

Noyo River



Location	• Mendocino County
Watershed Area	• 113.0 Square Miles
Potential Habitat	• 127.0 Stream Miles
Vegetation	• 71% Coniferous, 29% Riparian or Montane Forest
Erodability	• Moderate to High
Ownership Patterns	• 81% Private; 19% Public
Dominant Land Uses	• Timber
Housing Density	• Moderate
TMDL Pollutants	• Sediment, Temperature



Noyo River Harbor
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Noyo River Coho Salmon: Present – moderate abundance



Recovery Goals

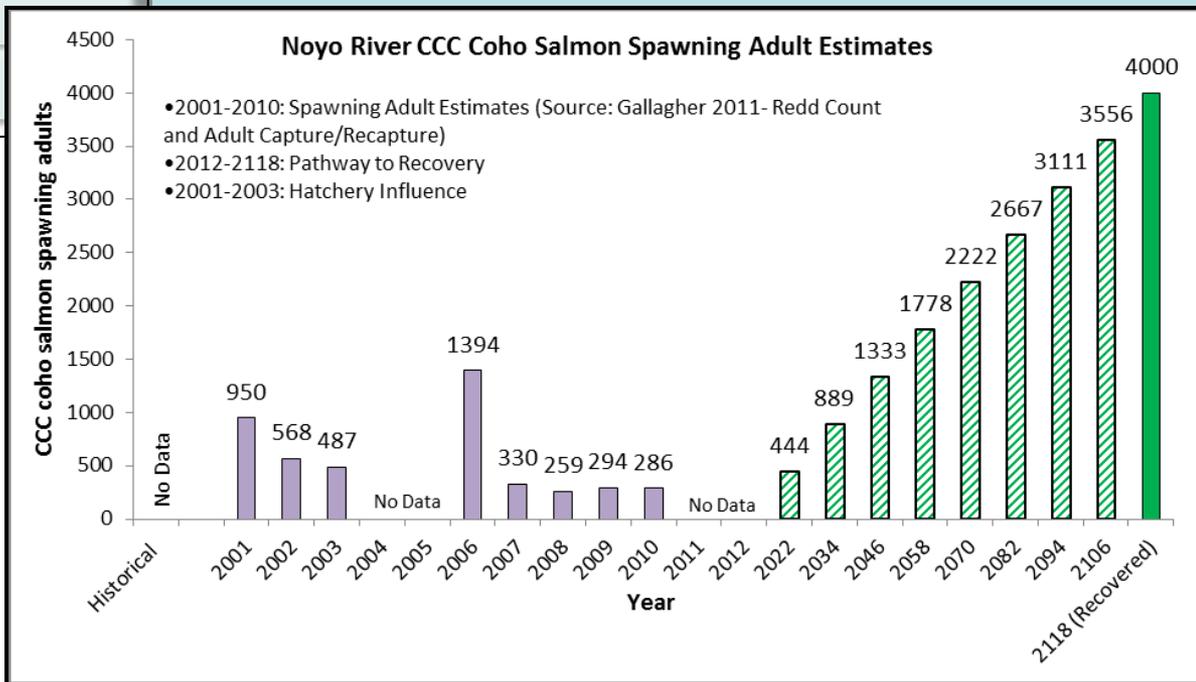
- ✓ Continue CDFG counts at life cycle station (longest running in the ESU) on South Fork Noyo River
- ✓ Continue juvenile monitoring efforts

