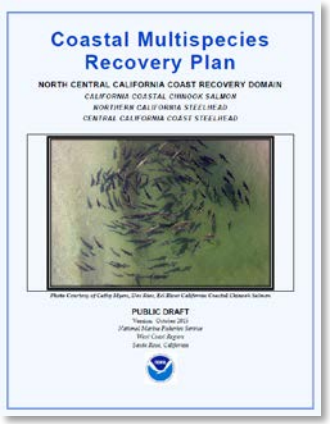
NOAA FISHERIES

West Coast Region

Proposed Coastal Multispecies Recovery Plan



North Coast RWQCB

January 28, 2016

Species

- California Coastal Chinook Salmon ESU
- Northern California Steelhead DPS
- Central California Coast Steelhead DPS

Courtesy: Eric McDermott, Sonoma County Water Agency

Courtesy: Schmiebel - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons

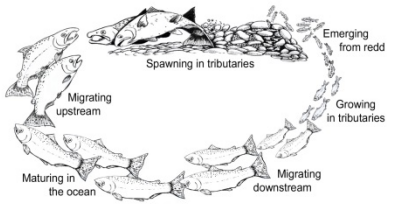
Recovery Goals and Objectives

Recovery Goal

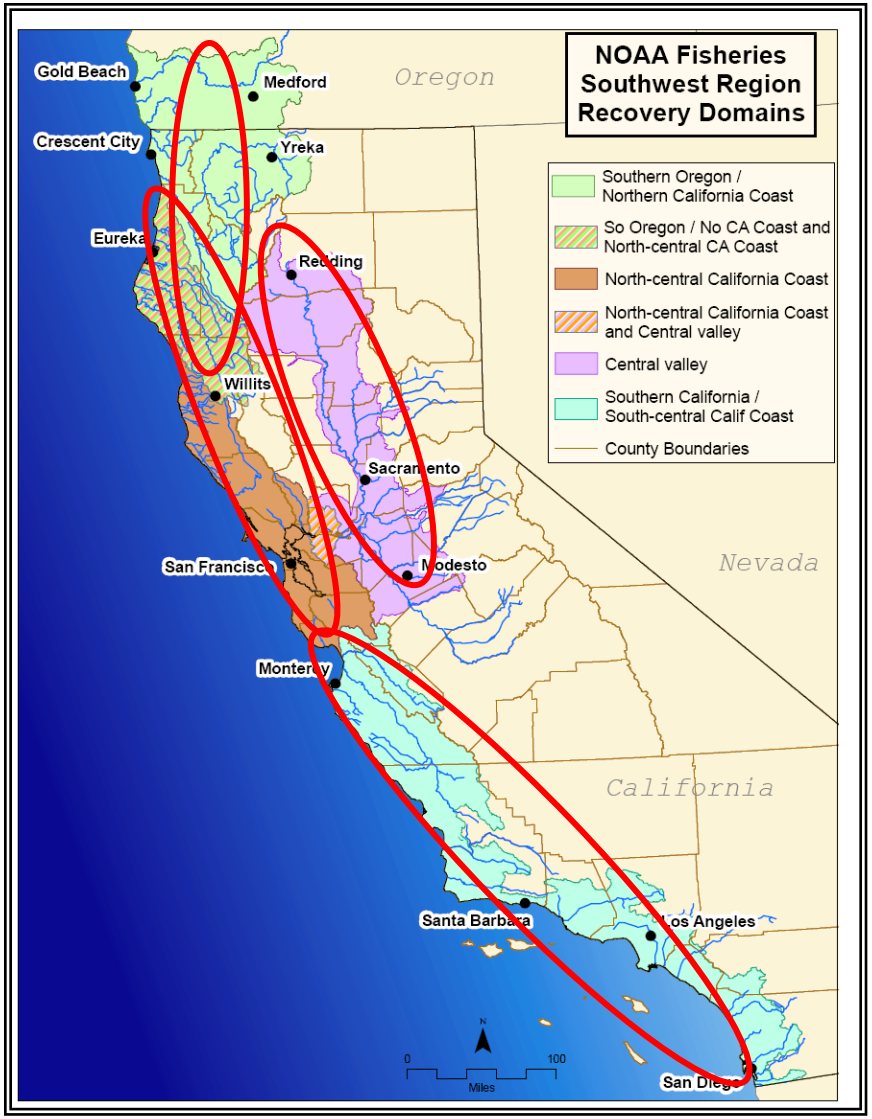
Remove focus salmonid species from the Federal List of Endangered and Threatened Wildlife due to their recovery.

Vision

Restored freshwater and estuarine habitats that support self-sustaining, well-distributed and naturally spawning salmonid populations.



