
COTTANEVA CREEK

Cottaneva Creek

Dependent Population
13.8 IP-Km of potential coho salmon habitat
Coho salmon and steelhead present

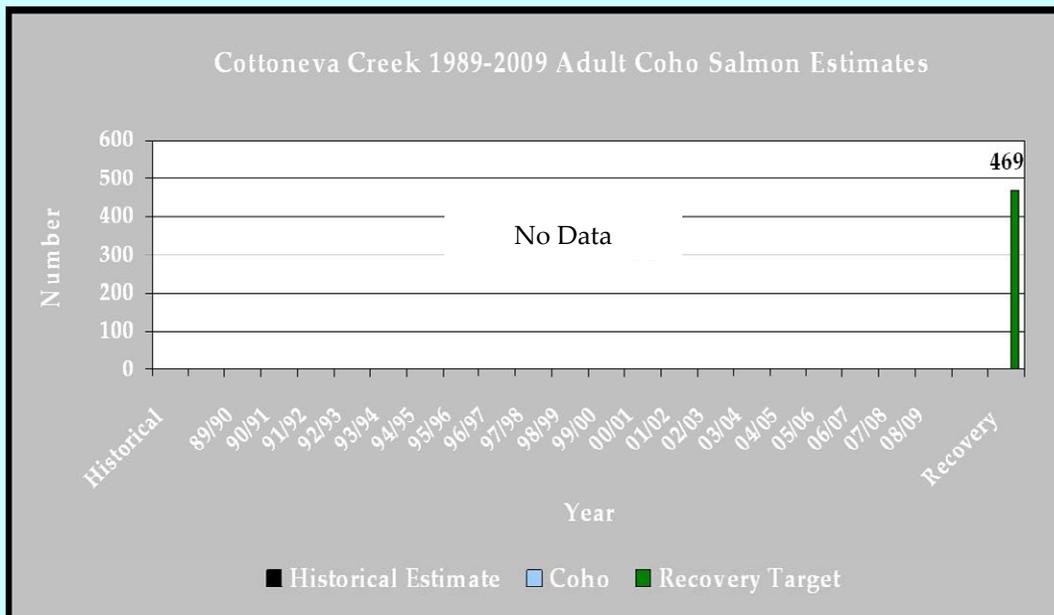
Cottaneva Creek drains about 17 square miles of western Mendocino County and enters the Pacific Ocean about 25 miles north of the town of Fort Bragg. About 73 percent of the Cottaneva Creek watershed is redwood forest and about 21 percent is either montane or riparian hardwood forest. The entire Cottaneva Creek watershed has highly erodible soils. The entire watershed is in private ownership. The dominant land use within the watershed is forestry. The first sawmill at Cottaneva Creek started in 1877. Various timber harvesting operations occurred in Cottaneva Creek over subsequent years. The Mendocino Redwood Company (MRC), purchased approximately 75 percent of the watershed in 1998. MRC currently manages the land for sustained timber harvest. Recreational use of the watershed includes fishing, hunting, and mushroom gathering. Housing development within the watershed is uncommon – only 15 houses are present.



Cottaneva Creek estuary and lower watershed.
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The Watershed at a Glance

Spawning Quantity & Quality:	FAIR to GOOD
Summer Water Temperatures:	FAIR
Depth & Shelter of Pools:	POOR
Large Wood Frequency:	POOR
Riparian Canopy:	GOOD
Off channel/Floodplain Quality:	POOR
Estuary Function:	GOOD



Increasing the survival of coho salmon

requires **protecting** all individuals from threats that are jeopardizing coho salmon. The highest ranked threats are:

- Logging and Wood Harvesting
- Roads and Railroads

Preventing the extinction of coho salmon

means **restoring** many key habitat attributes within the Cottaneva Creek watershed that are in poor condition. The highest priorities for restoration are to:

- Reduce sources of sediment
- Improve pool complexity and increase number of pools
- Increase large wood in streams
- Increase the frequency of off channel habitat and floodplain connectivity
- Reduce the amount of roads in and near the riparian zone and throughout the watershed