**Noyo River
Adult Spawner Targets**

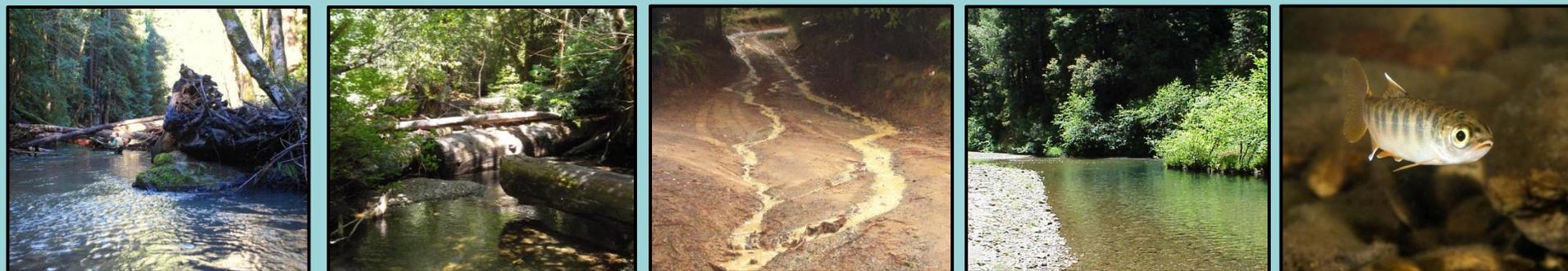
**Downlisting to Threatened
2,000**

**Recovery
4,000**

**STEELHEAD: YES
CHINOOK SALMON: YES**



Current Instream, Watershed and Population Conditions



Preventing Extinction & Improving Conditions

Priority 1: Immediate Restoration Actions

- Install large woody material, boulders, and other instream features to increase habitat complexity and improve pool frequency and depth
- Promote passive diversion devices designed to allow diversion of water only when minimum streamflow is met
- Treat high priority slides and landings

Priority 2 & 3: Long-Term Restoration Actions

- Work with the California Western Railroad to stop removal of LWD from stream channels
- Promote off-channel storage in the upper watershed
- Improve canopy cover
- Identify locations, develop and maintain sediment catchment basins
- Implement a monitoring program



Recovery Partners
Jackson Demonstration State Forest



Future Threats



Reducing Future Threats

Priority 1: Immediate Threat Abatement Actions

- Design and implement a program of BMPs for road maintenance on private roads similar to the program for public roads
- Prevent increased landscape disturbance
- Avoid new road construction within floodplains, riparian areas, unstable soils or other sensitive areas

Priority 2 & 3: Long-Term Threat Abatement Actions

- Assign NMFS staff to conduct THP reviews of the highest priority areas within the watershed
- Limit winter use of unsurfaced roads and recreational trails



Passage impediment associated with a railroad crossing.
Photo courtesy of NMFS.

Conservation Highlights

- Noyo Watershed Alliance is working on sediment remediation associated with road
- CalFire, Jackson Demonstration State Forest, and Campbell Timberland Management have augmented habitat complexity by installing LWD
- Mendocino Redwood Company has undertaken sediment remediation projects
- CDFG is conducting coho salmon spawner surveys.