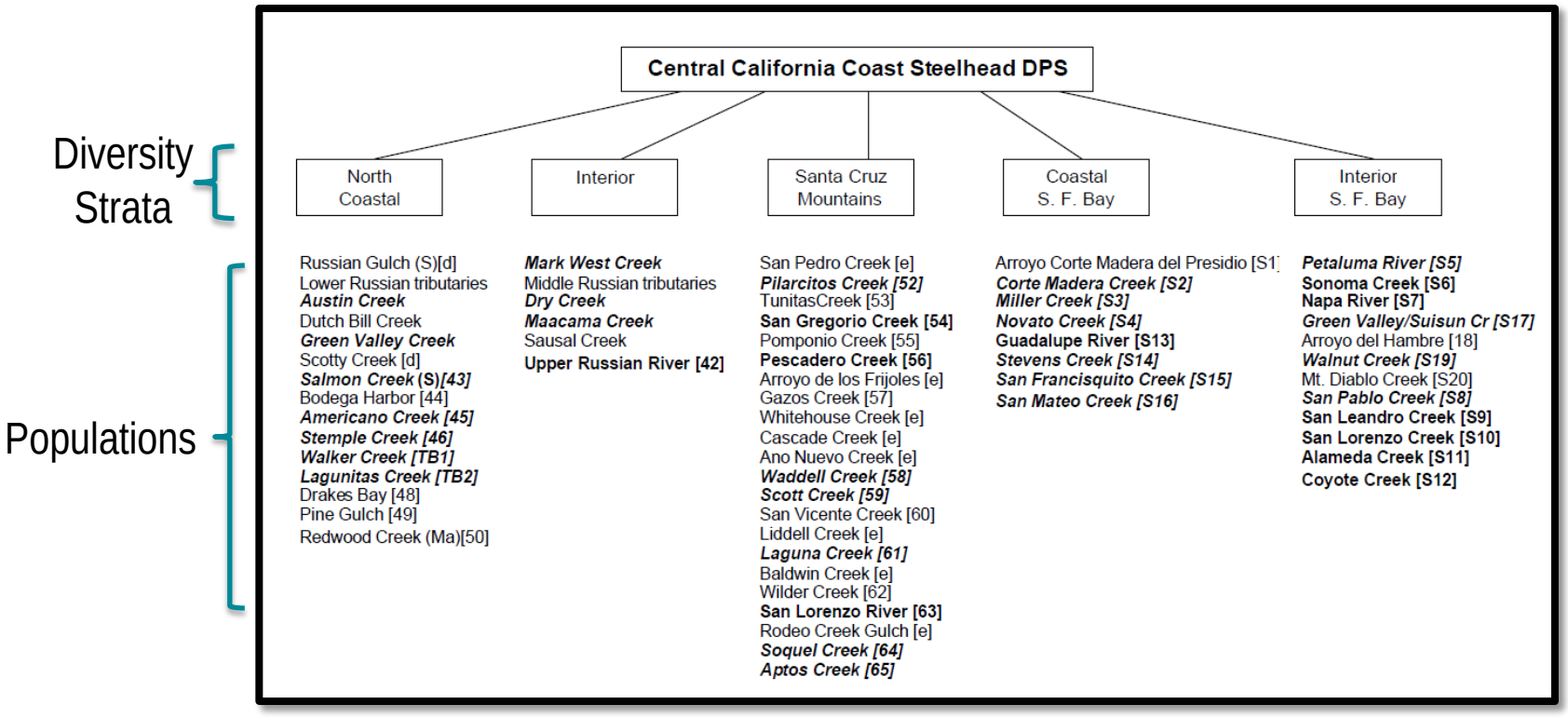
Recovery Domains



Geographic Setting

- 8 million acres
- Redwood Creek in Humboldt County to Aptos Creek in Santa Cruz County
- Includes San Francisco Bay and Humboldt Bay (and tributaries)