Cottaneva Creek

Photo © Mendocino Redwood Company

Advancing recovery of coho

salmon in Cottaneva Creek requires these priority **recovery actions**:

- Install large wood, boulders, and other structures to increase stream complexity and improve pool frequency and depth.
- Promote restoration projects designed to create or restore alcove and backchannel habitats, including projects that will provide functioning habitat at flows intermediate between winter base flow and flood stage.
- Decommission riparian road systems and/or upgrade roads and skid trails that deliver sediment to streams.
- Provide for watershed processes by promoting long term sustainable forestry practices that support coho salmon
- Treat high priority roads, culverts, road slides and landings to reduce sediment input to streams.

... **throughout** the Cottaneva Creek watershed.

Conservation Highlights

**We Need
Your Photo
Here**

Cottaneva Creek

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Immediate Needs

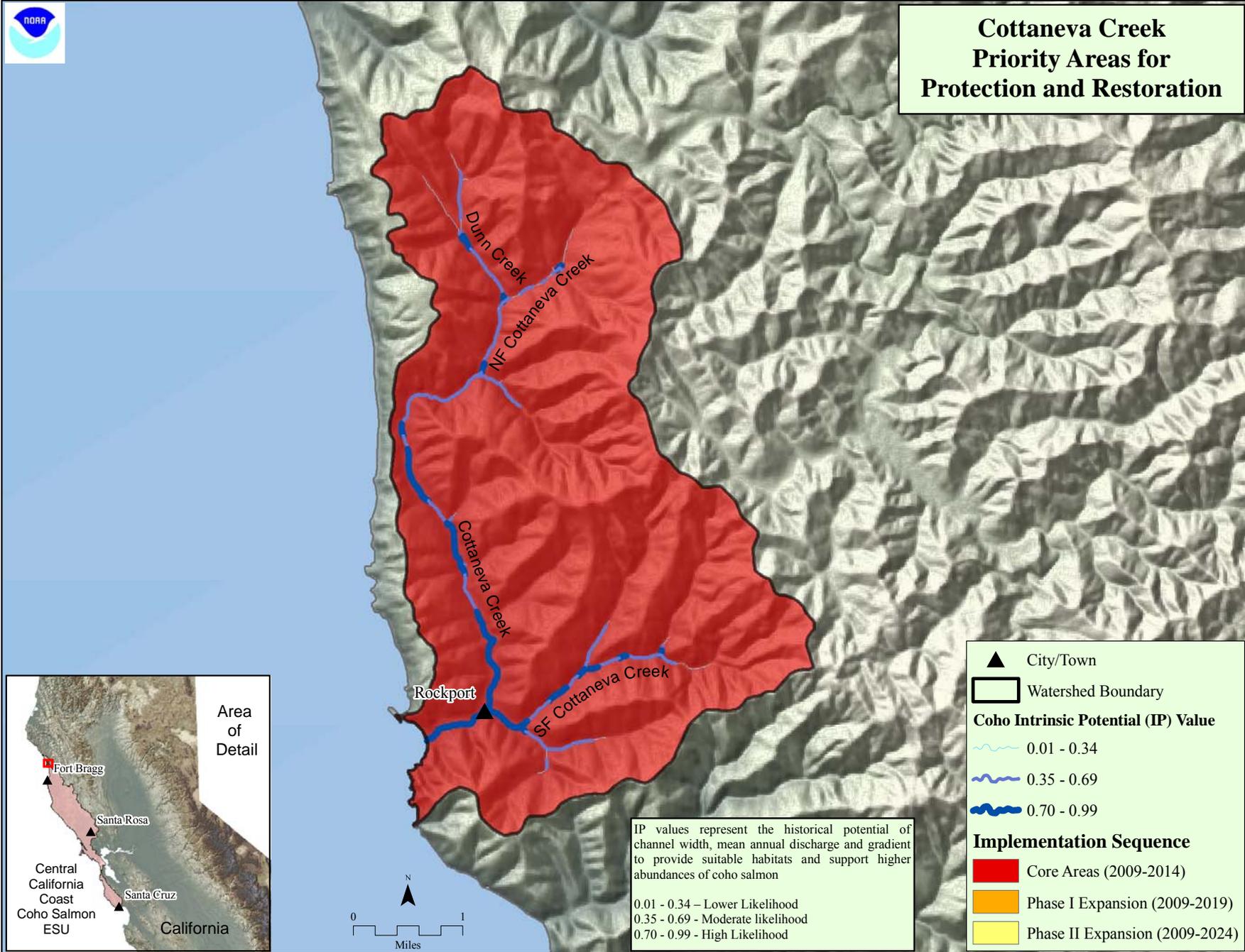
- √ Implement restoration actions described in the Mendocino Redwood Company watershed analysis.
- √ Incorporate fish sensitive methods into maintenance of Highway 1, including improvements to the Dunn Creek culvert under Highway 1.
- √ Describe the current condition of the estuary and identify restoration actions.
- √ Finalize MRC Habitat Conservation Plan.