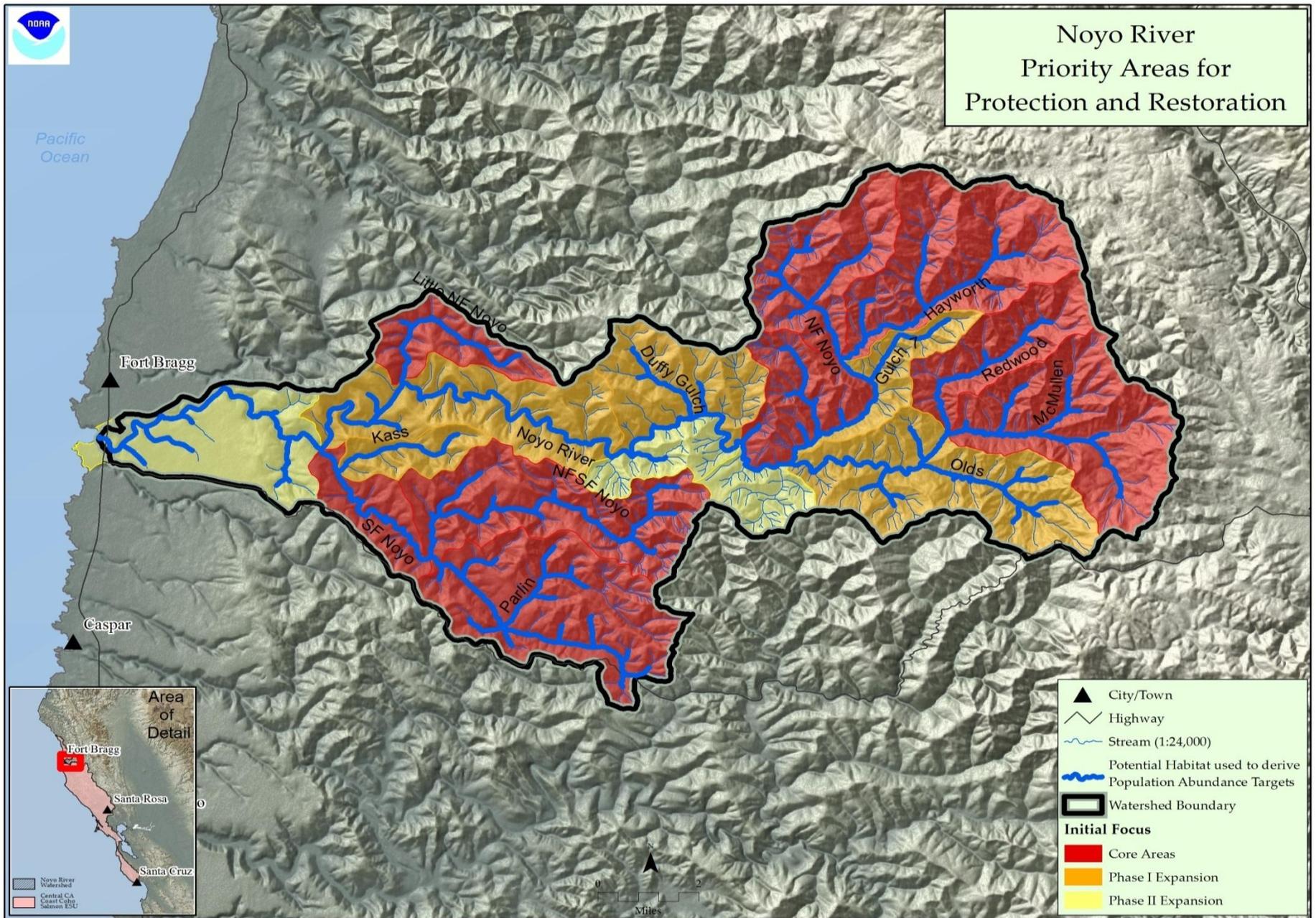


Figure 1: Map of Noyo River

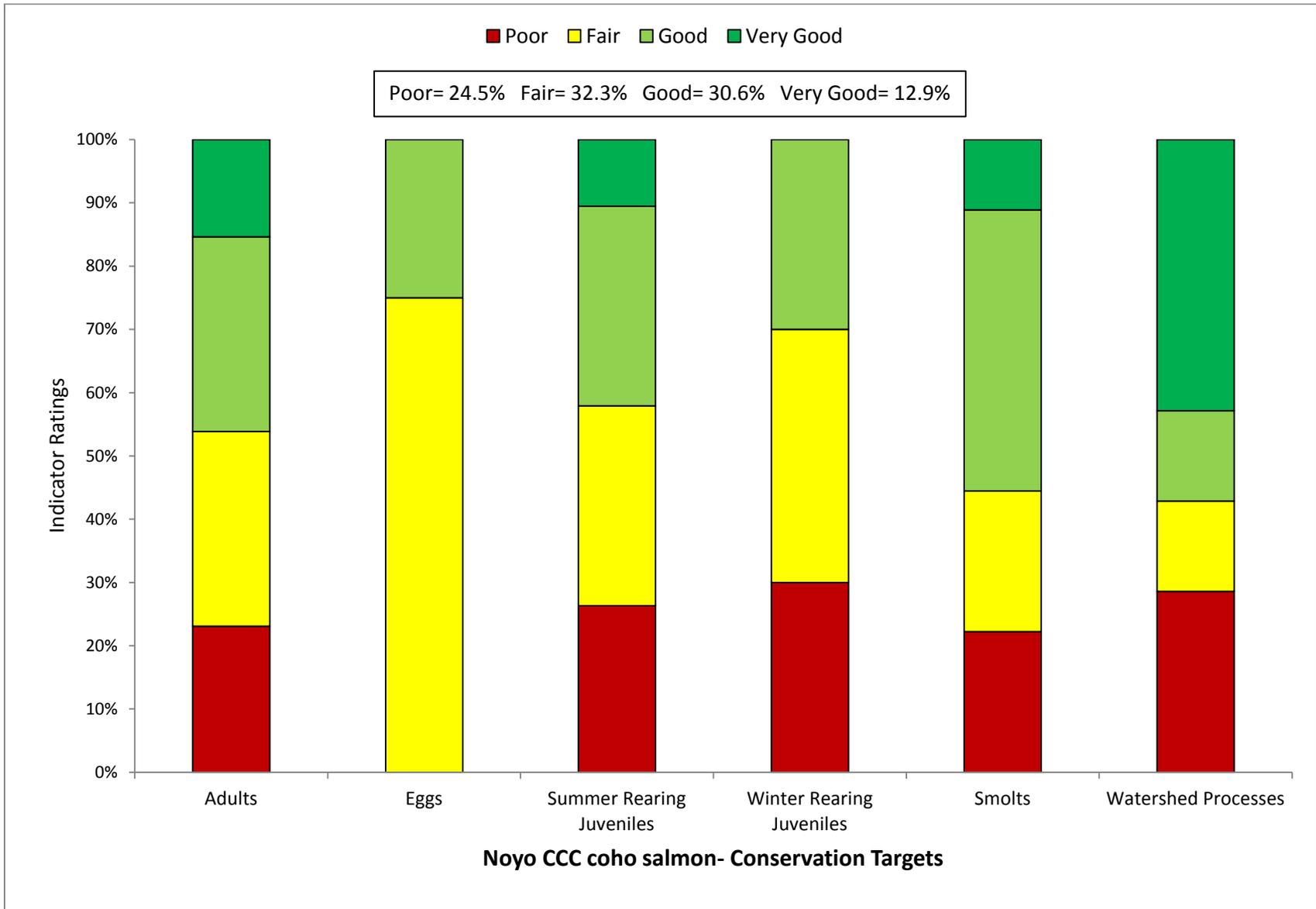


Figure 2: Viability Results by Lifestage

Table 1: CAP Viability Results ~ Noyo River

Target	Attribute	Indicator	Result	Rating	Method	Desired Criteria
Adults	Habitat Complexity	Large Wood Frequency (BFW 0-10 meters)	2.6 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 Key Pieces/100m	Poor	NMFS Expert Estuary/Lagoon Panel	1.3 to 4 Key Pieces/100 meters
Adults	Habitat Complexity	Pool/Riffle/Flatwater Ratio	50% to 74% of streams/ 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	<50% of 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 =35-50	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	98.85% 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)	40 - 54% Class 5 & 6 across IP-km	Fair	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	50-80% Response Reach Connectivity	Fair	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	75% to 90% of streams/ IP-km maintains severity score of 3 or lower	Good	SEC Analysis/CDFG Data	75% to 90% of streams/ IP-Km maintains severity score of 3 or lower
Adults	Viability	Density	>1 spawner per IP-km to < low risk spawner density	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 =51-75	Fair	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)	38% streams; 65% IP-km (>50% stream average scores of 1 & 2)	Fair	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	impaired but functioning	Fair	NMFS Instream Flow Analysis	Properly Functioning Condition
Summer Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 0-10 meters)	0 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)	0 Key Pieces/100m	Poor	NMFS Instream Flow Analysis	1.3 to 4 Key Pieces/100 meters