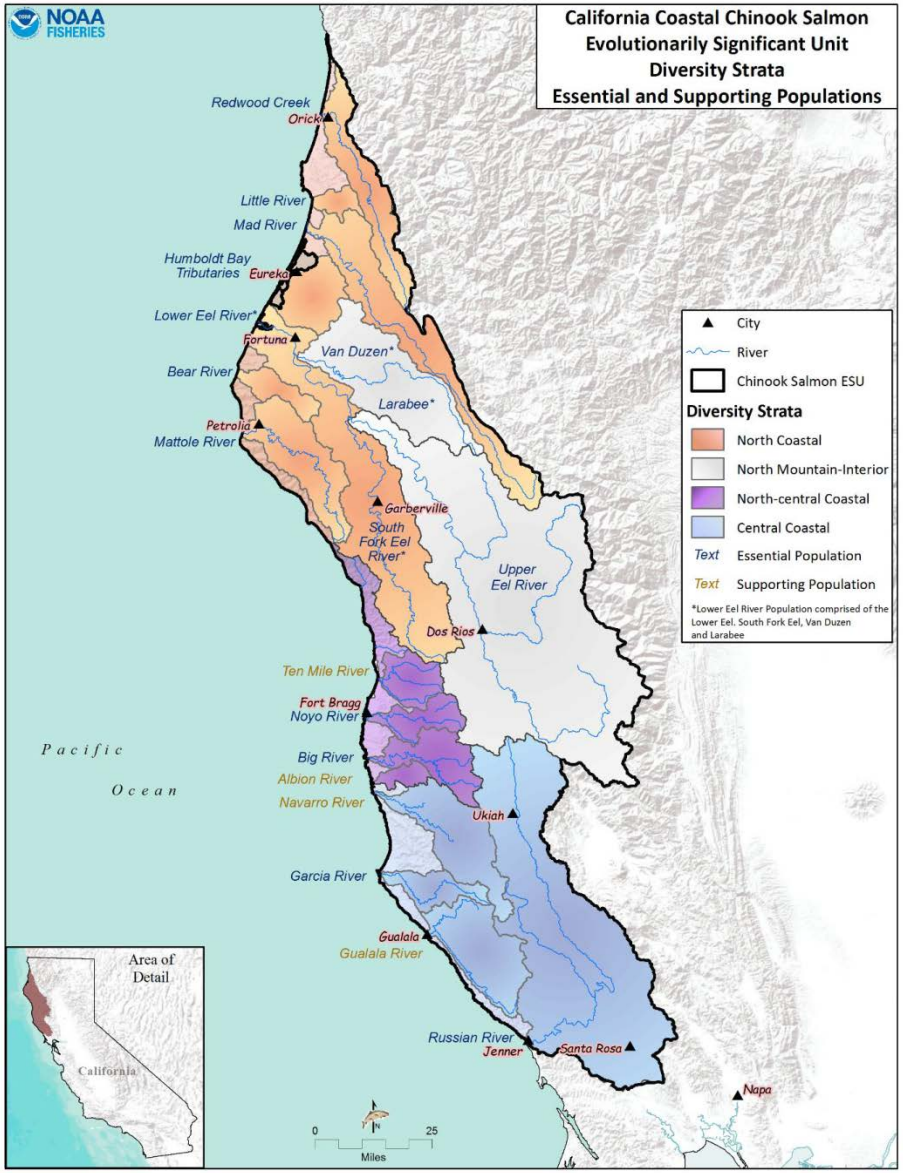
Population Structure



Spence *et al.* 2008, 2012

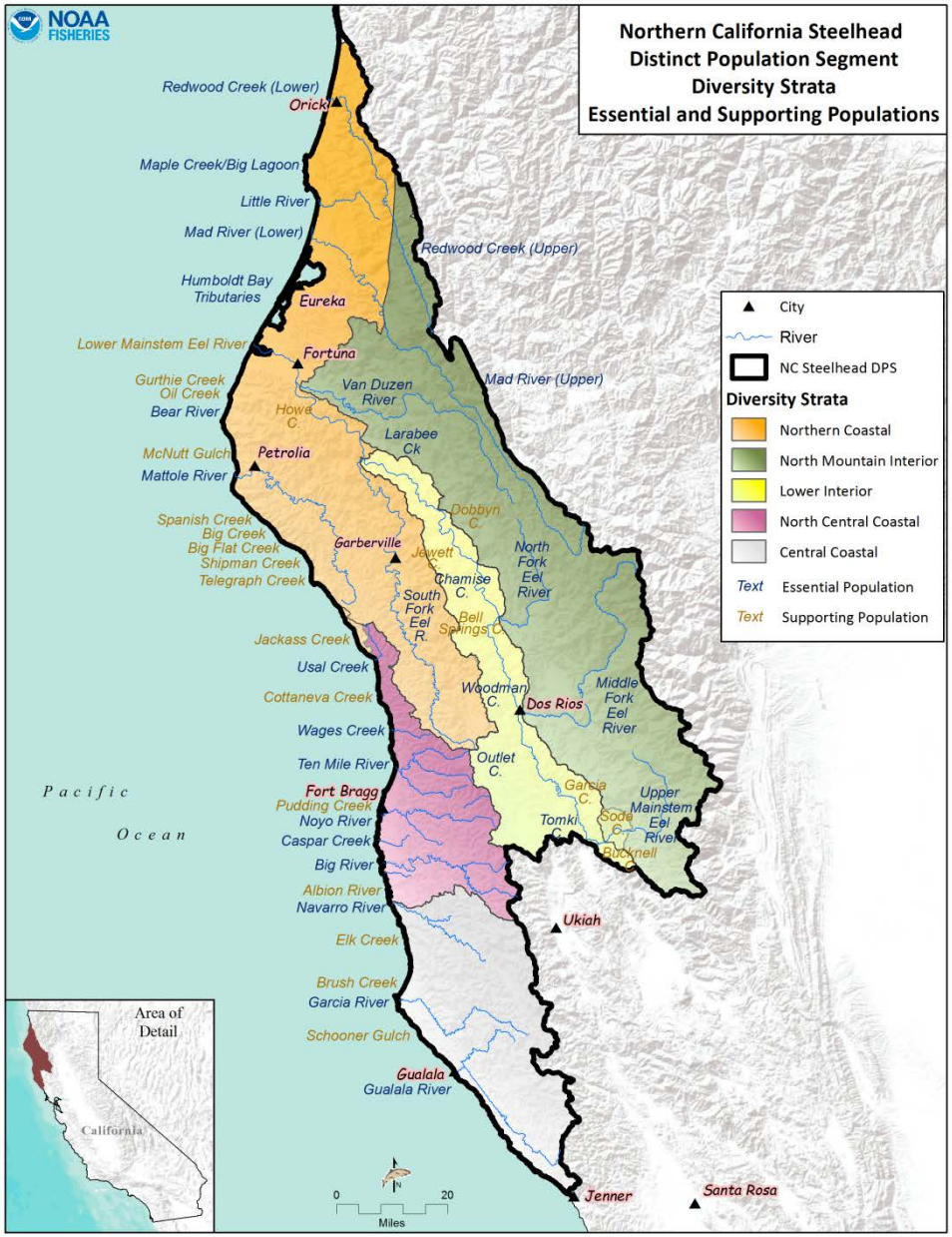
CC Chinook Salmon Diversity Strata

- North Coastal
- North Mountain Interior
- North-Central Coastal
- Central Coastal



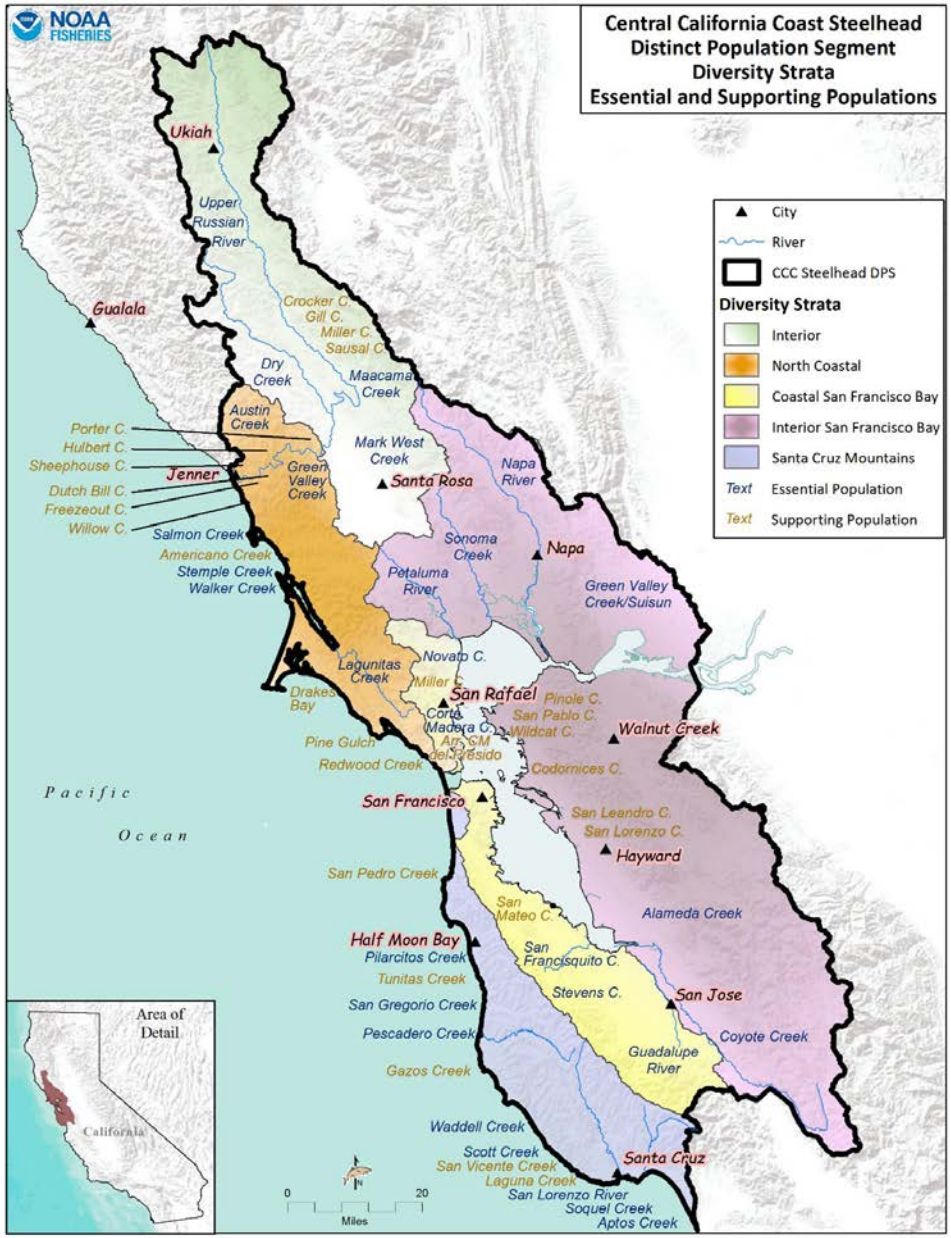
NC Steelhead Diversity Strata

- Northern Coastal
- Lower Interior
- North Mountain Interior
- North Central Coastal
- Central Coastal



