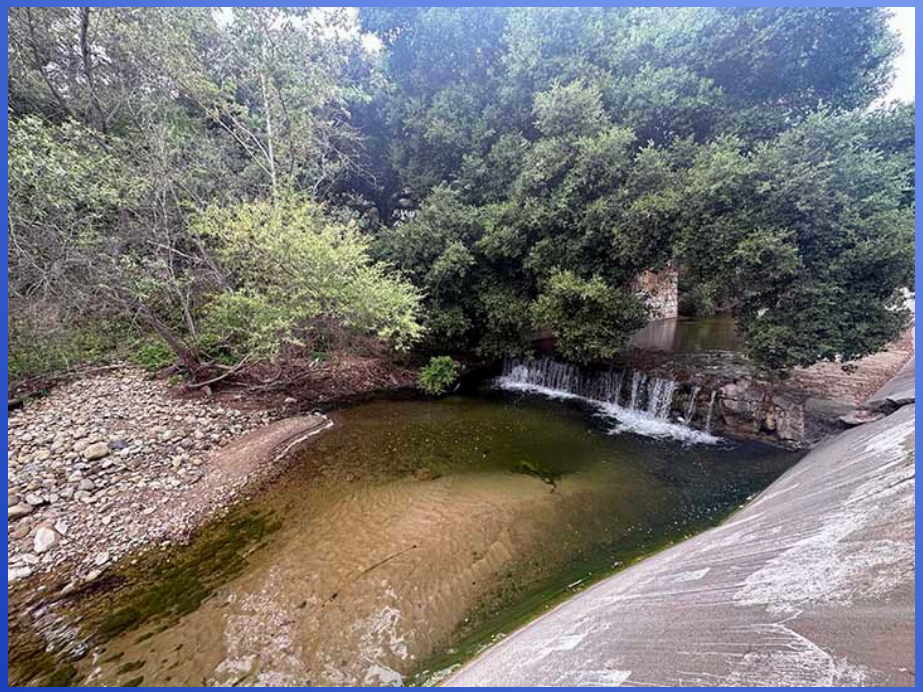
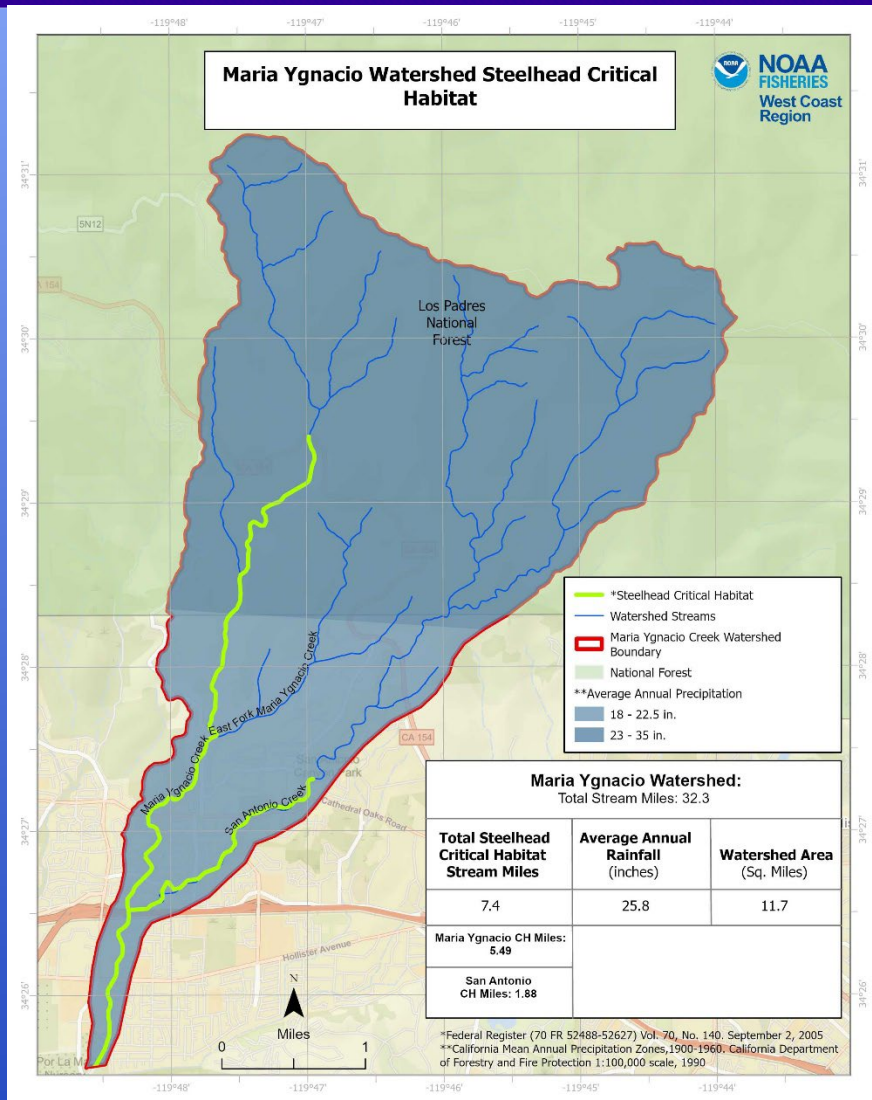
Goleta Slough Watershed – Maria Ygnacio Creek