Summer Rearing Juveniles	Habitat Complexity	Percent Primary Pools	14% streams; 31% IP-km (>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	59% streams 72% 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	6% stream; 1% 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	Fair	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	Good	NMFS Watershed Characterization	NMFS Flow Protocol Risk Factor Score 35-50
Summer Rearing Juveniles	Hydrology	Number, Condition and/or Magnitude of Diversions	0.41 Diversions/10 IP km	Good	NMFS Watershed Characterization	0.01 - 1 Diversions/10 IP km
Summer Rearing Juveniles	Passage/Migration	Passage at Mouth or Confluence	75% of IP-km to 90% of IP-km accessible	Good	NMFS Watershed Characterization	75% of IP-Km to 90% of IP-km
Summer Rearing Juveniles	Passage/Migration	Physical Barriers	>90% 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	>90% of streams/ IP-km (>70% average stream canopy; >85% where coho IP overlaps)	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)	40 - 54% Class 5 & 6 across IP-km	Fair	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)	50% to 74% of streams/ IP-km (>50% stream average scores of 1 & 2)	Fair	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)	<50% IP km (<20 C MWMT; <16 C MWMT where coho IP overlaps)	Poor	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	75% to 90% of streams/ IP-km maintains severity score of 3 or lower	Good	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 - 0.6 fish/meter^2	Fair	SEC Analysis/CDFG Data	0.5 - 1.0 fish/meter^2
Summer Rearing Juveniles	Viability	Spatial Structure	>90% of Historical Range	Very Good	NMFS Watershed Characterization/CWHR	75-90% of Historical Range
Winter Rearing Juveniles	Habitat Complexity	Large Wood Frequency (Bankfull Width 0-10 meters)	0 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)	0 Key Pieces/100m	Poor	NMFS Watershed Characterization/CWHR	1.3 to 4 Key Pieces/100 meters
Winter Rearing Juveniles	Habitat Complexity	Pool/Riffle/Flatwater Ratio	71% of streams/ 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	6% stream; 1% 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	75% of IP-km to 90% of IP-km accessible	Good	Population Profile/BPJ	75% of IP-Km to 90% of IP-km
