

Cottaneva Creek



Location	• Mendocino County
Watershed Area	• 17.0 Square Miles
Potential Habitat	• 14.5 Stream Miles
Vegetation	• 73% Coniferous • 21% Riparian or Montane Forest
Erodability	• High
Ownership Patterns	• 100% Private
Dominant Land Uses	• Timber
Housing Density	• Very low
TMDL Pollutants	• None



Cottaneva Creek estuary and lower watershed.
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Cottaneva Creek Coho Salmon: Persistent – Low Abundance

Recovery Goals

✓ Conduct periodic, standardized spawning surveys to estimate adult abundance in the watershed

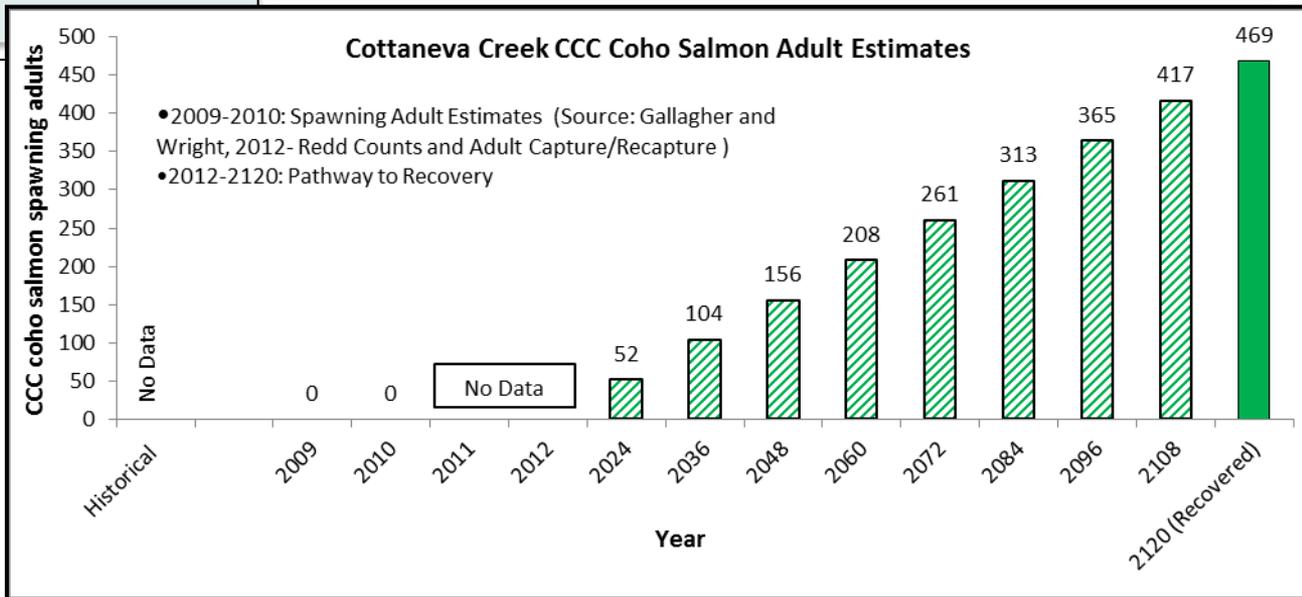


Cottaneva Creek Adult Spawner Targets

Downlisting to Threatened
235

Recovery
469

STEELHEAD: YES
CHINOOK SALMON: NO



Current Instream, Watershed and Population Conditions



Preventing Extinction & Improving Conditions

Priority 1: Immediate Restoration Actions

- Maintain current LWD, boulders, and other structure-providing features to maintain current stream complexity, pool frequency, and depth
- Decommission or upgrade roads
- Treat high priority roads, culverts, road slides and landings

Priority 2 & 3: Long-Term Restoration Actions

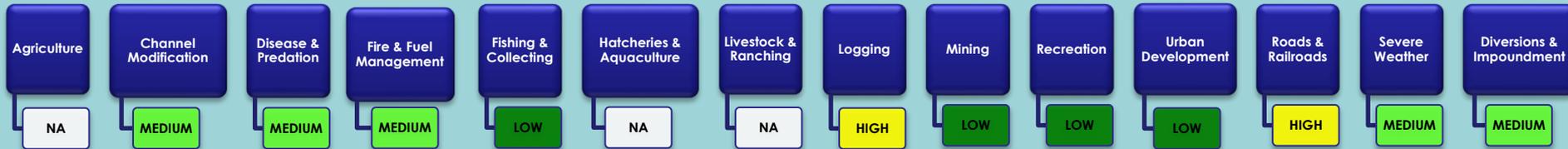
- Target habitat restoration and enhancement that will function between winter base flow and flood stage
- Promote restoration projects designed to create or restore off channel habitat
- Install large woody material, boulders, and other instream features
- Assess and implement sediment reduction measures associated with the 2008 Middle Fire
- Improve passage conditions through the aggraded estuary, mainstem, and lower reaches



Recovery Partners



Future Threats



Reducing Future Threats

Priority 1: Immediate Threat Abatement Actions

- Discourage timber operations in areas with high erosion potential during wet conditions
- Protect existing areas with floodplains or off channel habitats from future development
- Design new roads to avoid unstable slopes, wetlands, floodplains and other areas of high habitat value
- Use available best management practices for road construction, maintenance, management and decommissioning
- Discourage Caltrans from removing instream or near stream large woody material along Highway 1

Priority 2 & 3: Long-Term Threat Abatement Actions

- Encourage tree retention on the axis of headwall swales
- For areas with high or very high erosion hazard, extend the monitoring period and upgrade road maintenance for timber operations
- Conserve and manage forestlands for older forest stages
- Install and maintain adequate energy dissipaters for culverts and other drainage pipe outlets
- Minimize water withdrawals for dust control

Conservation Highlights

- Mendocino Redwood currently manages the land for sustained timber harvest.
- Trout Unlimited, Mendocino Redwood Company, and Pacific Watershed Associates are working on a multi-phase, watershed wide approach to sediment reduction.
- California Conservation Corps and Mendocino Redwood Company are partnering to install large wood structures.