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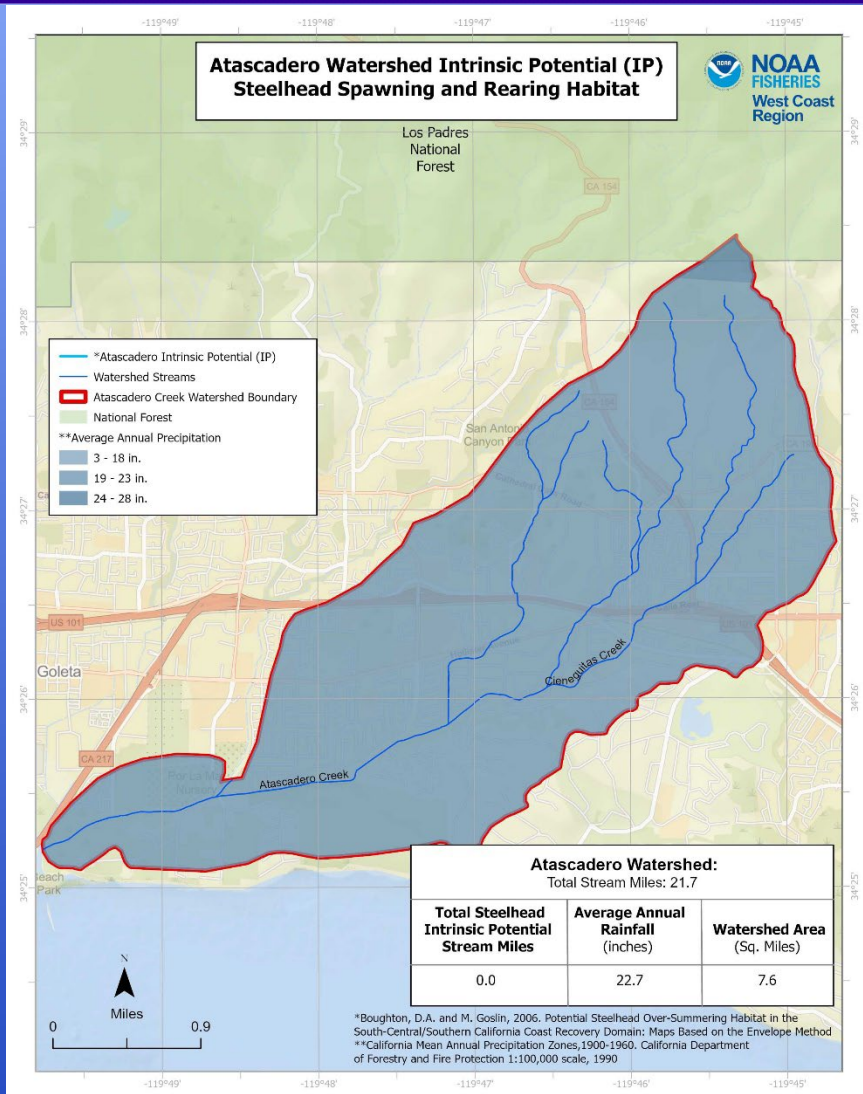
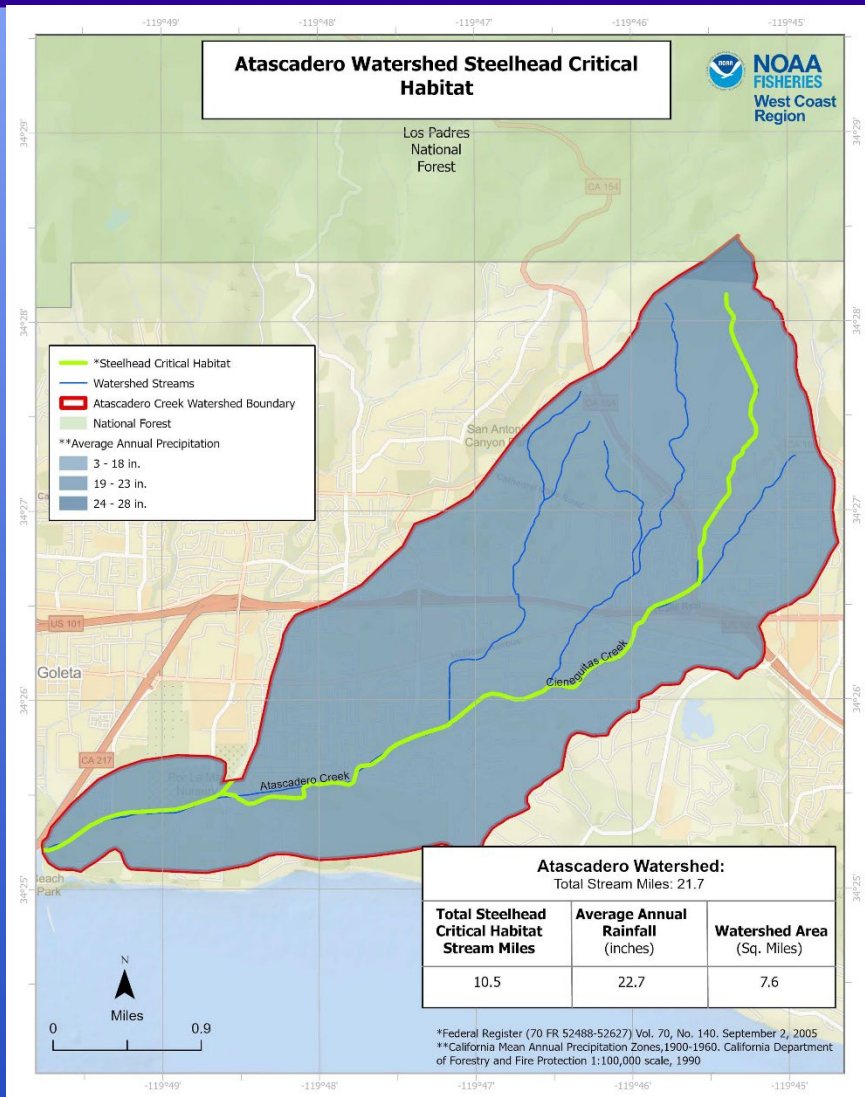
Goleta Slough Watershed – Atascadero Creek