Winter Rearing Juveniles	Riparian Vegetation	Tree Diameter (North of SF Bay)	55 - 69% 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)	50% to 74% of streams/ IP-km (>50% stream average scores of 1 & 2)	Fair	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	50-80% Response Reach Connectivity	Fair	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	Impaired but functioning	Fair	SEC Analysis/CDFG Data	Properly Functioning Condition
Smolts	Habitat Complexity	Shelter Rating	<50% 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	0.059 Diversions/10 IP-km	Good	Population Profile	0.01 - 1 Diversions/10 IP km
Smolts	Hydrology	Passage Flows	Risk Factor Score =35-50	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	Abundance leading to high risk spawner density = 0	Poor	Newcombe and Jensen 2003	Smolt abundance to produce low risk spawner density per Spence (2008)
Watershed Processes	Hydrology	Impervious Surfaces	0.251 % of Watershed in Impervious Surfaces	Very Good	SEC Analysis	3-6% of Watershed in Impervious Surfaces
Watershed Processes	Landscape Patterns	Agriculture	0.018% of Watershed in Agriculture	Very Good	EPA/RWQCB/NMFS Criteria	10-19% of Watershed in Agriculture
Watershed Processes	Landscape Patterns	Timber Harvest	26-35% of Watershed in Timber Harvest	Fair	Newcombe and Jensen 2003	25-15% of Watershed in Timber Harvest
Watershed Processes	Landscape Patterns	Urbanization	<8% 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	51-74% Historical Species Composition	Good	Newcombe and Jensen 2003	51-74% Intact Historical Species Composition
Watershed Processes	Sediment Transport	Road Density	>3 Miles/Square Mile	Poor	EPA/RWQCB/NMFS Criteria	1.6 to 2.4 Miles/Square Mile
Watershed Processes	Sediment Transport	Streamside Road Density (100 m)	>1 Miles/Square Mile	Poor	Newcombe and Jensen 2003	0.1 to 0.4 Miles/Square Mile