Cottaneva Creek Photo ©
Mendocino Redwood Company

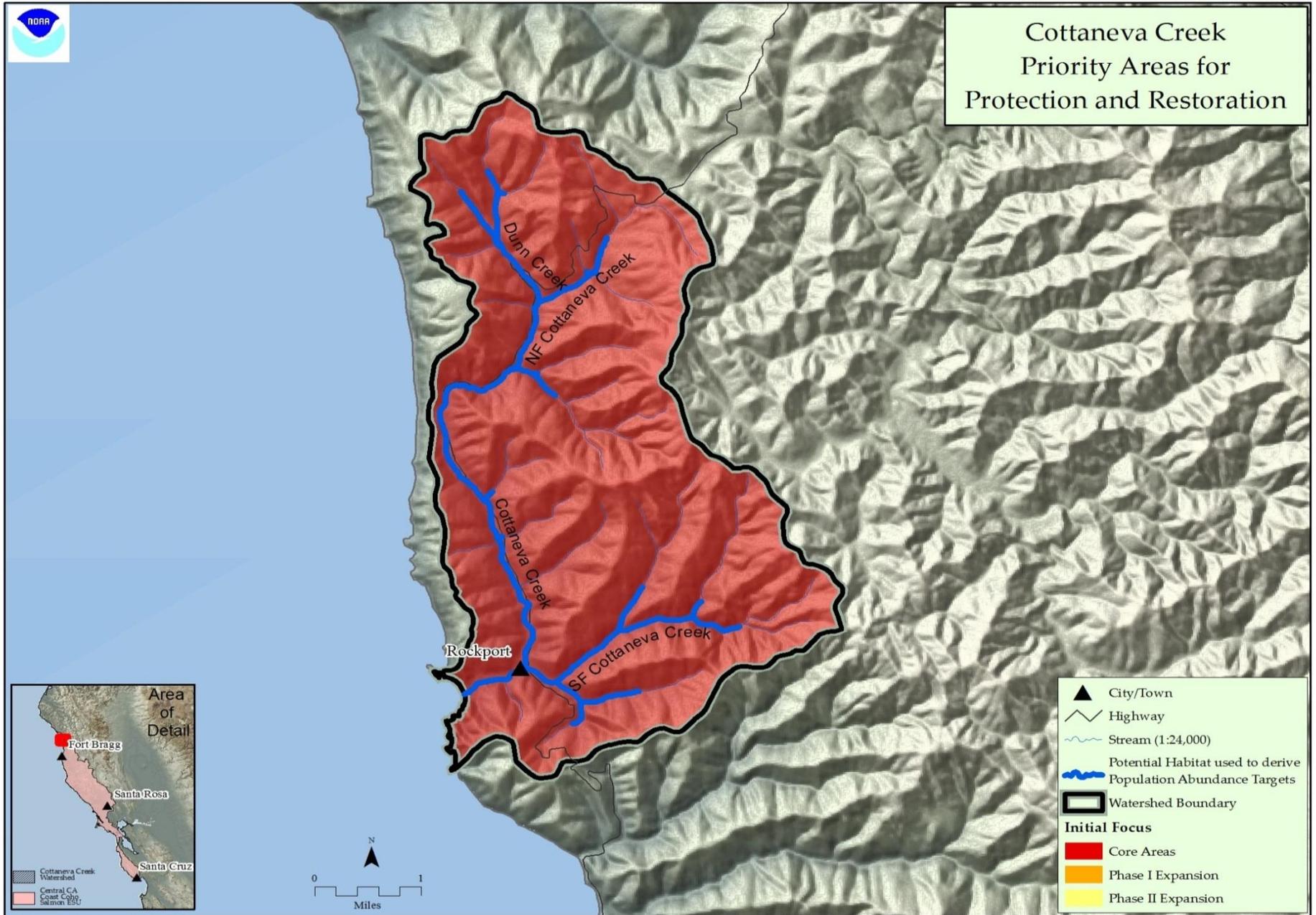


Figure 1: Map of Cottaneva Creek

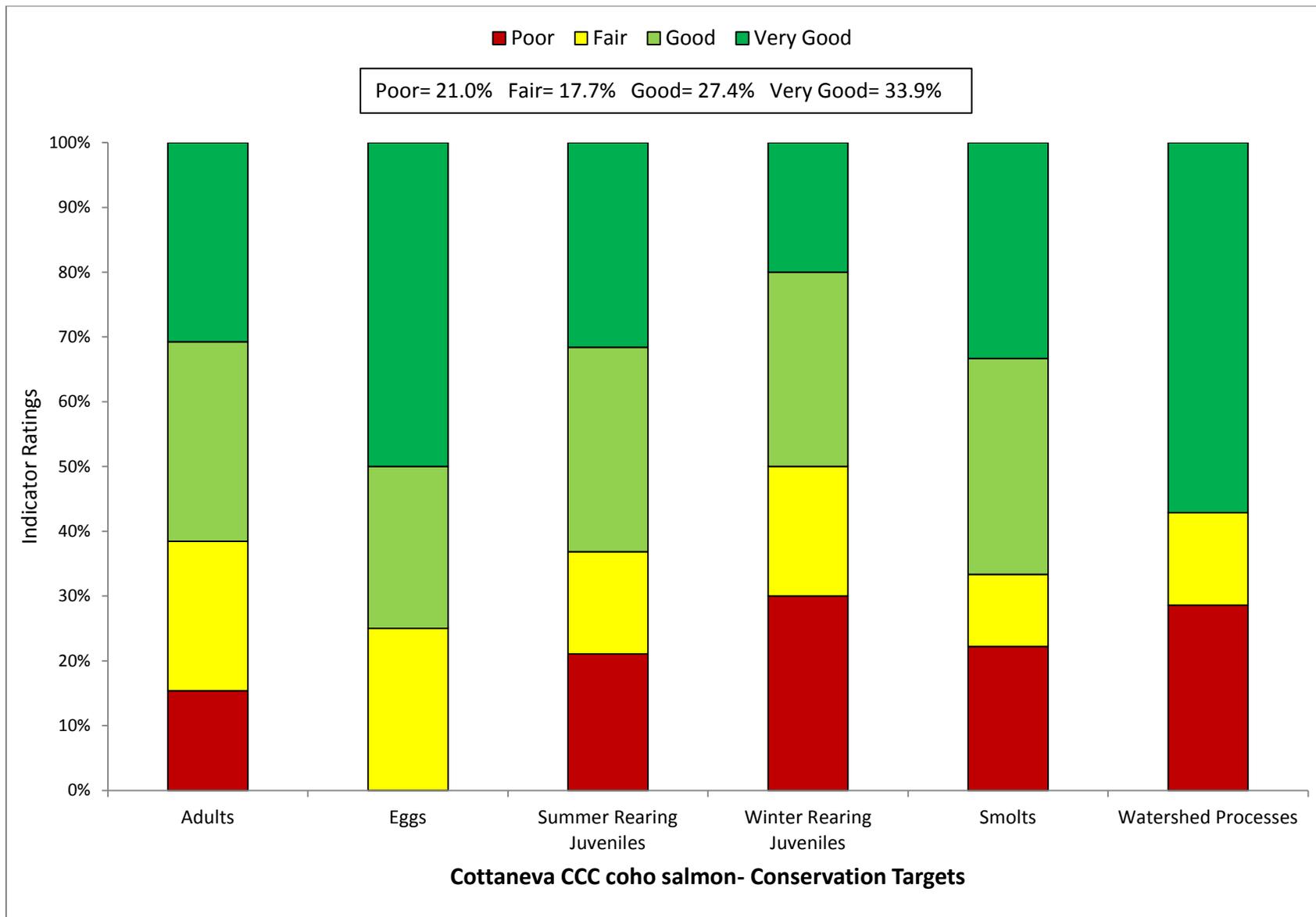


Figure 2: Viability Results by Lifestage

Table 1: CAP Viability Results ~ Cottaneva Creek

Target	Attribute	Indicator	Result	Rating	Method	Desired Criteria
Adults	Habitat Complexity	Large Wood Frequency (BFW 0-10 meters)	0.7 Key Pieces/ 100m	Poor	NMFS Expert Estuary/Lagoon Panel	6 to 11 key pcs/100m
Adults	Habitat Complexity	Large Wood Frequency (BFW 10-100 meters)	0/10 IP-km	Very Good	NMFS Expert Estuary/Lagoon Panel	1.3 to 4 Key Pieces/100 meters
Adults	Habitat Complexity	Pool/Riffle/Flatwater Ratio	64% streams, 49% IP-km (>30% Pools; >20% Riffles)	Fair	SEC Analysis/CDFG Data	75% to 90% of streams/ IP-Km (>30% Pools; >20% Riffles)
Adults	Habitat Complexity	Shelter Rating	0% streams/ IP-km (>80 stream average)	Poor	SEC Analysis/CDFG Data	75% to 90% of streams/ IP-Km (>80 stream average)
Adults	Hydrology	Passage Flows	Risk Factor Score =33	Very Good	SEC Analysis/CDFG Data	NMFS Flow Protocol: Risk Factor Score 35-50
Adults	Passage/Migration	Passage at Mouth or Confluence	> 90% of IP-km accessible	Very Good	SEC Analysis/CDFG Data	75% of IP-Km to 90% of IP-km
Adults	Passage/Migration	Physical Barriers	92% of IP-km accessible	Very Good	SEC Analysis/CDFG Data	75% of IP-Km to 90% of IP-km
Adults	Riparian Vegetation	Tree Diameter (North of SF Bay)	57%, Class 5 & 6 across IP-km	Good	SEC Analysis/CDFG Data	55 - 69% Class 5 & 6 across IP-km
Adults	Riparian Vegetation	Tree Diameter (South of SF Bay)	NA	0	SEC Analysis/CDFG Data	≥80% Density rating "D" across IP-km
Adults	Sediment	Quantity & Distribution of Spawning Gravels	75% of IP-km to 90% of IP-km accessible	Good	SEC Analysis/CDFG Data	75% of IP-Km to 90% of IP-km
Adults	Velocity Refuge	Floodplain Connectivity	> 80 % Response Reach Connectivity	Good	SEC Analysis/CDFG Data	>80% Response Reach Connectivity
Adults	Water Quality	Toxicity	No Acute or Chronic	Good	SEC Analysis/CDFG Data	No Acute or Chronic
Adults	Water Quality	Turbidity	50% to 74% of streams/ IP-km maintains severity score of 3 or lower	Fair	SEC Analysis/CDFG Data	75% to 90% of streams/ IP-Km maintains severity score of 3 or lower
Adults	Viability	Density	0.7-3.2 spawners per IP-km	Fair	SEC Analysis/CDFG Data	low risk spawner density per Spence (2008)
Eggs	Hydrology	Flow Conditions (Instantaneous Condition)	Risk Factor Score =35-50	Good	SEC Analysis/CDFG Data	NMFS Flow Protocol: Risk Factor Score 35-50
Eggs	Hydrology	Redd Scour	Risk Factor Score = 33	Very Good	SEC Analysis/CDFG Data	NMFS Flow Protocol: Risk Factor Score 35-50

Eggs	Sediment	Gravel Quality (Bulk)	15-17% (0.85mm) and <30% (6.4mm)	Fair	NMFS Instream Flow Analysis	12-14% (0.85mm) and <30% (6.4mm)