Recovery Partners

NMFS
DFG
Trout Unlimited
Mendocino Redwood Company
CalTrans



Cottaneva Creek Priority Areas for Protection and Restoration



**CCC Coho Salmon
Cottaneva Creek
CAP Viability Table Results**

Analyst	Source	Result	Rating	Target	Habitat Attribute	Indicator	Poor	Fair	Good	Very Good
Flow Panel	Decision Matrix	33	Very Good	Spawning Adults	Hydrology	Passage Flows	>75 (score)	51-75	35-50	<35
SEC	PSMFC Database	92%	Very Good	Spawning Adults	Passage	Physical Barriers	<50% of IP-km	50-70% of IP-km	70-90% of IP-km	>90% of IP-km
NCWAP	Decision Matrix	60-90 days	Good	Spawning Adults	Passage	Passage at Mouth	<30 days	30-60 days	60-90 days	>90 days
SEC	CDFG HAB 8	17055 m ²	Very Good	Spawning Adults	Sediment	Amount of Gravel*	<100 m ²	100-800 m ²	800-1600 m ²	>1600 m ²
NMFS	Best Prof. judgment	5-10%	Fair	Spawning Adults	Viability	Freshwater Harvest	>10% of pop.	5-10%	<5%	
Flow Panel	Decision Matrix	Very Good	Very Good	Eggs	Hydrology	Instantaneous Condition	>75 (score)	51-75	35-50	<35
Flow Panel	Decision Matrix	33	Very Good	Eggs	Hydrology	Redd Scour	>75 (score)	51-75	35-50	<35
SEC	Many Sources	NA	Fair	Eggs	Sediment	Gravel Quality	>17% 0.85mm and or >30% 6.3mm	15-17% 0.85	12-14% 0.85mm and or <30% 6.3mm	<12% 0.85
SEC	CDFG HAB 8	63%	Good	Eggs	Sediment	Gravel Quality (Embeddedness)	<25% of scores 1s&2s	25-50% of scores 1s&2s	>50% of scores 1s&2s	
Flow Panel	Decision Matrix	Good	Good	Summer Rearing	Hydrology	Baseflow	>75 (score)	51-75	35-50	<35
SEC	CDFG HAB 8	44.2	Poor	Summer Rearing	Pool Habitat	Shelter Rating	<60 avg. rating	60-80	80-100	>100
SEC	CDFG HAB 8	4%	Poor	Summer Rearing	Pool Habitat	Primary Pools	<30% pools by length	30-40%	40-50%	>50%
SEC/NMFS	Many Sources	NA	Fair	Summer Rearing	Water Quality	Temperature	>30% of IP > 17 C MWMT	Does not meet Good or Very Good	30-60% of IP < 15C MWMT	>60% of IP < 15C MWMT
SEC	CDFG HAB 8	43	Poor	Winter Rearing	Floodplain	Complex Habitat**	<50% Connected	50-80% connected	>80% connected	
NMFS	NCWAP	Good	Good	Smolts	Estuary	Estuary				
Flow Panel	Decision Matrix	Very Good	Very Good	Smolts	Hydrology	Passage Flows	>75 (score)	51-75	35-50	<35
SEC	SWRCB	0/10 IP-km	Very Good	Smolts	Passage	# of Diversions**	>5 / 10 IP km	1.1-5	0.01-1	0