Table 2: CAP Threats Results ~ Noyo River

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	Low	Low	Low	Low	Low	Low	Low
2	Channel Modification	Medium	Low	Low	Low	Low	Low	Low
3	Disease, Predation and Competition	Medium	-	Medium	Low	Low	Low	Medium
4	Fire, Fuel Management and Fire Suppression	Low	Low	Low	Low	Low	Low	Low
5	Fishing and Collecting	Low	-	Low	-	Low	-	Low
6	Hatcheries and Aquaculture	-	-	-	-	-	-	-
7	Livestock Farming and Ranching	Low	Low	Low	Low	Low	Low	Low
8	Logging and Wood Harvesting	Low	Medium	High	Medium	Medium	High	High
9	Mining	-	-	-	-	-	-	-
10	Recreational Areas and Activities	Low	Low	Low	Low	Low	Low	Low
11	Residential and Commercial Development	Low	Low	Medium	Low	Low	Low	Low
12	Roads and Railroads	Medium	Medium	Medium	Medium	Low	High	Medium
13	Severe Weather Patterns	Medium	Medium	Medium	High	Low	Medium	Medium
14	Water Diversion and Impoundments	Medium	Low	Low	Low	Low	Low	Low
Threat Status for Targets and Project		Medium	Medium	High	Medium	Medium	High	High

Central CA Coast Coho Salmon ~ Noyo River

ACTIONS FOR RESTORING HABITATS

1. Restoration- Estuary

No species-specific actions were developed.

2. Restoration- Floodplain Connectivity

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

2.1.1. **Recovery Action:** Rehabilitate and enhance floodplain connectivity

2.1.1.1. **Action Step:** Delineate unconfined reaches possessing or having potential for winter rearing habitat restoration.

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

2.1.1.3. **Action Step:** Focus off-channel restoration actions in the lower mainstem Noyo River and Core areas and areas with high IP-km values (> 0.7).

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, where germane, from MRC Noyo Watershed Analysis to determine stream locations with high instream LWD demand, and utilize CDFG stream habitat data to help determine reaches for LWD placement. Core areas of the South Fork Noyo, Little North Fork Noyo and Redwood Creek are priorities for restoration of LWD.

3.1.1.3. **Action Step:** Work with the railroad (California Western Railroad) to stop removal of LWD from the Noyo River.

3.1.1.4. **Action Step:** Develop and implement LWD projects in the Noyo River watershed using guidance from Albin (2006), Noyo River Watershed Enhancement Plan, or other credible watershed assessments.

3.1.1.5. **Action Step:** Encourage landowners to implement restoration projects as part of their ongoing operations in stream reaches where large woody debris is lacking.

4. Restoration- Hydrology

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

4.1.1. **Recovery Action:** Improve flow conditions (baseflow conditions)

4.1.1.1. **Action Step:** Promote off-channel storage to reduce impacts of water diversion (storage tanks for rural residential users) in the upper watershed.

4.1.1.2. **Action Step:** Promote passive diversion devices designed to allow diversion of water only when minimum streamflow requirements are met or exceeded (CDFG 2004).

4.1.1.3. **Action Step:** Provide incentives to water rights holders willing to convert some or all of their water right to instream use via petition change of use and §1707 (CDFG 2004).

4.1.1.4. **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. Work with the City of Fort Bragg and private landowners in the upper watershed to reduce diversion during the low flow summer period.

5. Restoration- Landscape Patterns

No species-specific actions were developed.

6. Restoration- Passage

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

6.1.1. **Recovery Action:** Modify or remove physical passage barriers

6.1.1.1. **Action Step:** Assess and restore passage at barriers associated with the California Western Railroad.

6.1.1.2. **Action Step:** Identify high priority barriers and restore passage per NMFS' Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001a).

7. Restoration- Pool Habitat

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

8. Restoration- Riparian

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

8.1.1. **Recovery Action:** Improve canopy cover

8.1.1.1. **Action Step:** Implement riparian canopy projects in the Noyo River watershed using Albin (2006) as guidance. Tributaries to have riparian canopy restoration are: Hayshed Gulch, middle Noyo River, Duffy Gulch, Hayworth Creek, Olds Creek and its tributaries.