Eggs	Sediment	Gravel Quality (Embeddedness)	100% of streams/ IP-km (>50% stream average scores of 1 & 2)	Very Good	NMFS Instream Flow Analysis	75% to 90% of streams/ IP-Km (>50% stream average scores of 1 & 2)
Summer Rearing Juveniles	Estuary/Lagoon	Quality & Extent	Properly Functioning Condition	Good	NMFS Instream Flow Analysis	Properly Functioning Condition
Summer Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 0-10 meters)	0.7 Key Pieces/ 100m	Poor	NMFS Instream Flow Analysis	6 to 11 key pcs/100m
Summer Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 10-100 meters)	<1 Key Pieces/100m	Poor	NMFS Instream Flow Analysis	1.3 to 4 Key Pieces/100 meters
Summer Rearing Juveniles	Habitat Complexity	Percent Primary Pools	0% (>49% of pools are primary pools)	Poor	NMFS Instream Flow Analysis	75% to 89% of streams/ IP-Km (>49% of pools are primary pools)
Summer Rearing Juveniles	Habitat Complexity	Pool/Riffle/Flatwater Ratio	64% by streams; 49 by IP-km (>30% Pools; >20% Riffles)	Fair	NMFS Instream Flow Analysis	75% to 90% of streams/ IP-Km (>30% Pools; >20% Riffles)
Summer Rearing Juveniles	Habitat Complexity	Shelter Rating	0% streams/ IP-km (>80 stream average)	Poor	NMFS Instream Flow Analysis	75% to 90% of streams/ IP-Km (>80 stream average)
Summer Rearing Juveniles	Hydrology	Flow Conditions (Baseflow)	Risk Factor Score 35-50	Good	NMFS Instream Flow Analysis	NMFS Flow Protocol Risk Factor Score 35-50
Summer Rearing Juveniles	Hydrology	Flow Conditions (Instantaneous Condition)	Risk Factor Score 35-50	Very Good	NMFS Watershed Characterization	NMFS Flow Protocol Risk Factor Score 35-50
Summer Rearing Juveniles	Hydrology	Number, Condition and/or Magnitude of Diversions	0 Diversions/10 IP-km	Very Good	NMFS Watershed Characterization	0.01 - 1 Diversions/10 IP km
Summer Rearing Juveniles	Passage/Migration	Passage at Mouth or Confluence	> 90% of IP-km accessible	Very Good	NMFS Watershed Characterization	75% of IP-Km to 90% of IP-km
Summer Rearing Juveniles	Passage/Migration	Physical Barriers	92% of IP-km accessible	Very Good	Population Profile/BPJ	75% of IP-Km to 90% of IP-km
Summer Rearing Juveniles	Riparian Vegetation	Canopy Cover	94% of streams/IP with average canopy >85%	Very Good	SEC or PAD/CDFG Data	75% to 90% of streams/ IP-Km (>85% average stream canopy)
Summer Rearing Juveniles	Riparian Vegetation	Tree Diameter (North of SF Bay)	57%, Class 5 & 6 across IP-km	Good	Population Profile/BPJ	55 - 69% Class 5 & 6 across IP-km
Summer Rearing Juveniles	Riparian Vegetation	Tree Diameter (South of SF Bay)	NA	0	SEC or PAD/CDFG Data	≥80% Density rating "D" across IP-km
Summer Rearing Juveniles	Sediment (Food Productivity)	Gravel Quality (Embeddedness)	100% of streams/ IP-km (>50% stream average scores of 1 & 2)	Very Good	SEC or PAD/CDFG Data	75% to 90% of streams/ IP-Km (>50% stream average scores of 1 & 2)