SEC	CDFG HAB 8	44.2	Poor	Multiple Life Stages	Pool Habitat	Shelter Rating	<60 avg. rating	60-80	80-100	>100
NMFS	Best Prof. judgment	>80%	Good	Multiple Life Stages	Floodplain	Floodplain Connectivity	<50%	50-80%	>80%	not defined
NMFS	CDF CWHR	58%	Good	Multiple Life Stages	Hydrology	Stand Age			>40 years old	
SEC	NLCDB	0.18%	Very Good	Multiple Life Stages	Hydrology	Impervious Surfaces	>12.01% of WS by area	7.01-12%	3.01-7%	0-3%
SEC	FMMP	0%	Very Good	Multiple Life Stages	Land disturbance	Agriculture	>30% of WS by area	10-30%	0.1-10%	<0.1%
NMFS	CDF THP Dataset	28%	Fair	Multiple Life Stages	Land disturbance	Timber Harvest	>35% of WS by area	25 - 35%	10 - 25%	<10%
SEC	Many Sources	0.7/100m%	Poor	Multiple Life Stages	Pool Habitat	LWD Freq. (BFW 0-10)	<4key pcs/100m	4-6/100m	6-11/100m	>11/100m
SEC	Best Prof. judgment	NA	NA	Multiple Life Stages	Pool Habitat	LWD Freq. (BFW 10-100)	<1/100m	1-1.3/100m	1.3-4/100m	>4/100m
NMFS	CDF CWHR	>50%	Good	Multiple Life Stages	Riparian Veg.	Species Composition	<25%	25-50%	>50%	Historical Conditions
NMFS	CDF CWHR	57%	Good	Multiple Life Stages	Riparian Veg.	DBH	<39% Class 5 and 6	40-54%	55-69%	>69%
SEC	CDFG HAB 8	94%	Good	Multiple Life Stages	Riparian Veg.	Canopy Cover	<75 % avg. over IP-km	75-85%	85-95%	>95%
NMFS	CDF THP Dataset	6.9mi/sq. mi.	Poor	Multiple Life Stages	Sediment Transport	Road Density	>3 miles/sq. mile	3 to 2.5	2.5 to 1.6	<1.6
NMFS	CDF THP Dataset	6.8.i/sq/mi.	Poor	Multiple Life Stages	Sediment Transport	Road density 100	>1 miles/sq. mile	1-0.5	0.5-0.1	<0.1
NMFS	Many Sources	Good	Good	Multiple Life Stages	Water Quality	Toxicity	Acute	Sublethal or Chronic	No Acute or Chronic	No evidence of toxins or Contaminants
NMFS	Best Prof. judgment	<1 per IP-km	Poor	Spawning Adults	Viability	Adult Density	<1 per IP-km	1-20 per IP-km	20-40 per IP-km	>40 per IP-km
NMFS	Best Prof. judgment	0.2-0.5 fish/m ²	Fair	Summer Rearing	Viability	Juvenile Density	<0.2 fish/m ²	0.2-0.5 fish/m ²	0.5-1.0 fish/m ²	>1.0 fish/m ²
NMFS	Best Prof. judgment	20-34%	Fair	Summer Rearing	Viability	Juvenile Distribution	<20% IP-km occupied	20-34%	35-50%	>50%

See Appendix C for a full description of the analysis methods for the Viability Table Reports