9. Restoration- Sediment

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

9.1.1. **Recovery Action:** Improve instream gravel quality

- 9.1.1.1. **Action Step:** Treat high priority slides and landings identified in the MRC Noyo River Watershed Analysis or the Jackson Demonstration State Forest Road Management Plan.
- 9.1.1.2. **Action Step:** NMFS and other landowners will work with RCD or NRCS to encourage sediment reduction assessments (first for subwatersheds in Core areas, then for Phase I areas).
- 9.1.1.3. **Action Step:** Locations for sediment catchment basins should be identified, developed and maintained, where appropriate.

10. Restoration- Viability

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

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

10.1.1.1. **Action Step:** Promote development of a life cycle station (Gallagher and Gallagher 2005). A likely location would be at the former egg taking station located on the South Fork Noyo River in the Jackson Demonstration State Forest.

10.1.1.2. **Action Step:** Continue and improve upon monitoring activities to determine the population status of salmonid adults and smolts in the mainstem and its tributaries.

10.1.2. **Recovery Action:** Increase abundance

10.1.2.1. **Action Step:** Work with existing permittees to rescue juvenile coho salmon that are under an imminent risk of stranding and mortality and relocate to suitable habitat when deemed appropriate by NMFS and CDFG.

11. Restoration- Water Quality

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

11.1.1. **Recovery Action:** Implement actions to maintain and restore water temperatures to meet habitat requirements for CCC coho salmon in specific streams (CDFG 2004).

11.1.1.1. **Action Step:** Implement riparian canopy projects in the Noyo River watershed using Albin (2006) as guidance. Tributaries to have riparian canopy restoration are: Hayshed Gulch, middle Noyo River, Duffy Gulch, Hayworth Creek, Olds Creek and its tributaries.

11.1.1.2. **Action Step:** Improve riparian and instream conditions in rearing habitats by establishing riparian protection zones that extend the distance of a site potential tree height from the outer edge of a channel, and by adding LWD.

11.1.1.3. **Action Step:** Promote streamside conservation measures, including conservation easements, setbacks, and riparian buffers (DFG 2004).

11.1.1.4. **Action Step:** Work with landowners to purchase easements on water rights to encourage the maintenance of surface flows.

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 increased landscape disturbance

19.1.1.1. **Action Step:** Complete comprehensive assessment/implementation of erosion control measures in the entire North Fork River basin (CDFG 2004).

19.1.1.2. **Action Step:** Encourage all permanent and year-round access roads beyond the THP parcel be surfaced after harvest completion with base rock and road gravel, asphalt, or chipseal, and disconnected from the stream network as appropriate.

19.1.1.3. **Action Step:** New THPs should identify problematic legacy roads within WLPZ's, decommission them, and revegetate the area with appropriate native species.

19.1.1.4. **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.

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

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

19.2.1.1. **Action Step:** Assign NMFS staff to conduct THP reviews of the highest priority areas within the Noyo River watershed.

19.2.1.2. **Action Step:** Establish greater oversight and post-harvest monitoring by the permitting agency of operations within Core, and Phase I CCC coho salmon areas.

19.2.1.3. **Action Step:** NMFS staff should provide recommendations on potential restoration projects that could be incorporated into timber harvest plans.

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 (impaired gravel quality and quantity)

23.1.1.1. **Action Step:** 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.

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

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

23.1.1.4. **Action Step:** Encourage County of Mendocino to address and adequately maintain the Sherwood Ridge Road. Encourage County of Mendocino to completely close and monitor gates and barriers during the winter period.

23.1.1.5. **Action Step:** Design and implement a program of BMPs for road maintenance on private roads similar to the program for public roads (Sommarstrom et al., 2002).

23.1.1.6. **Action Step:** Restoration projects that upgrade or decommission high risk roads in Core areas should be considered an extremely high priority for funding (e.g., PCSRF).