Summer Rearing Juveniles	Water Quality	Temperature (MWMT)	75 to 89% IP km (<16 C MWMT)	Good	Population Profile/BPJ	75 to 89% IP km (<16 C MWMT)
Summer Rearing Juveniles	Water Quality	Toxicity	No Acute or Chronic	Good	NMFS Watershed Characterization/CWHR	No Acute or Chronic
Summer Rearing Juveniles	Water Quality	Turbidity	50% to 74% of streams/ IP-km maintains severity score of 3 or lower	Fair	NMFS Watershed Characterization/CWHR	75% to 90% of streams/ IP-Km maintains severity score of 3 or lower
Summer Rearing Juveniles	Viability	Density	0.2-0.5 fish/meter^2	Fair	SEC Analysis/CDFG Data	0.5 - 1.0 fish/meter^2
Summer Rearing Juveniles	Viability	Spatial Structure	75-90% of Historical Range	Good	NMFS Watershed Characterization/CWHR	75-90% of Historical Range
Winter Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 0-10 meters)	0.7 Key Pieces/100m	Poor	NMFS Watershed Characterization/CWHR	6 to 11 key pcs/100m
Winter Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 10-100 meters)	<1 Key Pieces/100 m	Poor	NMFS Watershed Characterization/CWHR	1.3 to 4 Key Pieces/100 meters
Winter Rearing Juveniles	Habitat Complexity	Pool/Riffle/Flatwater Ratio	64% by streams; 49% by IP-km (>30% Pools; >20% Riffles)	Fair	NMFS Watershed Characterization/CWHR	75% to 90% of streams/ IP-Km (>30% Pools; >20% Riffles)
Winter Rearing Juveniles	Habitat Complexity	Shelter Rating	0% streams/ IP-km (>80 stream average)	Poor	CDF Vegetation Maps/BPJ	75% to 90% of streams/ IP-Km (>80 stream average)
Winter Rearing Juveniles	Passage/Migration	Physical Barriers	92% of IP-km accessible	Very Good	Population Profile/BPJ	75% of IP-Km to 90% of IP-km
Winter Rearing Juveniles	Riparian Vegetation	Tree Diameter (North of SF Bay)	57% Class 5 & 6 across IP-km	Good	Population Profile/BPJ	55 - 69% Class 5 & 6 across IP-km
Winter Rearing Juveniles	Riparian Vegetation	Tree Diameter (South of SF Bay)	NA	0	SEC Analysis/CDFG Data	≥80% Density rating "D" across IP-km
Winter Rearing Juveniles	Sediment (Food Productivity)	Gravel Quality (Embeddedness)	100 of streams/ IP-km (>50% stream average scores of 1 & 2)	Very Good	SEC Analysis/CDFG Data	75% to 90% of streams/ IP-Km (>50% stream average scores of 1 & 2)
Winter Rearing Juveniles	Velocity Refuge	Floodplain Connectivity	>80% Response Reach Connectivity	Good	SEC Analysis/CDFG Data	>80% Response Reach Connectivity
Winter Rearing Juveniles	Water Quality	Toxicity	No Acute or Chronic	Good	NMFS Watershed Characterization	No Acute or Chronic
Winter Rearing Juveniles	Water Quality	Turbidity	50% to 74% of streams/ IP-km maintains severity score of 3 or lower	Fair	NMFS Watershed Characterization	75% to 90% of streams/ IP-Km maintains severity score of 3 or lower

Smolts	Estuary/Lagoon	Quality & Extent	Property Functioning Condition	Good	SEC Analysis/CDFG Data	Property Functioning Condition
Smolts	Habitat Complexity	Shelter Rating	0% of streams/ IP-km (>80 stream average)	Poor	Population Profile	75% to 90% of streams/ IP-Km (>80 stream average)
Smolts	Hydrology	Number, Condition and/or Magnitude of Diversions	0 Diversions/10 IP-km	Very Good	Population Profile	0.01 - 1 Diversions/10 IP km
Smolts	Hydrology	Passage Flows	Risk Factor Score =33	Very Good	TRT Spence (2008)	NMFS Flow Protocol Risk Factor Score 35-50
Smolts	Passage/Migration	Passage at Mouth or Confluence	> 90% of IP-km accessible	Very Good	TRT Spence (2008)	75% of IP-Km to 90% of IP-km
Smolts	Smoltification	Temperature	75-90% IP-km (>6 and <16 C)	Good	TRT Spence (2008)	75-90% IP-Km (>6 and <16 C)
Smolts	Water Quality	Toxicity	No Acute or Chronic	Good	TRT Spence (2008)	No Acute or Chronic
Smolts	Water Quality	Turbidity	50% to 74% of streams/ IP-Km maintains severity score of 3 or lower	Fair	EPA/RWQCB/NMFS Criteria	75% to 90% of streams/ IP-Km maintains severity score of 3 or lower
Smolts	Viability	Abundance	Smolt abundance which produces high risk spawner density	Poor	Newcombe and Jensen 2003	Smolt abundance to produce low risk spawner density per Spence (2008)
Watershed Processes	Hydrology	Impervious Surfaces	0.18% of Watershed in Impervious Surfaces	Very Good	SEC Analysis	3-6% of Watershed in Impervious Surfaces
Watershed Processes	Landscape Patterns	Agriculture	0% of Watershed in Agriculture	Very Good	EPA/RWQCB/NMFS Criteria	10-19% of Watershed in Agriculture
Watershed Processes	Landscape Patterns	Timber Harvest	28% of Watershed in Timber Harvest	Fair	Newcombe and Jensen 2003	25-15% of Watershed in Timber Harvest
Watershed Processes	Landscape Patterns	Urbanization	0% of watershed >1 unit/20 acres	Very Good	EPA/RWQCB/NMFS Criteria	8-11% of watershed >1 unit/20 acres
Watershed Processes	Riparian Vegetation	Species Composition	> 75% Intact Historical Species Composition	Very Good	Newcombe and Jensen 2003	51-74% Intact Historical Species Composition
Watershed Processes	Sediment Transport	Road Density	6.9 Miles/Square Miles	Poor	EPA/RWQCB/NMFS Criteria	1.6 to 2.4 Miles/Square Mile
Watershed Processes	Sediment Transport	Streamside Road Density (100 m)	6.8 Miles/Square Mile	Poor	Newcombe and Jensen 2003	0.1 to 0.4 Miles/Square Mile

Table 2: CAP Threats Results ~ Cottaneva Creek

Threats Across Targets		Adults	Eggs	Summer Rearing Juveniles	Winter Rearing Juveniles	Smolts	Watershed Processes	Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	
1	Agriculture	-	-	-	-	-	-	-
2	Channel Modification	Medium	Low	Medium	Low	Low	Low	Medium
3	Disease, Predation and Competition	Medium	-	Medium	Low	Medium	Low	Medium
4	Fire, Fuel Management and Fire Suppression	Medium	Low	Medium	Medium	Medium	Medium	Medium
5	Fishing and Collecting	Low	-	Low	-	Low	-	Low
6	Hatcheries and Aquaculture	-	-	-	-	-	-	-
7	Livestock Farming and Ranching	-	-	-	-	-	-	-
8	Logging and Wood Harvesting	Medium	Low	Medium	High	Medium	High	High
9	Mining	Low	Low	Medium	Low	Low	Low	Low
10	Recreational Areas and Activities	Low	Low	Medium	Low	Low	Low	Low
11	Residential and Commercial Development	Low	Low	Medium	Low	Low	Low	Low
12	Roads and Railroads	Medium	Medium	High	High	High	High	High
13	Severe Weather Patterns	Medium	Low	Medium	High	Medium	Medium	Medium
14	Water Diversion and Impoundments	Medium	Low	Medium	Low	Medium	Low	Medium
Threat Status for Targets and Project		Medium	Medium	High	High	High	High	High

Central CA Coast Coho Salmon ~ Cottaneva Creek

ACTIONS FOR RESTORING HABITATS

1. Restoration- Estuary

No species-specific actions were developed.