* = watershed specific numbers

** = Ratings defined by the distribution of results

Cottaneva Creek Threats Across Targets		Spawning Adults	Eggs	Summer Rearing Juveniles	Winter Rearing Juveniles	Smolts	Multiple Life Stages			Overall Threat Rank
Project-specific threats		1	2	3	4	5	6	7	8	
1	Roads and Railroads	Medium	Medium	Medium	Medium	Medium	Very High			High
2	Logging and Wood Harvesting	Medium	Low	High	Medium	Medium	High			High
3	Droughts	Medium	Low	Medium	Medium	High	Medium			Medium
4	Storms and Flooding	Medium	Low	Medium	Medium	Medium	High			Medium
5	Channel Modification	Medium	Low	Medium	Medium	Medium	Medium			Medium
6	Climate Change	Medium	Low	Medium	Medium	Medium	Medium			Medium
7	Fire and Fuel Management	Medium	Low	Medium	Medium	Medium	Medium			Medium
8	Livestock Farming and Ranching	Medium	Low	Medium	Medium	Medium	Medium			Medium
9	Mining	Medium	Low	Medium	Medium	Medium	Medium			Medium
10	Recreational Areas and Activities	Medium	Low	Medium	Medium	Medium	Medium			Medium
11	Residential and Commercial Development	Medium	Low	Medium	Medium	Medium	Medium			Medium
12	Water Diversion and Impoundment	Medium	Low	Medium	Medium	Medium	Low			Medium
13	Agricultural Practices	Medium	Low	Medium	Medium	Medium	-			Medium
14	Disease, Predation, and Competition	Medium	-	Low	-	Medium	-			Medium
15	Fishing and Collecting	Medium	-	Low	Low	Low	-			Low
16	Hatcheries and Aquaculture	-	-	-	Low	Low	Low			Low
Threat Status for Targets and Project		High	Medium	High	High	High	Very High	-	-	Very High

Cottaneva Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
CoC-A-6.1.3	Recovery Action	Pool Habitat	Encourage landowners to implement restoration projects as part of their ongoing operations in stream reaches where large woody debris is lacking.	1	60	CDFG, Mendocino Redwood Company, NMFS PRD, NOAA RC, Private Landowners						TBD	Can not determine cost at this time.
CoC-A-8.1	Objective	Sediment	Improve habitat conditions at multiple life stages by reducing sediment inputs to the stream at the watershed scale.										
CoC-A-8.1.1	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-A-8.1.1.1	Action Step	Sediment	Decommission riparian road systems and/or upgrade roads (and skid trails on forestlands) that deliver sediment into adjacent watercourses (DFG 2004).	1	60	CalFire, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners, RWQCB						TBD	Costs may vary widely depending on number of riparian roads and the magnitude of the problem associated with the roads.
CoC-A-8.1.1.2	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	60.00	60.00	60.00	60.00	60.00	300	Cost is based on a rough estimate of \$3000 per culvert.
CoC-A-8.1.1.3	Action Step	Sediment	Provide incentives to restore high priority sites as determined by watershed analysis, DFG, or CalFire.	2	30	CalFire, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Costs are difficult to estimate at this time.
CoC-A-8.1.1.4	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	20	CalFire, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Costs are difficult to estimate at this time.
CoC-A-8.1.1.5	Action Step	Sediment	Roads or landings shall be maintained at the design standards that lower risk of mass wasting sediment delivery.	2	60	CalFire, CDFG, Mendocino Redwood Company, Private Landowners						0	The cost associated with this strategy is likely low.
CoC-A-9.1	Objective	Viability	Develop and implement a monitoring program to evaluate the performance of recovery efforts.										
CoC-A-9.1.1	Recovery Action	Viability	Measure or estimate response of key habitat attributes to recovery efforts across the watershed.										
CoC-A-9.1.1.1	Action Step	Viability	Use standardized watershed assessments (Coastal Monitoring Plan) within sub-watersheds not previously evaluated in MRC's 2005 effort.	3	12	CDFG, Mendocino Redwood Company, NMFS, Private Consultants, Private Landowners						TBD	12 years based on frequency of conducting assessments every 5 years during a 60 year plan period.
CoC-A-9.1.2	Recovery Action	Viability	Monitor population status for response to recovery actions.										
CoC-A-9.1.2.1	Action Step	Viability	Use Coastal Monitoring Plan methods to determine the population status of adult and smolt salmonids in the watershed and its tributaries.	3	60	CDFG, Mendocino Redwood Company, NMFS, NOAA SWFSC, Private Landowners						TBD	60 years or until population targets have been met.
CoC-A-20.1	Objective	Logging and Wood Harvesting	Maintain and expand California's working forestlands and forestlands held by the State, and prevent future conversion of forestlands to agriculture or other land uses.										
CoC-A-20.1.1	Recovery Action	Logging and Wood Harvesting	Coordinate with the agencies that authorize conversions to minimize conversions in key watersheds and discourage forestland conversions.	3	60	CalFire, CDFG, NMFS						0	Cost expected to be minimal. Action should take place at state level.