National Marine Fisheries Service

Goleta Slough Watershed – Atascadero Creek



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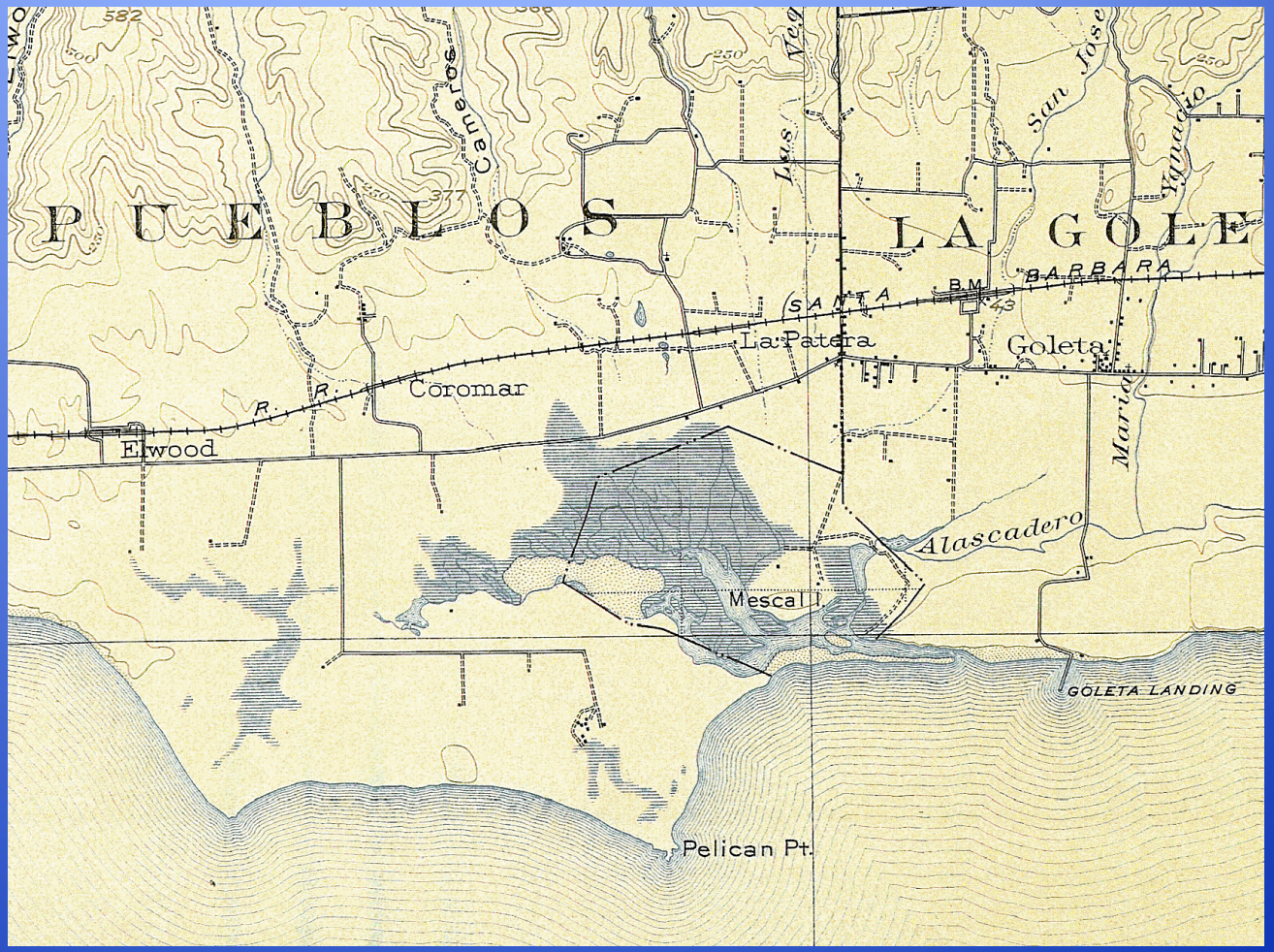
Goleta Slough

- Historic area: 1,150 acres
- Current area: 430 acres
- CDFW Ecological Reserve: 360 acres