2. Restoration- Floodplain Connectivity

2.1. **Objective:** Improve over-winter survival by increasing the frequency and functionality of off-channel habitats.

2.1.1. **Recovery Action:** Create flood refuge habitat, such as hydrologically connected floodplains with riparian forest, or remove or setback levees, and use streamway concept where appropriate.

2.1.1.1. **Action Step:** Delineate reaches possessing both potential winter rearing habitat and floodplain areas.

2.1.1.2. **Action Step:** Target habitat restoration and enhancement that will function between winter base flow and flood stage.

2.1.1.3. **Action Step:** Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats.

3. Restoration- Habitat Complexity

3.1. **Objective:** Address the present or threatened destruction, modification or curtailment of the species habitat or range

3.1.1. **Recovery Action:** Increase LWD, primary pools and shelter ratings.

3.1.1.1. **Action Step:** Maintain current LWD, boulders, and other structure-providing features to maintain current stream complexity, pool frequency, and depth (CDFG 2004).

3.1.1.2. **Action Step:** Install or enhance existing LWD, boulders, and other instream features to increase habitat complexity and improve pool frequency and depth (CDFG 2004). Use information from MRC Cottaneva Creek Watershed Analysis to determine stream locations with high instream LWD demand, and utilize CDFG stream habitat data to help determine reaches for LWD placement.

3.1.1.3. **Action Step:** Allow trees in riparian areas to age, die, and recruit into the stream naturally.

4. Restoration- Hydrology

No species-specific actions were developed.

5. Restoration- Landscape Patterns

No species-specific actions were developed.

6. Restoration- Passage

No species-specific actions were developed.

7. Restoration- Pool Habitat

No species-specific actions were developed. See Habitat Complexity.

8. Restoration- Riparian

No species-specific actions were developed.

9. Restoration- Sediment

9.1. **Objective:** Improve habitat conditions at multiple life stages by reducing sediment inputs to the stream at the watershed scale.

9.1.1. **Recovery Action:** Address sediment and runoff sources from road networks and other actions that deliver sediment and runoff to stream channels. Restoration projects that upgrade or decommission high risk roads in Core CCC coho salmon areas should be considered an extremely high priority for funding (e.g., PCSRF).

9.1.1.1. **Action Step:** Decommission riparian road systems and/or upgrade roads (and skid trails on forestlands) that deliver sediment into adjacent watercourses (CDFG 2004).

9.1.1.2. **Action Step:** Treat high priority roads, culverts, road slides and landings that are identified in the 2005 MRC Cottaneva Creek Watershed Analysis. Focus on 88 culverts determined to be high priority by MRC.

9.1.1.3. **Action Step:** Acquire funding for assessment and implementation of sediment reduction measures associated with the 2008 Middle Fire in the Cottaneva Creek watershed.

10. Restoration- Viability

10.1. **Objective:** Address the inadequacy of existing regulatory mechanisms.

10.1.1. **Recovery Action:** Increase spatial structure and diversity

10.1.1.1. **Action Step:** Conduct periodic, standardized spawning surveys to estimate adult abundance in the watershed. Surveys should include all three cohorts.

10.1.2. **Recovery Action:** Monitor population status for response to recovery actions.

10.1.2.1. **Action Step:** Use standardized watershed assessments (Coastal Monitoring Plan) within sub-watersheds not previously evaluated in MRC's 2005 effort.

10.1.2.2. **Action Step:** Continue and expand upon biological monitoring activities to determine salmonid population and productivity trends at the watershed and sub-watershed scales. Information regarding spawner escapement and smolt production are the highest priorities.

11. Restoration- Water Quality

No species-specific actions were developed.

THREAT ABATEMENT ACTIONS

12. Threat- Agricultural Practices

No species-specific actions were developed.

13. Threat- Channel Modification

No species-specific actions were developed.

14. Threat- Disease/Predation/Competition

No species-specific actions were developed.

15. Threat- Fire/Fuel Management

No species-specific actions were developed.

16. Threat- Fishing/Collecting

No species-specific actions were developed.

17. Threat- Hatcheries

No species-specific actions were developed.

18. Threat- Livestock

No species-specific actions were developed.

19. Threat- Logging

19.1. **Objective:** Address the present or threatened destruction, modification or curtailment of the species habitat or range

19.1.1. **Recovery Action:** Prevent impairment to floodplain connectivity (quality & extent)

19.1.1.1. **Action Step:** Timber harvest planning should evaluate and avoid or minimize adverse impacts to offchannel habitats, floodplains, ponds, and oxbows.

19.1.2. **Recovery Action:** Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)

19.1.2.1. **Action Step:** Encourage tree retention on the axis of headwall swales. Any deviations should be reviewed and receive written approval by a licensed engineering geologist.

19.1.2.2. **Action Step:** Protect headwater channels with larger buffers to minimize sediment delivery downstream.

19.1.2.3. **Action Step:** Wet weather and/or winter operations should be discouraged in areas with high erosion potential.

19.1.2.4. **Action Step:** For areas with high or very high erosion hazard, extend the monitoring period and upgrade road maintenance for timber operations.

19.1.3. **Recovery Action:** Prevent future impairment to instream habitat complexity (reduced large wood and/or shelter)

19.1.3.1. **Action Step:** Retain the largest trees in all riparian zones (including intermittent and ephemeral streams) for bank stability and long-term wood recruitment.

19.1.3.2. **Action Step:** Conduct conifer release to promote growth of larger diameter trees where appropriate.

19.1.4. **Recovery Action:** Prevent increased landscape disturbance

19.1.4.1. **Action Step:** Conserve and manage forestlands for older forest stages.

19.1.4.2. **Action Step:** Encourage low impact timber harvest techniques such as full-suspension cable yarding (to improve canopy cover; reduce sediment input, etc.).

19.1.5. **Recovery Action:** Prevent adverse alterations to riparian species composition and structure

19.1.5.1. **Action Step:** Manage riparian areas for their site potential composition and structure.

19.2. **Objective:** Address the inadequacy of existing regulatory mechanisms

19.2.1. **Recovery Action:** Prevent increased landscape disturbance

19.2.1.1. **Action Step:** Discourage Mendocino County from rezoning forestlands to rural residential or other land uses (e.g., vineyards).

19.2.1.2. **Action Step:** Discourage home building or other incompatible land use in areas identified as timber production zones (TPZ).

19.2.1.3. **Action Step:** Discourage all activities (e.g., roads, harvest, yarding, etc.) in unstable areas (e.g., steep slopes, headwall swales, inner gorges, streambanks, etc.) unless a detailed geological assessment is performed by a certified engineering geologist that shows there is no potential for increased sediment delivery to a watercourse as a result.

20. Threat- Mining

No species-specific actions were developed.

21. Threat- Recreation

No species-specific actions were developed.

22. Threat- Residential/Commercial Development

No species-specific actions were developed.

23. Threat- Roads/Railroads

23.1. **Objective:** Address the present or threatened destruction, modification, or curtailment of the species habitat or range

23.1.1. **Recovery Action:** Prevent impairment to instream substrate/food productivity (gravel quality and quantity)

23.1.1.1. **Action Step:** Use available best management practices for road construction, maintenance, management and decommissioning (e.g. Weaver and Hagens, 1994; Sommarstrom et al., 2002; Oregon Department of Transportation, 1999).