CCC Steelhead Diversity Strata

- North Coastal
- Interior
- Santa Cruz Mountains
- Coastal SF Bay
- Interior SF Bay



Population Viability

Viability: the ability of a population to persist and avoid extinction

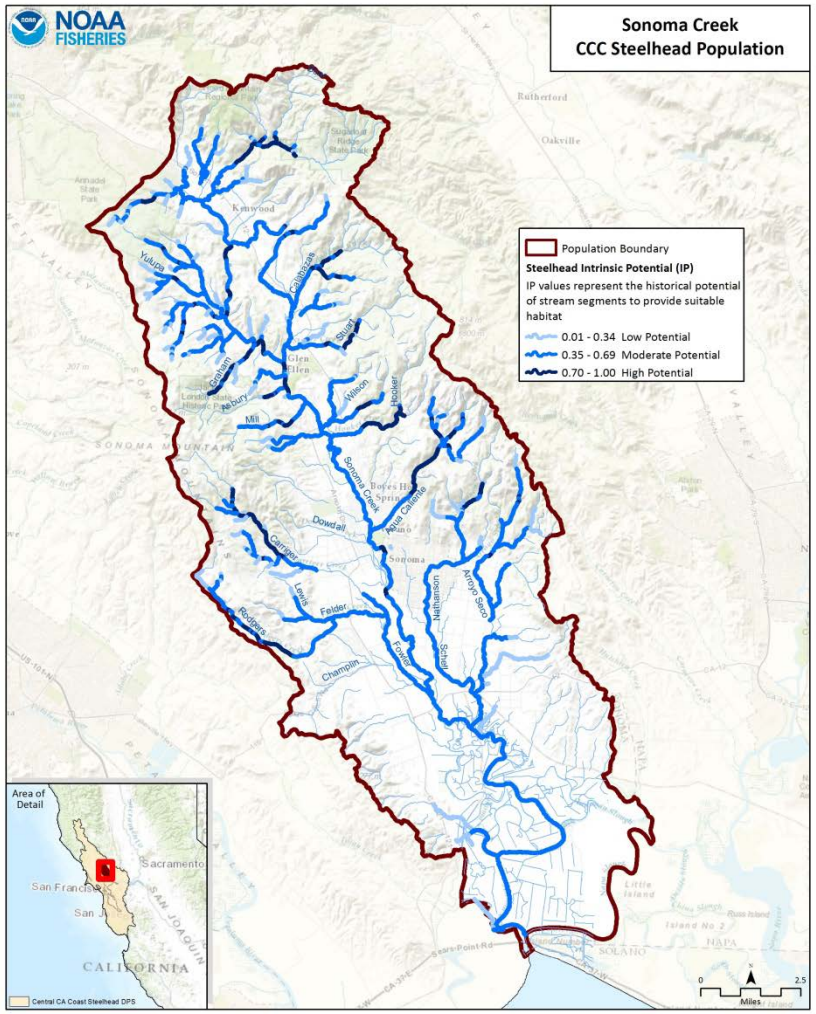
TRT developed framework for population viability

- Population abundance
- Population decline
- Catastrophic decline
- Spawner density
- Hatchery influence

Historic Intrinsic Potential (IP) Models:

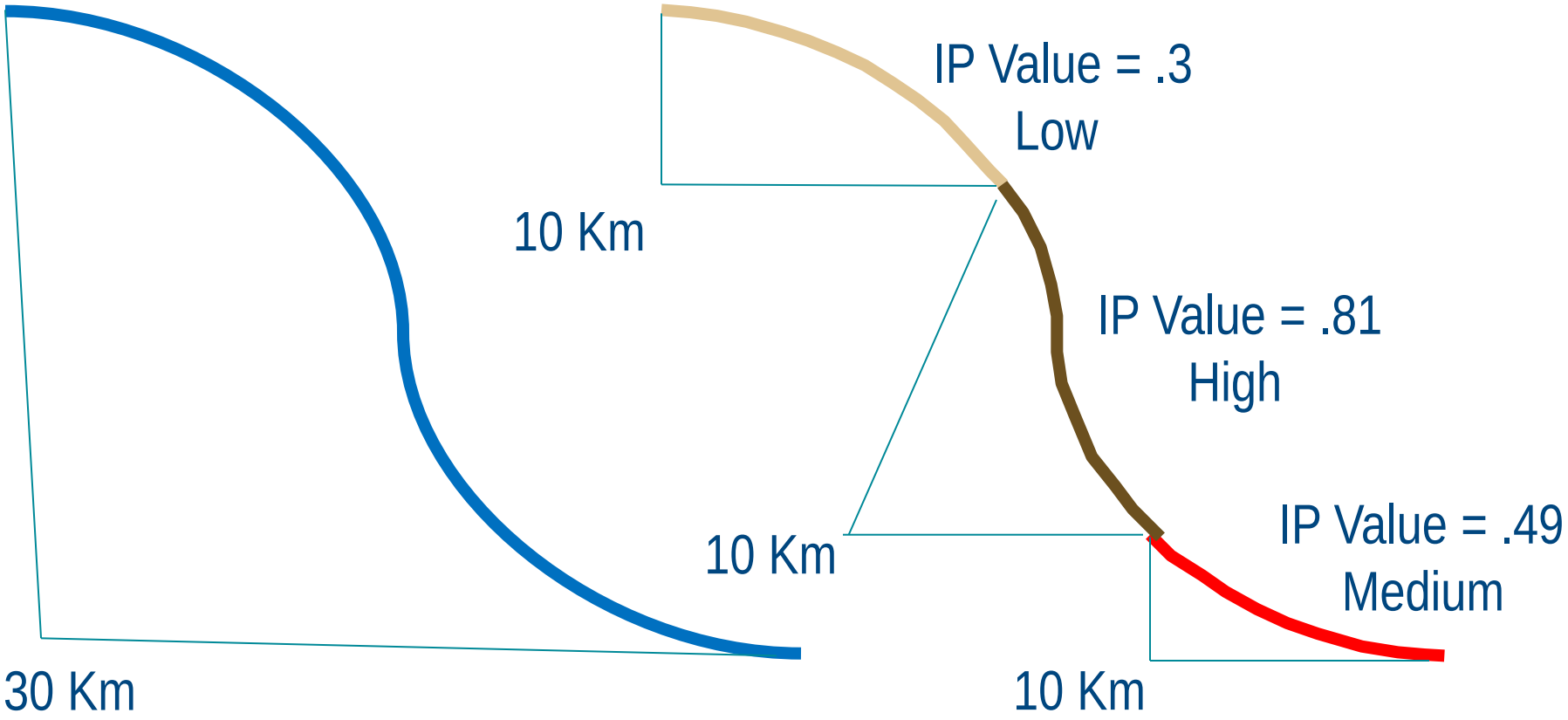
Likelihood of a stream reach to historically support salmonids