National Marine Fisheries Service

Goleta Slough

Goleta Slough – 1929

Goleta Slough – c. 2009

Goleta Slough

Natural Breaching

2017

National Marine Fisheries Service

Goleta Slough

Artificial Breaching

2013

National Marine Fisheries Service

Goleta Slough Watershed

Significant Future Recovery Actions

- Sediment
  - Comprehensive sediment assessment
  - Sediment Management Plan

Goleta Slough Watershed and Sub-Watersheds

Summary of Significant Recovery Actions since 2016 5-Year Review:

- Maria Ygnacio Creek – removal of two debris basins*
- San Jose Creek – flood control and fish passage facility

* NMFS' Flood Control Operations including Annual Stream Maintenance, Debris Basin Maintenance, Goleta Slough Dredging and Long-term Atascadero Creek Channel Maintenance permitted by the U.S. Army Corps of Engineers, and implemented by the Santa Barbara County Flood Control District in designated waters occurring within Santa Barbara County

National Marine Fisheries Service

Goleta Slough Watershed

Significant Future Recovery Actions

- Fish Passage Barriers
  - Comprehensive fish passage barrier assessment
  - Fish passage barrier removal/modification plan

San Antonio Creek

Atascadero Creek

National Marine Fisheries Service

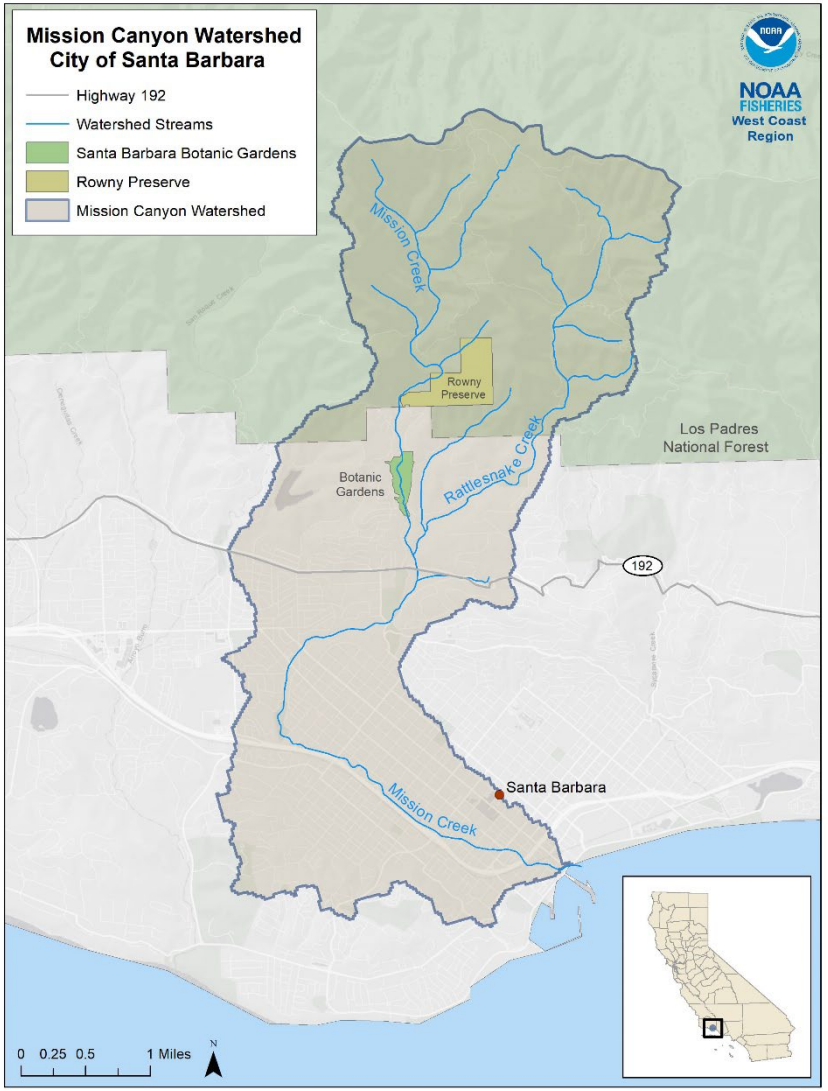
Goleta Slough Watershed

Significant Future Recovery Actions

- Public Education
- Comprehensive interpretive signage program
- Watershed stewardship land-owner guide