23.1.1.2. **Action Step:** Establish adequate spoils storage sites throughout the watershed so that material from landslides and road maintenance can be stored safely away from coho streams.

23.1.1.3. **Action Step:** Reduce road densities by 10 percent over the next 20 years, prioritizing high risk areas.

23.1.1.4. **Action Step:** Install and maintain adequate energy dissipaters for culverts and other drainage pipe outlets where needed.

23.1.1.5. **Action Step:** Implement high and medium priority sediment reduction actions identified in the Mendocino Redwood Company's 2005 watershed analysis. Conduct a similar sediment reduction plan in the Dunn Creek subbasin.

23.1.2. **Recovery Action:** Prevent impairment to passage and migration

23.1.2.1. **Action Step:** Bridges associated with new roads or replacement bridges (including railroad bridges) should be free span or constructed with the minimum number of bents feasible in order to minimize drift accumulation and facilitate fish passage.

23.1.3. **Recovery Action:** Prevent impairment to watershed hydrology

23.1.3.1. **Action Step:** Size culverts to accommodate flashy, debris-laden flows and maintain trash racks to prevent culvert plugging and subsequent road failure.

23.1.3.2. **Action Step:** Stream crossings on THP parcels should be identified and mapped with the intention of replacement or removal if they cannot pass 100 year flow. Design should include fail safe measures to accommodate culvert overflow without causing massive road fill failures.

23.2. **Objective:** Address the inadequacy of existing regulatory mechanisms

23.2.1. **Recovery Action:** Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)

23.2.1.1. **Action Step:** Conduct annual inspections of all roads prior to winter. Correct conditions that are likely to deliver sediment to streams. Hydrologically disconnect roads.

23.2.1.2. **Action Step:** Limit winter use of unsurfaced roads and recreational trails by unauthorized and impacting uses to decrease fine sediment loads.

23.2.2. **Recovery Action:** Prevent impairment to floodplain connectivity (impaired quality & extent)

23.2.2.1. **Action Step:** Avoid new road construction within floodplains, riparian areas, unstable soils or other sensitive areas until a watershed specific and/or agency/company specific road management plan is created and implemented.

23.2.3. **Recovery Action:** Prevent impairment to instream substrate.

23.2.3.1. **Action Step:** Discourage Caltrans from removing instream or near stream large woody material along Highway 1.

24. Threat- Severe Weather Patterns

24.1. **Objective:** Address the present or threatened destruction, modification, or curtailment of the species habitat or range

24.1.1. **Recovery Action:** Prevent impairment to hydrology (impaired water flow)

24.1.1.1. **Action Step:** CDFG, SWRCB, RWQCB, CalFire, Caltrans, and other agencies and landowners, in cooperation with NMFS, should evaluate the rate and volume of water

drafting for dust control in streams or tributaries and where appropriate, minimize water withdrawals that could impact coho salmon.

24.1.2. **Recovery Action:** Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)

24.1.2.1. **Action Step:** Protect high-risk shallow-seeded landslide areas and surfaces prone to erosion from being mobilized by intense storm events.

25. Threat- Water Diversion/Impoundment

No species-specific actions were developed.

26. Threat- Watershed Process

No species-specific actions were developed.