- Habitat attributes
  - Channel gradient
  - Valley width
  - Mean annual discharge
- Watershed totals (IP-km)
- Revisions
  - Model revision, Spence *et al*. 2012
  - NOAA staff revision
  - Co-manager revisions on populations with a severe IP bias



Historic Intrinsic Potential (IP) Models:

(0.3 x 10) + (0.81 x 10) + (0.48 x 10) = 16 IP Kilometers



Spawner Densities and Abundance Targets

- Identified for each population
- These numbers as calculated from the Intrinsic Potential (IP-km) generated for each population

Diversity Strata	NC winter-run steelhead populations	Historical Population Status	Population's Role In Recovery	Current Weighted IP-km	Spawner Density	Spawner Abundance
Northern Coastal	Bear River	I	Essential	107.8	27.2	2,900
	Big Creek	D	Supporting	3.8	6-12	21-44
	Big Flat Creek	D	Supporting	5.9	6-12	33-69
	Guthrie Creek	D	Supporting	9.2	6-12	53-108
	Howe Creek	D	Supporting	13.9	6-12	81-165
	Humboldt Bay Tributaries	I	Essential	203.4	20.0	4,100

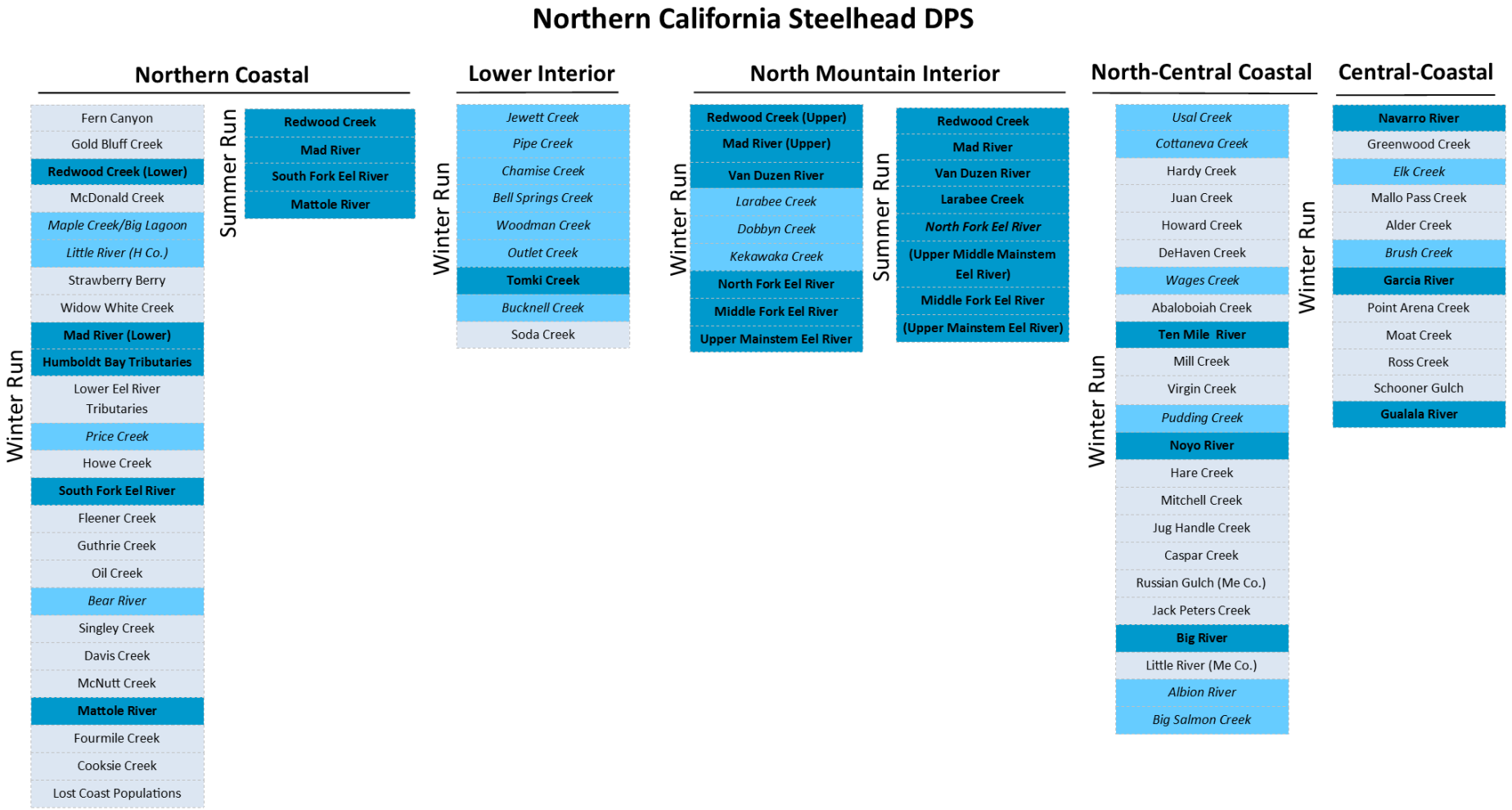
Roles of Populations

- Independent - *likely to persist over 100-year time period*
  - Spawner density of 20-40 spawners per IP-km
  - NC/CCC steelhead ≥ 16 IP-km; CC Chinook ≥ 20 IP-km

- Dependent – *likely to go extinct in isolation; rely on immigration*
  - Spawner density of 6-12 spawners per IP-km
  - NC/CCC steelhead < 16 IP-km; CC Chinook < 20 IP-km

Based on Spence *et al.* (2008) and depensation literature.