National Marine Fisheries Service

Mission Creek Watershed



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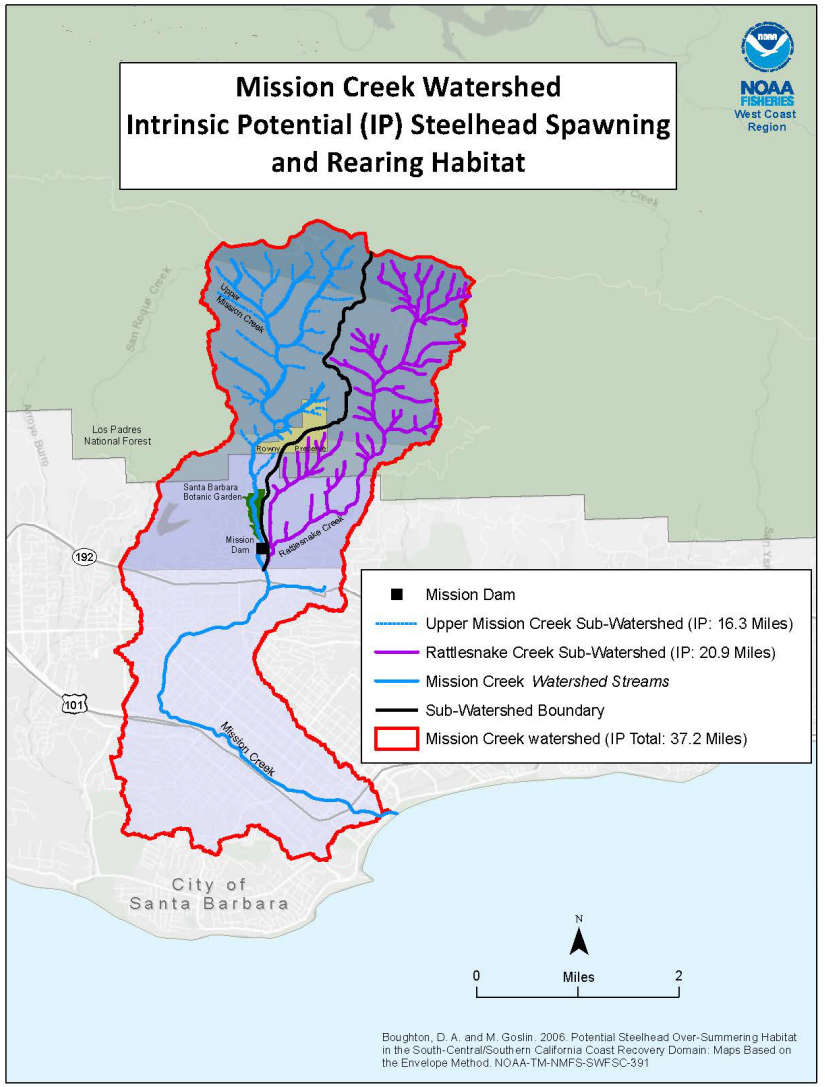
Mission Creek Watershed



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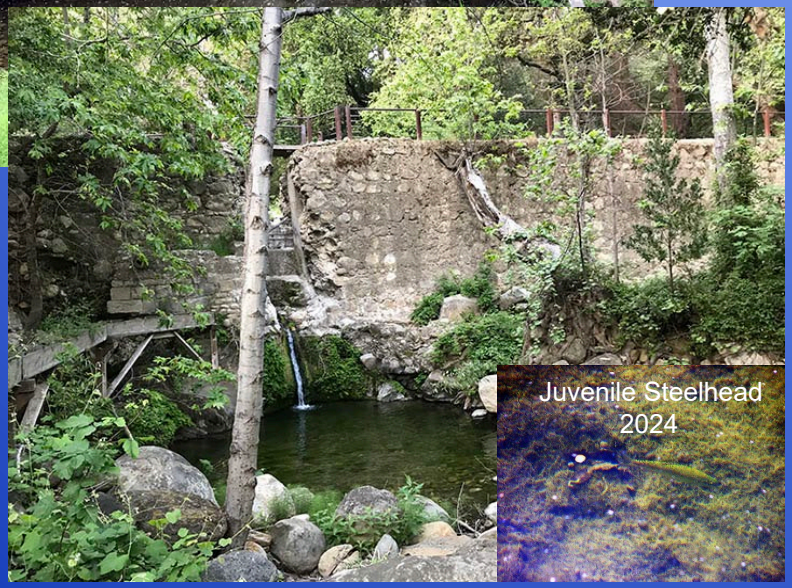
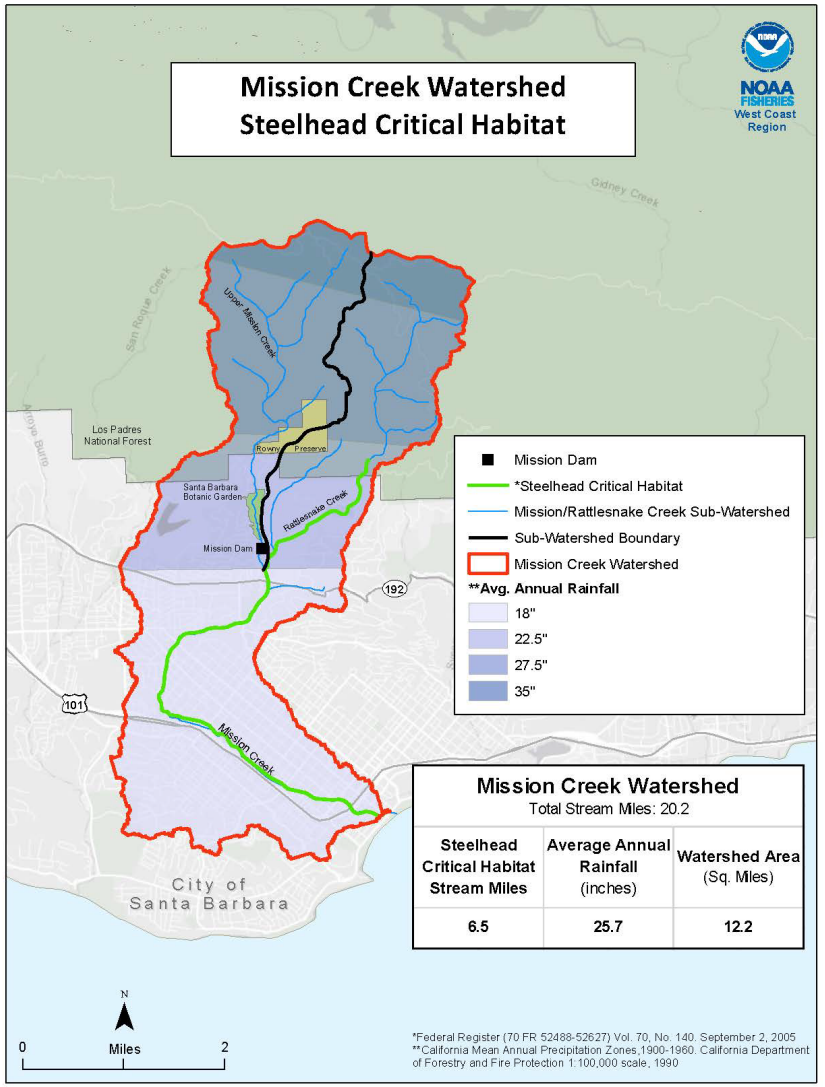
Mission Creek Watershed