Table 3: Implementation Schedule ~ Cottaneva Creek

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-2.1	Objective	Floodplain Connectivity	Improve over-winter survival by increasing the frequency and functionality of off-channel habitats.										
CoC-CCC-2.1.1	Recovery Action	Floodplain Connectivity	Create flood refuge habitat, such as hydrologically connected floodplains with riparian forest, or remove or setback levees, and use streamway concept where appropriate.										
CoC-CCC-2.1.1.1	Action Step	Floodplain Connectivity	Delineate reaches possessing both potential winter rearing habitat and floodplain areas.	3	5	CalFire, Mendocino Redwood Company, Private Landowners	40.00					40	This may be a GIS exercise with ground truthing. Available information exists from past habitat typing that may streamline this analysis and further reduce the overall cost.
CoC-CCC-2.1.1.2	Action Step	Floodplain Connectivity	Target habitat restoration and enhancement that will function between winter base flow and flood stage.	2	10	CalFire, California Coastal Conservancy, CDFG, Mendocino Redwood Company						TBD	Costs depend on level of technical assistance required and types of projects proposed.
CoC-CCC-2.1.1.3	Action Step	Floodplain Connectivity	Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats.	2	10	CalFire, California Coastal Conservancy, CDFG, Mendocino Redwood Company, Private Landowners	36.00	36.00				72	Costs to promote and support restoration efforts depend on level of technical assistance provided and the types of projects proposed. Cost for treating 1 mile (assume 1 project/mile in 25% High IP with 1 mile minimum) at a rate of \$36,046/mile.
CoC-CCC-3.1	Objective	Habitat Complexity	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
CoC-CCC-3.1.1	Recovery Action	Habitat Complexity	Increase LWD, primary pools and shelter ratings.										
CoC-CCC-3.1.1.1	Action Step	Habitat Complexity	Maintain current LWD, boulders, and other structure-providing features to maintain current stream complexity, pool frequency, and depth (CDFG 2004).	1	100	CalFire, CalTrans, CDFG, Mendocino Redwood Company, Private Landowners						In-Kind	Caltrans road maintenance practices should be carefully monitored in regard to large woody material management. There should be minimal cost if incorporated into management operations.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-3.1.1.2	Action Step	Habitat Complexity	Install or enhance existing LWD, boulders, and other instream features to increase habitat complexity and improve pool frequency and depth (CDFG 2004). Use information from MRC Cottaneva Creek Watershed Analysis to determine stream locations with high instream LWD demand, and utilize CDFG stream habitat data to help determine reaches for LWD placement.	2	10	California Conservations Corps, CDFG, Mendocino Redwood Company, Private Landowners, RPFs	25.00	25.00				50	Cost based on treating 2 miles (assume 50% High IP) at a rate of \$25,000/mile. Cost could be lower based on updated information from MRC Cottaneva Creek Watershed Analysis.
CoC-CCC-3.1.1.3	Action Step	Habitat Complexity	Allow trees in riparian areas to age, die, and recruit into the stream naturally.	2	100	CalFire, CDFG, Mendocino County, Mendocino Redwood Company, PG&E, Private Landowners						In-Kind	
CoC-CCC-9.1	Objective	Sediment	Improve habitat conditions at multiple life stages by reducing sediment inputs to the stream at the watershed scale.										
CoC-CCC-9.1.1	Recovery Action	Sediment	Address sediment and runoff sources from road networks and other actions that deliver sediment and runoff to stream channels. Restoration projects that upgrade or decommission high risk roads in Core CCC coho salmon areas should be considered an extremely high priority for funding (e.g., PCSRF).										
CoC-CCC-9.1.1.1	Action Step	Sediment	Decommission riparian road systems and/or upgrade roads (and skid trails on forestlands) that deliver sediment into adjacent watercourses (CDFG 2004).	1	10	CalFire, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners, RWQCB	25.00	25.00				50	Costs may vary widely depending on number of riparian roads and the magnitude of the problem associated with the roads. Cost based on decommissioning 4 miles of riparian road network at a rate of \$12,000/mile. TU, MRC, and Pacific Watershed Associates are working on sediment reduction in the Cottaneva Creek watershed. The restoration work is part of TU's North Coast Coho Project and is a multi-phase, watershed-wide approach to sediment reduction.
CoC-CCC-9.1.1.2	Action Step	Sediment	Treat high priority roads, culverts, road slides and landings that are identified in the 2005 MRC Cottaneva Creek Watershed Analysis. Focus on 88 culverts determined to be high priority by MRC.	1	5	CDFG, Mendocino Redwood Company, NOAA RC, Private Consultants, Trout Unlimited							Cost accounted for in ROADS/RAILROADS.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-9.1.1.3	Action Step	Sediment	Acquire funding for assessment and implementation of sediment reduction measures associated with the 2008 Middle Fire in the Cottaneva Creek watershed.	2	10	CalFire, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners	16.50	16.50				33	Cost based on sediment assessment for 2,643 acres (assume 25% of total watershed acres) at a rate of \$12/acre.
CoC-CCC-10.1	Objective	Viability	Address the inadequacy of existing regulatory mechanisms.										
CoC-CCC-10.1.1	Recovery Action	Viability	Increase spatial structure and diversity										
CoC-CCC-10.1.1.1	Action Step	Viability	Conduct periodic, standardized spawning surveys to estimate adult abundance in the watershed. Surveys should include all three cohorts.	2	25	CDFG, Mendocino Redwood Company, Private Landowners	38.00	38.00	38.00	38.00	38.00	190	Cost based on annual spawning surveys for North Central Coast streams (assume 6 km in High IP) at a rate of \$75,840/year.
CoC-CCC-10.1.2	Recovery Action	Viability	Monitor population status for response to recovery actions.										
CoC-CCC-10.1.2.1	Action Step	Viability	Use standardized watershed assessments (Coastal Monitoring Plan) within sub-watersheds not previously evaluated in MRC's 2005 effort.	2	10	CalFire, CalTrans, CDFG, Mendocino Redwood Company, NMFS, Private Consultants, Private Landowners						In-Kind	
CoC-CCC-10.1.2.2	Action Step	Viability	Continue and expand upon biological monitoring activities to determine salmonid population and productivity trends at the watershed and sub-watershed scales. Information regarding spawner escapement and smolt production are the highest priorities.	3	20	CDFG, Mendocino Redwood Company, Private Landowners	25.00	25.00	25.00	25.00		100	Some cost accounted for in spawning surveys. Cost based for smolt monitoring based on estimate of \$50,000/unit/year.
CoC-CCC-19.1	Objective	Logging	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
CoC-CCC-19.1.1	Recovery Action	Logging	Prevent impairment to floodplain connectivity (quality & extent)										
CoC-CCC-19.1.1.1	Action Step	Logging	Timber harvest planning should evaluate and avoid or minimize adverse impacts to offchannel habitats, floodplains, ponds, and oxbows.	1	100	CalFire, Mendocino Redwood Company, Private Landowners, RPFs						In-Kind	This recommendation should be considered standard practice.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-19.1.2	Recovery Action	Logging	Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)										
CoC-CCC-19.1.2.1	Action Step	Logging	Encourage tree retention on the axis of headwall swales. Any deviations should be reviewed and receive written approval by a licensed engineering geologist.	2	100	CalFire, California Geological Survey, Mendocino Redwood Company, Private Landowners, RPFs						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.2.2	Action Step	Logging	Protect headwater channels with larger buffers to minimize sediment delivery downstream.	2	100	CalFire, CDFG, Mendocino Redwood Company, RPFs, RWQCB						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.2.3	Action Step	Logging	Wet weather and/or winter operations should be discouraged in areas with high erosion potential.	1	100	CalFire, Mendocino Redwood Company, Private Landowners, RPFs, RWQCB						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.2.4	Action Step	Logging	For areas with high or very high erosion hazard, extend the monitoring period and upgrade road maintenance for timber operations.	2	100	CalFire, CDFG, Mendocino Redwood Company, Private Landowners, RPFs, RWQCB						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.3	Recovery Action	Logging	Prevent future impairment to instream habitat complexity (reduced large wood and/or shelter)										
CoC-CCC-19.1.3.1	Action Step	Logging	Retain the largest trees in all riparian zones (including intermittent and ephemeral streams) for bank stability and long-term wood recruitment.	2	100							In-Kind	The current Forest Practice Rules require retention of a proportion of the largest diameter trees adjacent to water courses. This practice should continue and potential expansion of the number left for future recruitment should be considered.
CoC-CCC-19.1.3.2	Action Step	Logging	Conduct conifer release to promote growth of larger diameter trees where appropriate.	3	10	CalFire, Mendocino Redwood Company, RPFs	57.00	57.00				114	Cost based on treating 1.0 mile (assume 80 acres/mile in 5% of High IP with a minimum of 1 mile) at a rate of \$1,422/acre.
CoC-CCC-19.1.4	Recovery Action	Logging	Prevent increased landscape disturbance										