Cottaneva Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
CoC-A-20.2	Objective	Logging and Wood Harvesting	Provide for properly functioning watershed processes (e.g., cycles of wood, water and sediment) by promoting long term sustainable forestry practices that support coho salmon habitats.										
CoC-A-20.2.1	Recovery Action	Logging and Wood Harvesting	Address sources from timber harvesting operations.										
CoC-A-20.2.1.1	Action Step	Logging and Wood Harvesting	Ensure that post harvest THP road maintenance and BMPs are implemented.	2	60	CalFire, CDFG, Private Landowners						TBD	Need additional information for monitoring and upgrade costs to estimate total cost of implementing this action.
CoC-A-20.2.2	Recovery Action	Logging and Wood Harvesting	Conserve and manage forestlands for older forest stages.	3	60	CalFire, CDFG, Mendocino Redwood Company, NMFS PRD						TBD	Costs to implement this action may be minimal if MRC HCP is completed.
CoC-A-20.2.3	Recovery Action	Logging and Wood Harvesting	Encourage landowners to implement restoration projects as part of their ongoing practices in priority stream reaches, particularly where large woody debris is found lacking.	2	60	CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Cost can not be determined at this time.
CoC-A-20.3	Objective	Logging and Wood Harvesting	Develop a California Forest Practice monitoring protocol to determine whether specific practices are effectively meeting intended objectives and are providing for the protection of CCC coho salmon.										
CoC-A-20.3.1	Recovery Action	Logging and Wood Harvesting	Consider the development of a Watershed Database (similar to the DFG Northern Spotted Owl database) for salmonids that provides watershed data and information in a consistent fashion to all foresters for consideration in their harvest plans.	3	10	CalFire, CDFG, NMFS						0	Cost is estimated for all watersheds in Ten Mile strategies. \$300K for ten years.
CoC-A-20.4	Objective	Logging and Wood Harvesting	Provide information to BOF regarding CCC coho salmon priorities and recommend upgrading relevant forest practices.	2	2	NMFS HCD, NMFS PRD	25.00	25.00				50	Cost based on NMFS staff time over a two year period. This cost would cover all CCC focus watersheds.
CoC-A-20.5	Objective	Logging and Wood Harvesting	Establish greater oversight and post-harvest monitoring by the permitting agency of operations within Core, Phase I and Phase II CCC coho salmon areas.	2	60	CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Cost can not be determined at this time.
CoC-A-20.5.1	Recovery Action	Logging and Wood Harvesting	Assign NMFS staff to conduct THP reviews of the highest priority areas using revised "Guidelines for NMFS Staff when Reviewing Timber Operations: Avoiding Take and Harm of Salmon and Steelhead" (NMFS 2004).	2	10	CalFire, NMFS, NMFS OLE	50.00	50.00	50.00	50.00	50.00	500	Cost estimate only considers NMFS staff time.
CoC-A-24.1	Objective	Roads and Railroads	Conduct outreach and education regarding the adverse effects of roads, and the types of best management practices protective of salmonids.										
CoC-A-24.1.1	Recovery Action	Roads and Railroads	Continue education of Caltrans, County, and MRC road engineers and maintenance staff regarding watershed processes and the adverse effects of improper road construction and maintenance on salmonids and their habitats.	2	60	CalFire, CalTrans, CDFG, Jackson Demonstration State Forest, NMFS, Private Consultants, Private Landowners						TBD	Cost is included in other watersheds.
CoC-A-24.1.2	Recovery Action	Roads and Railroads	Develop a Salmon Certification Program for road maintenance staff.	2	10	CalFire, FishNet 4C, NOAA RC, Private Landowners, RWQCB	5.00	5.00	5.00	5.00	5.00	50	Cost includes only estimated portion that would cover Cottaneva Creek watershed.
CoC-A-24.2	Objective	Roads and Railroads	Reduce road densities by 10 percent over the next 10 years, prioritizing high risk areas.										
CoC-A-24.2.1	Recovery Action	Roads and Railroads	Decommission riparian road systems and/or upgrade roads (and skid trails on forestlands) that deliver sediment into adjacent watercourses (DFG 2004). See MRC watershed analysis for segments identified for decommissioning.										