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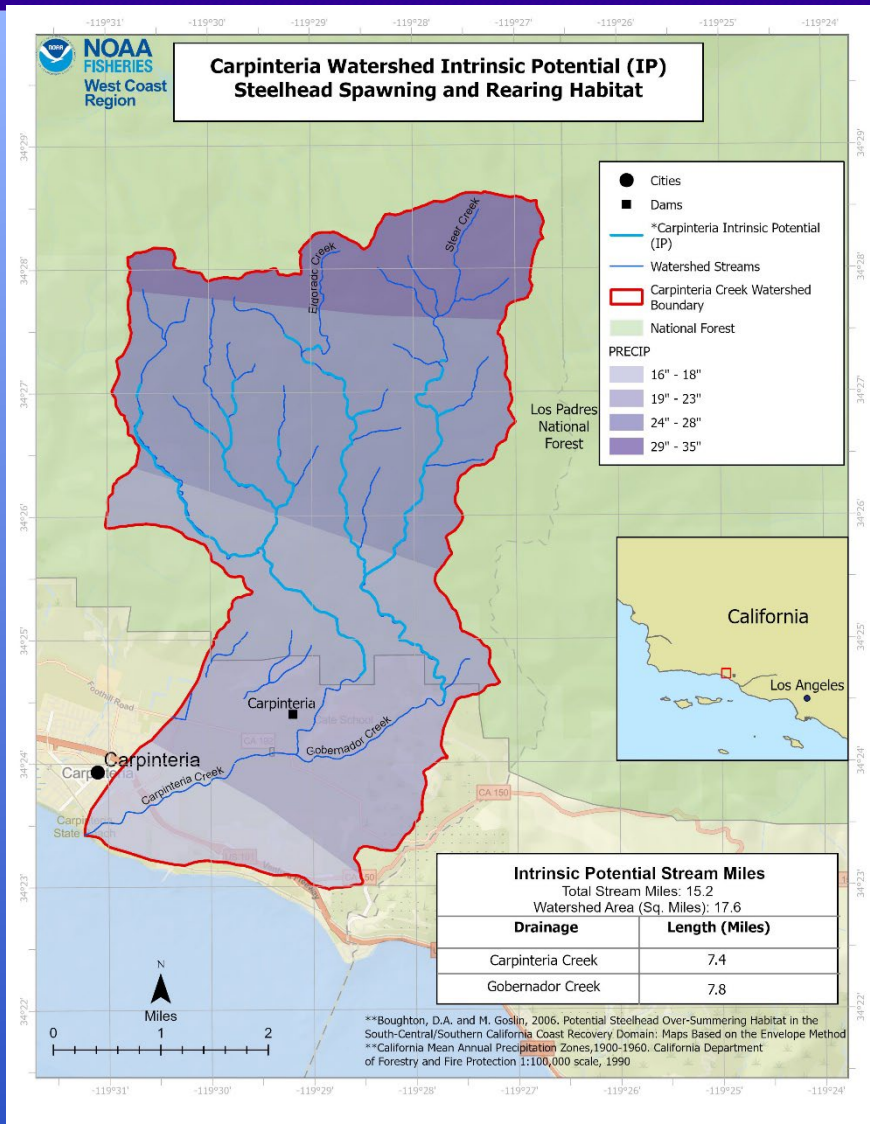
Carpinteria Creek Watershed