Roles of Populations



ESU/DPS Viability Criteria

- Representation
- Remaining populations
- Redundancy
- Connectivity

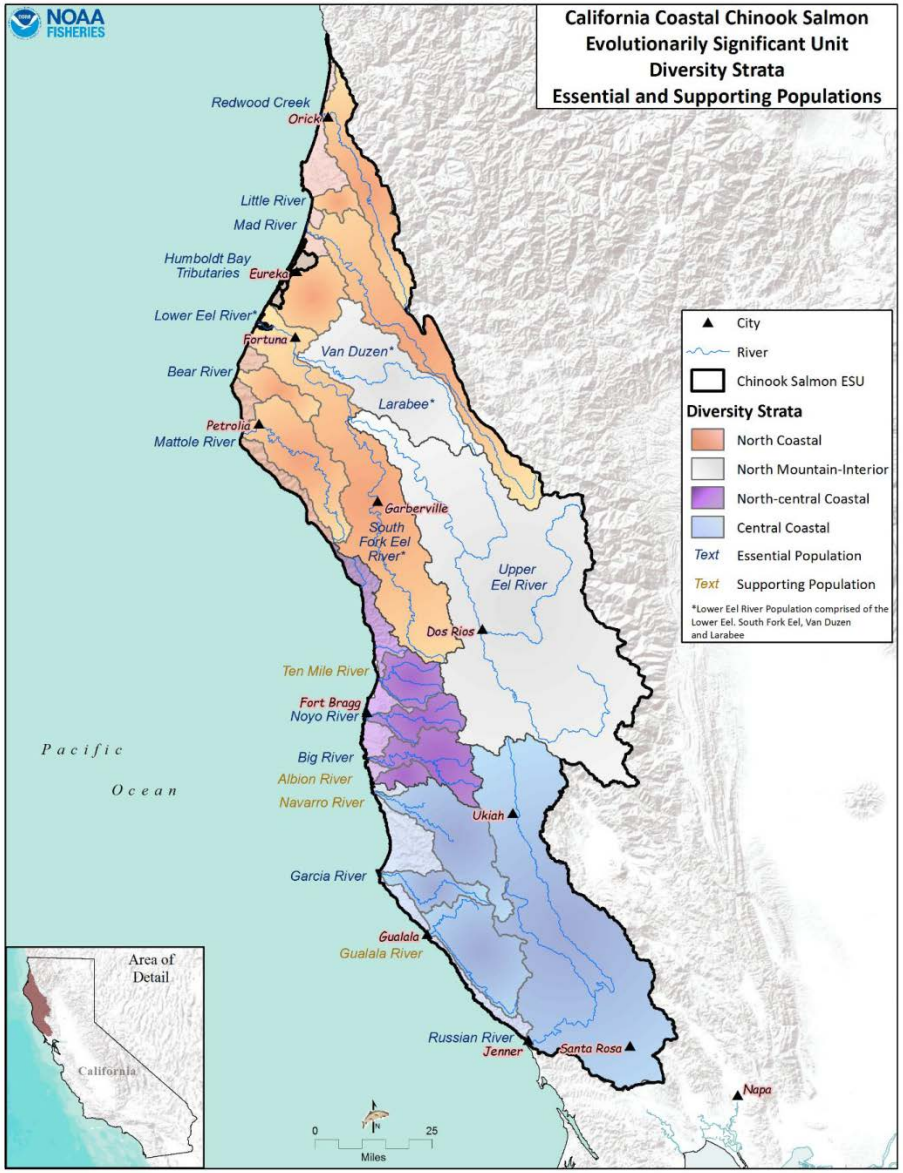
Populations Needed for Recovery

- Essential populations
  - Low extinction risk
  - Needed for representation
  - Contribute to meeting 50% of aggregate historical abundance for Diversity Stratum.

- Supporting populations
  - Moderate extinction risk
  - Needed for redundancy/connectivity
  - *Do not* contribute to meeting 50% of the aggregate historical abundance for the Diversity Stratum.

Recovery Scenario: CC Chinook Salmon

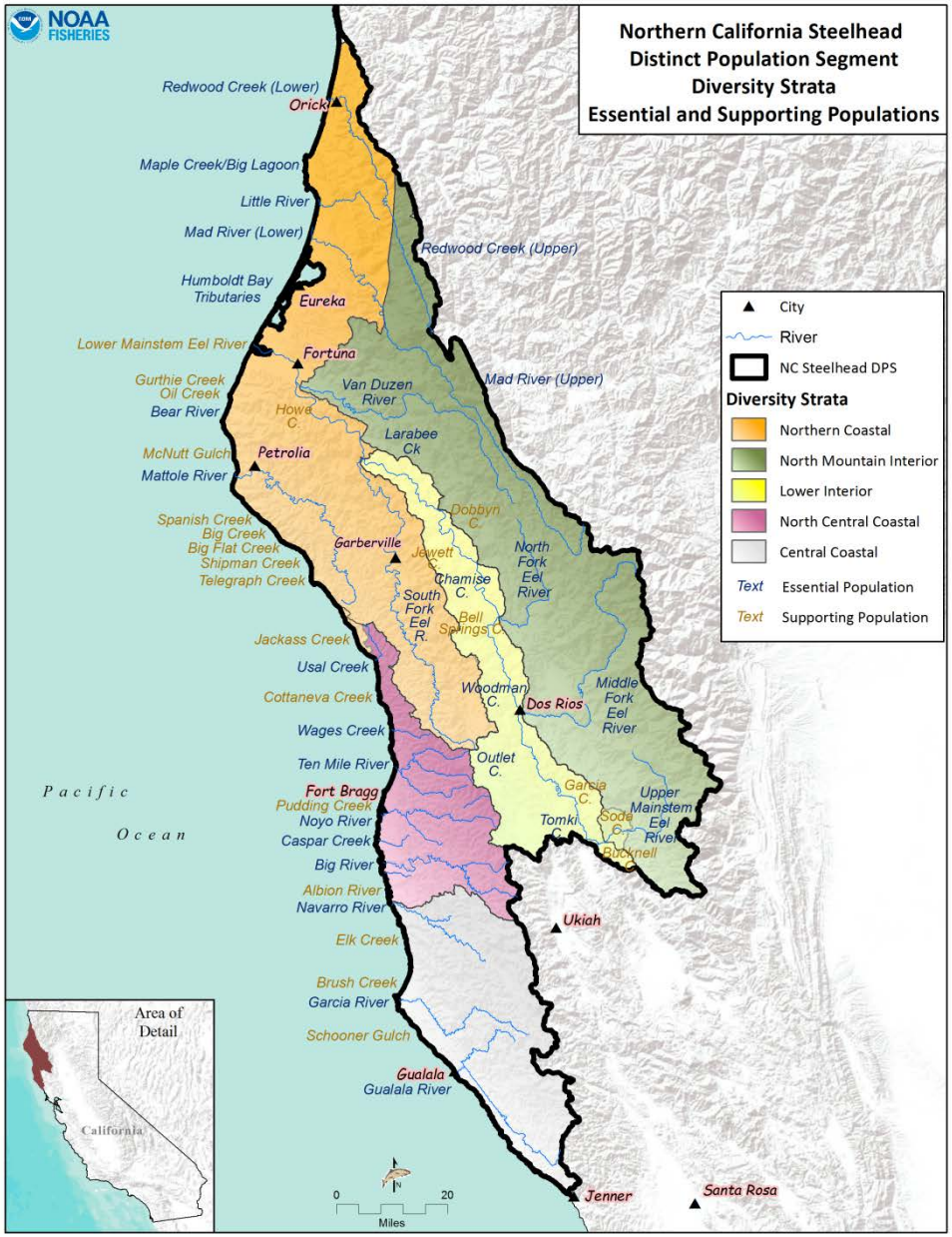
- 17 populations
  - 13 essential populations
  - 4 supporting populations