Cottaneva Creek (Lost Coast-Navarro Point) Threats and Associated Recovery Actions

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Entire Duration	Comments
							FY1	FY2	FY3	FY4	FY5		
CoC-A-24.2.1.1	Action Step	Roads and Railroads	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). A detailed field evaluation of these segments will be required in order to determine if decommissioning is appropriate.	3	12	CDFG, Mendocino Redwood Company, NMFS, Private Consultants, Private Landowners						TBD	12 years based on frequency of conducting assessments every 5 years during a 60 year plan period.
CoC-A-24.3	Objective	Roads and Railroads	Conduct actions that hydrologically disconnect roads in Core areas within five years (from 2010).										
CoC-A-24.3.1	Recovery Action	Roads and Railroads	Address sediment and runoff sources from road networks and other actions that deliver sediment and runoff to stream channels.										
CoC-A-24.3.1.1	Action Step	Roads and Railroads	Develop a Road Sediment Reduction Plan that prioritizes sites and outlines implementation and a timeline of necessary actions. Begin with a road survey focused on inner gorge roads followed by roads in other settings.	3	10	Private Landowners						0	Lower priority and cost has been assigned because MRC is the major landowner and has conducted watershed analysis.
CoC-A-24.3.2	Recovery Action	Roads and Railroads	Limit winter use of unsurfaced roads and recreational trails by unauthorized and impacting uses to decrease fine sediment loads.	2	10	CalFire, FishNet 4C, NOAA RC, Private Landowners, RWQCB	5.00	5.00	5.00	5.00	5.00	50	Cost includes only estimated portion that would cover Cottaneva Creek watershed.
CoC-A-24.3.2.1	Action Step	Roads and Railroads	Conduct annual inspections of all roads prior to winter. Correct conditions that are likely to deliver sediment to streams. Hydrologically disconnect roads.	2	60	Private Landowners, RWQCB						TBD	This action is part of ongoing road maintenance. Some additional cost may be expected from increased inspections and resulting maintenance costs.
CoC-A-24.4	Objective	Roads and Railroads	Reduce sediment sources from road networks, maintenance activities, and other actions that deliver sediment to stream channels.										
CoC-A-24.4.1	Recovery Action	Roads and Railroads	Minimize 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.	2	60	CalFire, CalTrans, CDFG, Mendocino County Department of Public Works, NOAA RC, Private Landowners, RWQCB						TBD	Cost of avoiding these sensitive areas will require further analysis.
CoC-A-24.4.2	Recovery Action	Roads and 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.	1	10	Mendocino Redwood Company, NOAA RC, Trout Unlimited						TBD	Much of the cost is accounted for in other actions or is yet to be determined.
CoC-A-24.4.3	Recovery Action	Roads and Railroads	Use available best management practices for road construction, maintenance, management and decommissioning (e.g. Hagans & Weaver, 1994; Sommarstrom, 2002; Oregon Department of Transportation, 1999).	2	60	Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Need estimates from landowners within this basin.