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-19.1.4.1	Action Step	Logging	Conserve and manage forestlands for older forest stages.	2	100	CalFire, Mendocino Redwood Company, Private Landowners						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.4.2	Action Step	Logging	Encourage low impact timber harvest techniques such as full-suspension cable yarding (to improve canopy cover; reduce sediment input, etc.).	2	100	CalFire, CDFG, Mendocino Redwood Company, RPFs, RWQCB						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.1.5	Recovery Action	Logging	Prevent adverse alterations to riparian species composition and structure										
CoC-CCC-19.1.5.1	Action Step	Logging	Manage riparian areas for their site potential composition and structure.	2	100	CalFire, Mendocino Redwood Company, Private Landowners, RPFs						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-19.2	Objective	Logging	Address the inadequacy of existing regulatory mechanisms										
CoC-CCC-19.2.1	Recovery Action	Logging	Prevent increased landscape disturbance										
CoC-CCC-19.2.1.1	Action Step	Logging	Discourage Mendocino County from rezoning forestlands to rural residential or other land uses (e.g., vineyards).	1	100	Mendocino County, Mendocino Redwood Company, Private Landowners						In-Kind	
CoC-CCC-19.2.1.2	Action Step	Logging	Discourage home building or other incompatible land use in areas identified as timber production zones (TPZ).	1	100	CalFire, Mendocino County						In-Kind	Illegal marijuana cultivation may occur in some areas and have the potential to severely degrade juvenile rearing conditions by diverting water and introducing toxic quantities of fertilizers and pesticides into the stream environment. Increased anthropogenic interface with forested lands will likely lead to increases in these activities.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-19.2.1.3	Action Step	Logging	Discourage all activities (e.g., roads, harvest, yarding, etc.) in unstable areas (e.g., steep slopes, headwall swales, inner gorges, streambanks, etc.) unless a detailed geological assessment is performed by a certified engineering geologist that shows there is no potential for increased sediment delivery to a watercourse as a result.	2	100	CalFire, California Geological Survey, CalTrans, CDFG, Mendocino Land Trust, Private Landowners, RPFs, RWQCB						In-Kind	
CoC-CCC-23.1	Objective	Roads/Railroads	Address the present or threatened destruction, modification, or curtailment of the species habitat or range										
CoC-CCC-23.1.1	Recovery Action	Roads/Railroads	Prevent impairment to instream substrate/food productivity (gravel quality and quantity)										
CoC-CCC-23.1.1.1	Action Step	Roads/Railroads	Use available best management practices for road construction, maintenance, management and decommissioning (e.g. Weaver and Hagans, 1994; Sommarstrom et al., 2002; Oregon Department of Transportation, 1999).	1	100	CalFire, CalTrans, Mendocino Redwood Company, RPFs, RWQCB						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-23.1.1.2	Action Step	Roads/Railroads	Establish adequate spoils storage sites throughout the watershed so that material from landslides and road maintenance can be stored safely away from coho streams.	3	10	CalFire, CalTrans, Mendocino County, Mendocino Redwood Company						TBD	Cost cannot be estimated without analysis of feasibility of adequate spoils storage sites.
CoC-CCC-23.1.1.3	Action Step	Roads/Railroads	Reduce road densities by 10 percent over the next 20 years, prioritizing high risk areas.	3	10	CalFire, California Geological Survey, CalTrans, Mendocino County, Mendocino Redwood Company, Private Consultants, Private Landowners, Trout Unlimited	36.00	36.00				72	Three road segments in Cottaneva Creek have been identified as potential candidates for decommissioning. These segments include roads 47- CC (South Fork Cottaneva near Kimball Creek), 47-PH 005 (South of Honky Tonk picnic area) and 47-G4 (Middle Fork Cottaneva Creek). A detailed evaluation will likely be required to determine if decommissioning is appropriate at these sites. The decommissioning target is likely achievable due to the extensive and seldom used logging roads in the watershed which are under the management of one large landowner. Most of these costs have been addressed as mitigation measures in the MRC HCP. Cost based on decommissioning 6 miles of road network at a rate of \$12,000/mile.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-23.1.1.4	Action Step	Roads/Railroads	Install and maintain adequate energy dissipaters for culverts and other drainage pipe outlets where needed.	2	100	CalFire, CalTrans, Mendocino County Department of Public Works, Mendocino Redwood Company						TBD	Standard business practice. Cost will be determined by inventory of quantity and type of energy dissipaters needed.
CoC-CCC-23.1.1.5	Action Step	Roads/Railroads	Implement high and medium priority sediment reduction actions identified in the Mendocino Redwood Company's 2005 watershed analysis. Conduct a similar sediment reduction plan in the Dunn Creek subbasin.	2	100	CalFire, California Geological Survey, Mendocino Redwood Company						In-Kind	Much of the cost is accounted for in other actions or will likely be incorporated into the MRC HCP.
CoC-CCC-23.1.2	Recovery Action	Roads/Railroads	Prevent impairment to passage and migration										
CoC-CCC-23.1.2.1	Action Step	Roads/Railroads	Bridges associated with new roads or replacement bridges (including railroad bridges) should be free span or constructed with the minimum number of bents feasible in order to minimize drift accumulation and facilitate fish passage.	3	100	CalFire, CalTrans, Mendocino Redwood Company						In-Kind	This recommendation should be considered standard practice.
CoC-CCC-23.1.3	Recovery Action	Roads/Railroads	Prevent impairment to watershed hydrology										
CoC-CCC-23.1.3.1	Action Step	Roads/Railroads	Size culverts to accommodate flashy, debris-laden flows and maintain trash racks to prevent culvert plugging and subsequent road failure.	1	100	CalFire, California Geological Survey, CalTrans, Mendocino Redwood Company						In-kind	This recommendation should be considered standard practice.
CoC-CCC-23.1.3.2	Action Step	Roads/Railroads	Stream crossings on THP parcels should be identified and mapped with the intention of replacement or removal if they cannot pass 100 year flow. Design should include fail safe measures to accommodate culvert overflow without causing massive road fill failures.	1	20	CalFire, California Department of Mines and Geology, Mendocino Redwood Company, RPFs	450.00	450.00	450.00	450.00		1,800	Cost based on treating 8 stream crossings (assume 50% of current stream crossings) at a rate of \$223,051/unit.
CoC-CCC-23.2	Objective	Roads/Railroads	Address the inadequacy of existing regulatory mechanisms										
CoC-CCC-23.2.1	Recovery Action	Roads/Railroads	Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)										

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-23.2.1.1	Action Step	Roads/Railroads	Conduct annual inspections of all roads prior to winter. Correct conditions that are likely to deliver sediment to streams. Hydrologically disconnect roads.	2	100	CalFire, CalTrans, Mendocino Redwood Company, Private Landowners, RWQCB						In-Kind	This action is part of ongoing road maintenance. Some additional cost may be expected from increased inspections and resulting maintenance costs.
CoC-CCC-23.2.1.2	Action Step	Roads/Railroads	Limit winter use of unsurfaced roads and recreational trails by unauthorized and impacting uses to decrease fine sediment loads.	2	100	CalFire, Mendocino Redwood Company, Private Landowners, RWQCB						In-Kind	
CoC-CCC-23.2.2	Recovery Action	Roads/Railroads	Prevent impairment to floodplain connectivity (impaired quality & extent)										
CoC-CCC-23.2.2.1	Action Step	Roads/Railroads	Avoid new road construction within floodplains, riparian areas, unstable soils or other sensitive areas until a watershed specific and/or agency/company specific road management plan is created and implemented.	1	5	CalFire, CalTrans, CDFG, Mendocino Redwood Company, Private Landowners, RWQCB						TBD	
CoC-CCC-23.2.3	Recovery Action	Roads/Railroads	Prevent impairment to instream substrate.										
CoC-CCC-23.2.3.1	Action Step	Roads/Railroads	Discourage Caltrans from removing instream or near stream large woody material along Highway 1.	1	100	CalFire, CalTrans, CDFG, NMFS						In-Kind	
CoC-CCC-24.1	Objective	Severe Weather Patterns	Address the present or threatened destruction, modification, or curtailment of the species habitat or range										
CoC-CCC-24.1.1	Recovery Action	Severe Weather Patterns	Prevent impairment to hydrology (impaired water flow)										

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		
CoC-CCC-24.1.1.1	Action Step	Severe Weather Patterns	CDFG, SWRCB, RWQCB, CalFire, Caltrans, and other agencies and landowners, in cooperation with NMFS, should evaluate the rate and volume of water drafting for dust control in streams or tributaries and where appropriate, minimize water withdrawals that could impact coho salmon.	2	10	CalFire, CalTrans, CDFG, Mendocino County, Mendocino Redwood Company, NMFS HCD, Private Landowners, RPFs, RWQCB, SWRCB						In-Kind	These agencies should consider existing regulations or other mechanisms when evaluating alternatives to water as a dust palliative (including EPS-certified compounds) that are consistent with maintaining or improving water quality.
CoC-CCC-24.1.2	Recovery Action	Severe Weather Patterns	Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)										
CoC-CCC-24.1.2.1	Action Step	Severe Weather Patterns	Protect high-risk shallow-seeded landslide areas and surfaces prone to erosion from being mobilized by intense storm events.	3	100	CalFire, California Geological Survey, CalTrans, CDFG, Mendocino County, Mendocino Redwood Company, Private Landowners, RPFs, RWQCB						TBD	An assessment of the quantity and extent of high-risk shallow-seeded landslide areas needs to be conducted prior to developing cost for this recovery action.