Recovery Scenario: NC Steelhead

- 51 Winter-Run populations
  - 27 essential populations
  - 24 supporting populations

- 10 Summer-Run populations



Recovery Scenario
CCC Steelhead

- 56 populations
  - 28 essential populations
  - 28 supporting populations

Condition and Threat Analysis

- TNC Conservation Action Planning
  - Essential populations
  - Existing conditions (poor, fair, good, very good)
  - Existing/future threats (very high, high, medium, low)

- Rapid assessment
  - Supporting populations
  - By diversity stratum (supporting)

#	Conservation Target	Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Measurement	Current Rating
1	Adults	Condition	Habitat Complexity	Large Wood Frequency (BFW 0-10 meters)	<50% of streams/ IP-Km (>6 Key Pieces/100 meters)	50% to 74% of streams/ IP-Km (>6 Key Pieces/100 meters)	75% to 90% of streams/ IP-Km (>6 Key Pieces/100 meters)	>90% of streams/ IP-Km (>6 Key Pieces/100 meters)	<50% of streams/ IP-km (>6 Key Pieces/100 meters)	Poor
			Habitat Complexity	Large Wood Frequency (BFW 10-100 meters)	<50% of streams/ IP-Km (>1.3 Key Pieces/100 meters)	50% to 74% of streams/ IP-Km (>1.3 Key Pieces/100 meters)	75% to 90% of streams/ IP-Km (>1.3 Key Pieces/100 meters)	>90% of streams/ IP-Km (>1.3 Key Pieces/100 meters)	<50% of streams/ IP-km (>1.3 Key Pieces/100 meters)	Poor
			Habitat Complexity	Pool/Riffle/Flatwater Ratio	<50% of streams/ IP-Km (>40% Pools; >20% Riffles)	50% to 74% of streams/ IP-Km (>40% Pools; >20% Riffles)	75% to 90% of streams/ IP-Km (>40% Pools; >20% Riffles)	>90% of streams/ IP-Km (>40% Pools; >20% Riffles)	80% streams/ 85% IP-km (>40% Pools; >20% Riffles)	Good
			Habitat Complexity	Shelter Rating	<50% of streams/ IP-Km (>80 stream average)	50% to 74% of streams/ IP-Km (>80 stream average)	75% to 90% of streams/ IP-Km (>80 stream average)	>90% of streams/ IP-Km (>80 stream average)	20% streams/ 15% IP-km (>80 stream average)	Poor
			Hydrology	Passage Flows	NMFS Flow Protocol: Risk Factor Score >75	NMFS Flow Protocol: Risk Factor Score 51-75	NMFS Flow Protocol: Risk Factor Score 35-50	NMFS Flow Protocol: Risk Factor Score <35	NMFS Flow Protocol: Risk Factor Score 35-50	Good

Recovery Actions

- To improve condition (poor/fair) or abate threat (high/very high)
- ESU/DPS and Population Level Actions

California Coastal Chinook Salmon ESU Level Recovery Actions

Action ID	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partner	Costs ($K)						Comment
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
ESU-CCCh-1.1	Estuary	Objective	Address the present or threatened destruction, modification, or curtailment of the species habitat or range.										
ESU-CCCh-1.1.1	Estuary	Recovery Action	Increase quality and extent of estuarine habitat.										
ESU-CCCh-1.1.1.1	Estuary	Action Step	In estuary/lagoons when applicable, remove problematic infrastructure and fill material to promote the historical seasonal formation and timing of an estuary/lagoon barrier breach	3	20	County, State, NMFS						TBD	Cost is dependent on the infrastructure of fill to be removed
ESU-CCCh-1.1.1.2	Estuary	Action Step	Implement patrols by citizens groups, city employees, and law enforcement to ensure seasonal sandbars are not illegally breached.	1	50	City, Citizens, County, CDFW Wardens, NMFS OLE, Non-Profits, Private Landowners,						0	Action is considered In-Kind
ESU-CCCh-1.2	Estuary	Objective	Address the inadequacy of existing regulatory mechanisms.										
ESU-CCCh-1.2.1	Estuary	Recovery Action	Increase quality and extent of estuarine habitat.										
ESU-CCCh-1.2.1.1	Estuary	Action Step	Develop and implement Estuary Inflow Protection and Enhancement Guidelines to maintain estuary function and provide information for estuary restoration.	2	20	CDFW, NMFS, SWRCB						0	Action is considered In-Kind
ESU-CCCh-1.2.1.2	Estuary	Action Step	Work with local county/city and state organizations to develop alternative methods of flood control to reduce artificial breaching frequency.	2	10	City, County, NMFS, State						0	Action is considered In-Kind
ESU-CCCh-2.1	Floodplain Connectivity	Objective	Address the present or threatened destruction, modification, or curtailment of habitat or range.										
ESU-CCCh-2.1.1	Floodplain Connectivity	Recovery Action	Rehabilitate and enhance floodplain connectivity										
ESU-CCCh-2.1.1.1	Floodplain Connectivity	Action Step	Evaluate opportunities and implement actions for planned retreat of urban development or other incompatible land uses from floodplains (similar to the City of Napa, CA) and alluvial valley streams to recreate natural floodplain processes and complex off-channel habitat and implement such opportunities where appropriate.	2	50	City, County						TBD	In-Kind for the evaluation, TBD for the implementation of the plan
ESU-CCCh-2.2	Floodplain Connectivity	Objective	Address the inadequacy of existing regulatory mechanisms										
ESU-CCCh-2.2.1	Floodplain Connectivity	Recovery Action	Rehabilitate and enhance floodplain connectivity										
ESU-CCCh-2.2.1.1	Floodplain Connectivity	Action Step	County zoning should consider the 20-year and 100-year floodprone areas and design protective ordinances and compatible land use designations in these locations.	2	50	County						0	Action is considered In-Kind
ESU-CCCh-3.1	Hydrology	Objective	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
ESU-CCCh-3.1.1	Hydrology	Recovery Action	Improve flow conditions										
ESU-CCCh-3.1.1.1	Hydrology	Action Step	Encourage water conservation and the use of native vegetation in new landscaping to reduce the need for watering and application of herbicides, pesticides, and fertilizers.	2	50	EPA, City, County, NGO, Private Landowners, State, RWQCB						0	Action is considered In-Kind
ESU-CCCh-3.1.1.2	Hydrology	Action Step	Work with rural residential communities to develop water conservation strategies protective of salmonids while allowing for domestic water use.	2	20	City, County, NGO, Private Landowners, State, SWRCB						0	Action is considered In-Kind