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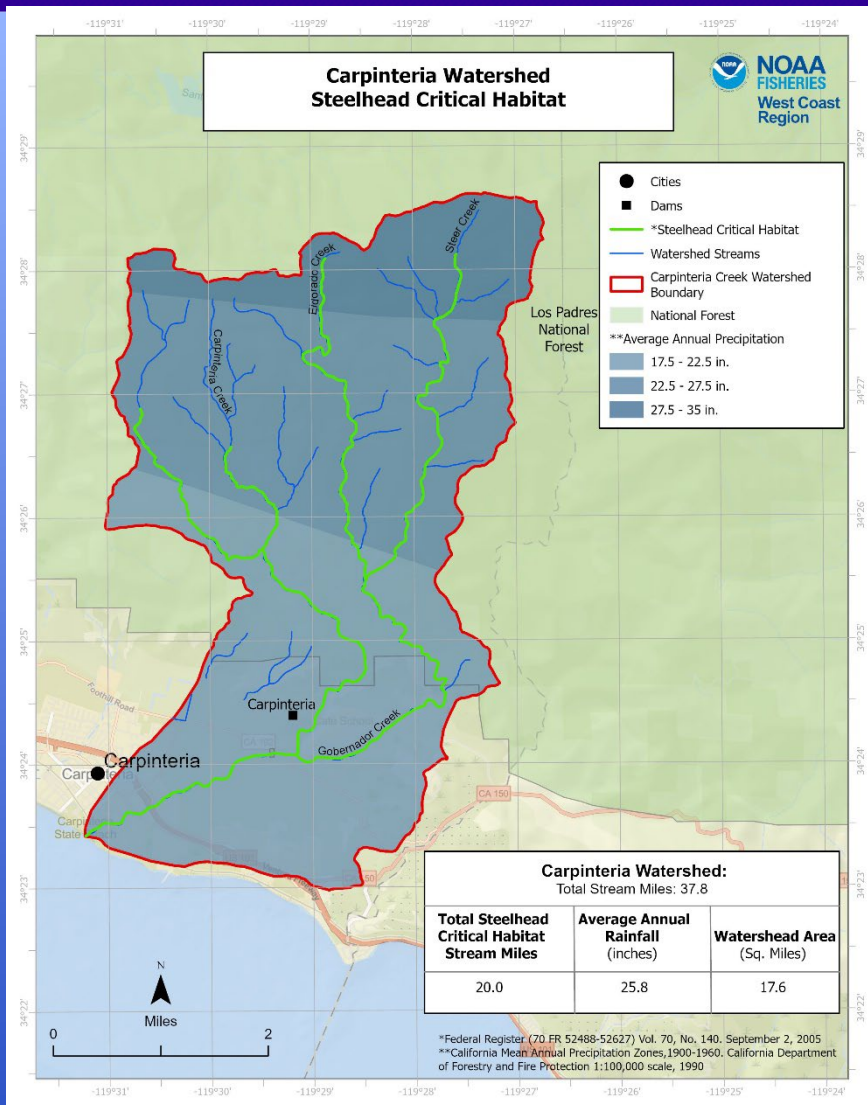
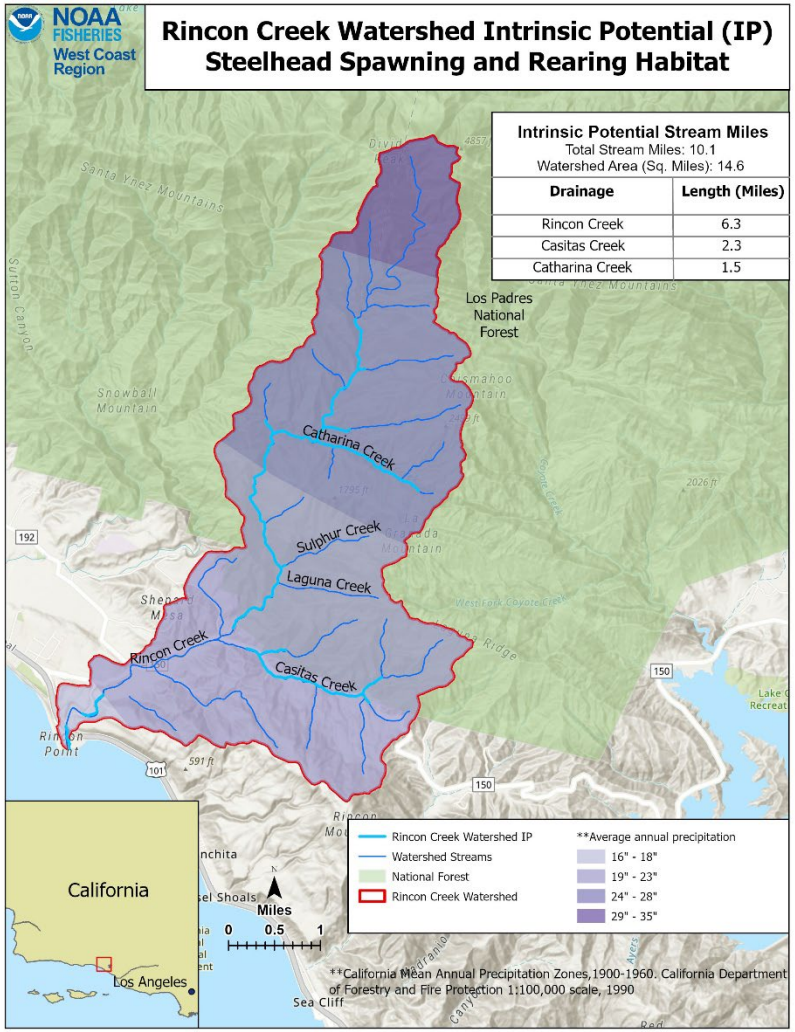
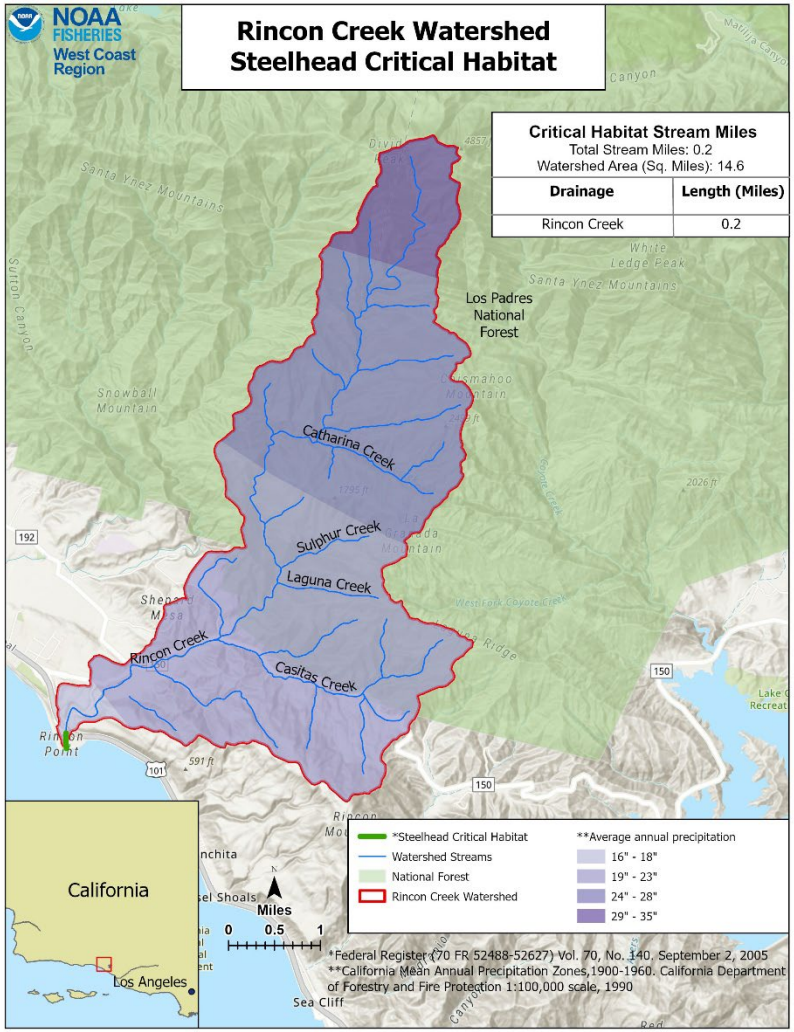
Carpinteria Creek Watershed