Recovery Actions - Prioritization

- Priority 1 - Must be taken to prevent extinction
- Priority 2 - Must be taken to prevent significant decline
- Priority 3 - All other actions to achieve full recovery

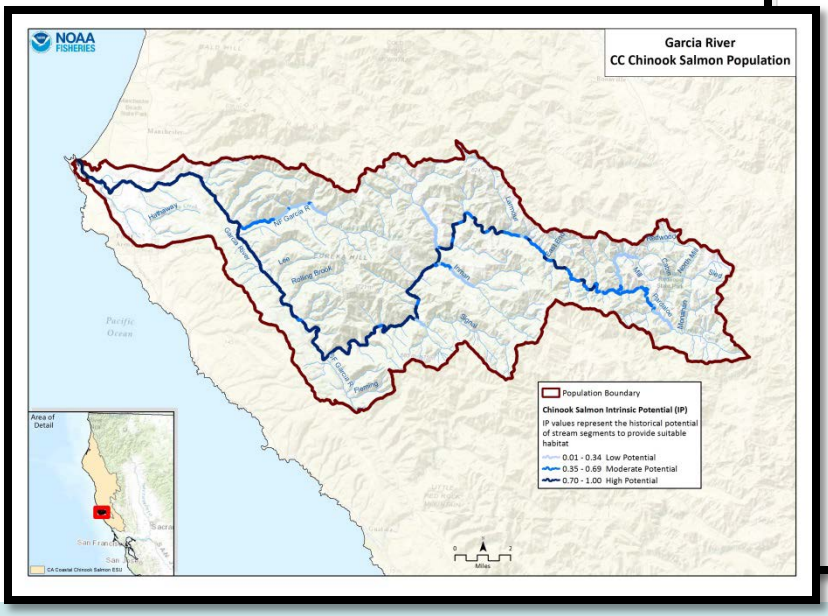
Recovery Plan Organization

- Volume 1 – general information on recovery planning, methods, criteria, and implementation.

- Volume II – CC Chinook ESU
- Volume III – NC Steelhead DPS
- Volume IV – CCC Steelhead DPS
- Volume V – marine and estuarine; climate change; TRT documents; costs; IP revisions, etc.

Population Level Information

- Profile
- Map
- Results
- Recovery Actions



Garcia River Population

CC Chinook Salmon Fall-Run

- Role within ESU: Potentially Independent Population
- Diversity Stratum: Central Coastal
- Spawner Abundance Target: 2,000 adults
- Current Intrinsic Potential: 56.2 IP-km

For information regarding NC steelhead and CCC coho salmon for this watershed, please see the NC steelhead volume of this recovery plan and the CCC coho salmon recovery plan (http://www.westcoast.fisheries.noaa.gov/).

Chinook Salmon Abundance and Distribution

Quantitative abundance and distribution estimates of fall-run Chinook salmon within the Garcia River watershed are sparse or non-existent. Chinook salmon abundance is severely depleted from historical accounts, and in most years very few individuals are observed or reported (TCF 2006). Anecdotal accounts of Chinook salmon from the early 1920s suggest abundant and sustainable runs within the Garcia River (Warmerdam, 2010).

Although degraded from pristine conditions, a substantial amount of high value habitat still exists within the Garcia watershed. The extent of suitable Chinook salmon habitat is primarily limited to the mainstem Garcia River below the confluence with Inman Creek. The North Fork Garcia River may also support Chinook salmon in some years.

History of Land Use

The early period of logging and timber harvest in the Garcia River watershed began in the late 1860s and ended in 1915. In the 1950s, logging resumed in response to the post-World War II housing boom, with intense harvest rate and loggers utilizing more advanced technologies and heavy machinery. This period of intense logging ended in 1961 and left the watershed in a much degraded state. Large amounts of land were again harvested for timber more recently as 52-percent of the basin was harvested between 1987 and 1997 (NCRWQB 2005). Logging and wood harvest still occur within the watershed; however, timber harvest practices have improved as compared to previous logging areas, and, therefore, logging-related impacts to salmonid habitat may be less likely.

NMFS/NCRWQCB Implementation Opportunities

- Opportunities to align and leverage efforts
  - Sediment reduction
  - Minimize exposure to contaminants
  - Instream flow initiatives
  - Improve habitat complexity
  - Improve stream temperatures
- Centralize and exchange data and information
- Address barriers to permitting

NMFS/NCRWQCB Implementation Opportunities

- Ongoing efforts and programs
  - Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds
  - Fish Friendly Farming and Ranching
  - Wood for Salmon Working Group
  - NCRWQCB Basin Plan
  - Restoration Policy
  - TMDL for 303d listed waterbodies
  - NPDES storm water permits

NMFS Contacts

Erin Seghesio

Recovery Coordinator

erin.seghesio@noaa.gov, 707-575-8515

Bob Coey

North Coast Branch Chief

bob.coey@noaa.gov, 707-575-6090

Korie Schaeffer

Operations and Policy Branch Chief

korie.schaeffer@noaa.gov, 707-575-6087

Thank you for coming!

"…restoring salmon runs will require reshaping our relationship to the landscape, guided by the humility to admit that we do not know how to manufacture, let alone manage, a natural ecosystem…"

David Montgomery 2003