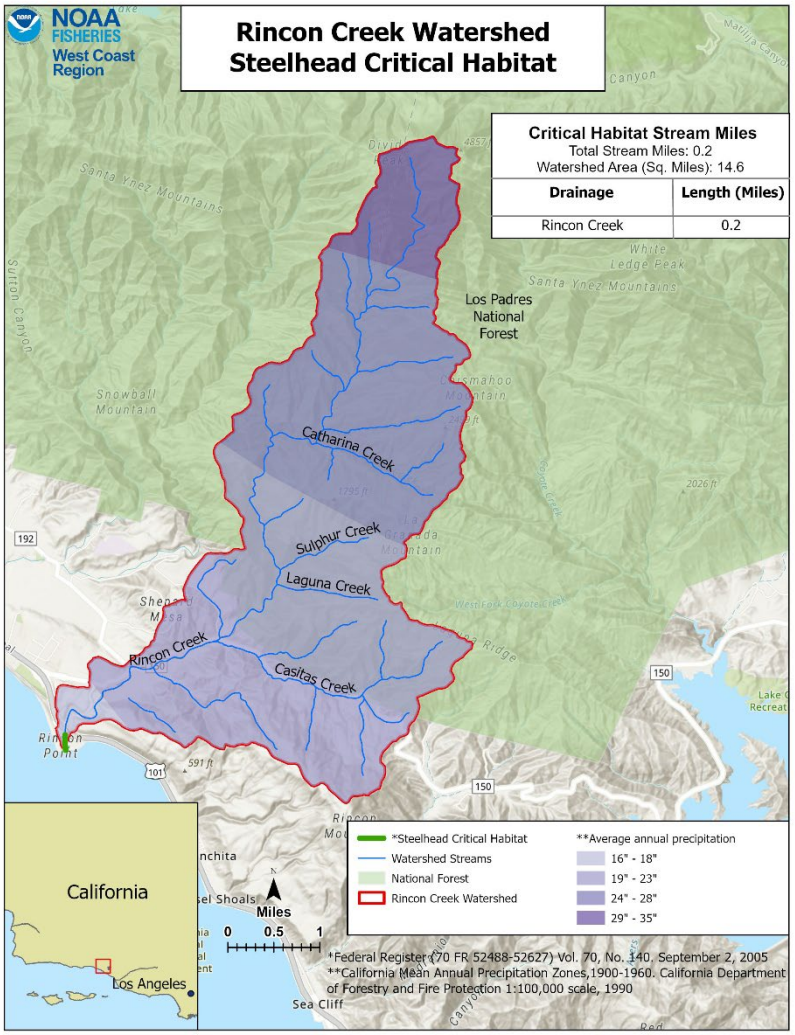
Rincon Creek Watershed



Rincon Creek Watershed



Rincon Creek Watershed



Southern California Steelhead 2023 5-Year Review & South Coast Steelhead

National Marine Fisheries Service

City of Goleta – Creek Week
September 27, 2024
Mark H. Capelli
Steelhead Recovery Coordinator