23.1.1.7. **Action Step:** Fully implement the Noyo River TMDL.

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

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

23.2.1.1. **Action Step:** Establish a moratorium on 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.

- 23.2.1.2. **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.
- 23.2.1.3. **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.
- 23.2.1.4. **Action Step:** Ensure all existing and new road and railway crossings minimize potential sediment delivery to the stream environment and allow upstream and downstream passage of adult and juvenile coho salmon.

24. Threat- Severe Weather Patterns

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

24.1.1. **Recovery Action:** Prevent impairment to stream hydrology.

24.1.1.1. **Action Step:** Develop and implement critical flow levels for the mainstem Noyo River impacted by water diversions for the City of Fort Bragg.

24.1.1.2. **Action Step:** If predicted flows are below a level considered critical to maintain viable rearing habitat for salmonids, measures to reduce water consumption should be initiated by municipal water suppliers and other users in the watershed through conservation programs.

24.1.1.3. **Action Step:** Identify and work with water users to minimize depletion of summer base flows during drought years.

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 ~ Noyo River

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-2.1	Objective	Floodplain Connectivity	Address the present or threatened destruction, modification or curtailment of the species habitat or range.										
NoR-CCC-2.1.1	Recovery Action	Floodplain Connectivity	Rehabilitate and enhance floodplain connectivity										
NoR-CCC-2.1.1.1	Action Step	Floodplain Connectivity	Delineate unconfined reaches possessing or having potential for winter rearing habitat restoration.	2	3	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Consultants, Private Landowners	10.00					10	Rough estimate for consultant to use existing data and conduct some ground truthing.
NoR-CCC-2.1.1.2	Action Step	Floodplain Connectivity	Promote restoration projects designed to create or restore alcove, backchannel, ephemeral tributary, or seasonal pond habitats.	2	20	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners						In-Kind	
NoR-CCC-2.1.1.3	Action Step	Floodplain Connectivity	Focus off-channel restoration actions in the lower mainstem Noyo River and Core areas and areas with high IP-km values (> 0.7).	2	10	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners	90.50	90.50				181	Cost based on treating 5 miles, with 1 project/mile in high IP, at a rate of \$36,046/mile.
NoR-CCC-3.1	Objective	Habitat Complexity	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
NoR-CCC-3.1.1	Recovery Action	Habitat Complexity	Increase LWD , primary pools and shelter ratings.										

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-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	60	Cal Western Railroad, CalFire, California Coastal Conservancy, California Department of Mines and Geology, Campbell Timberland Management, CDFG, City of Fort Bragg, Mendocino Redwood Company, NMFS, Private Landowners, RWQCB, USACE						0	There will be no cost when leaving remaining instream structures in place.
NoR-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, where germane, from MRC Noyo Watershed Analysis to determine stream locations with high instream LWD demand, and utilize CDFG stream habitat data to help determine reaches for LWD placement. Core areas of the South Fork Noyo, Little North Fork Noyo and Redwood Creek are priorities for restoration of LWD.	1	10	Cal Western Railroad, CalFire, California Coastal Conservancy, Campbell Timberland Management, CDFG, City of Fort Bragg, Jackson Demonstration State Forest, Mendocino Redwood Company, NMFS, NOAA RC, Pacific States Marine Fisheries Commission, Private Landowners, RWQCB, Trout Unlimited	62.50	62.50				125	Projects such as this are directly aimed at improving long-term survival for all freshwater life stages of CCC coho salmon. Cost is based on treating 5 miles, assuming 50% of high IP, at a rate of \$25,000/mile. If ELJ are used, total cost would be \$505,600.
NoR-CCC-3.1.1.3	Action Step	Habitat Complexity	Work with the railroad (California Western Railroad) to stop removal of LWD from the Noyo River.	1	10	Cal Western Railroad, CDFG, NMFS PRD, NOAA RC						In-Kind	Cost of educating the railroad regarding the importance of large woody debris and their DFG 1600 program is expected to be part of conducting business.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-3.1.1.4	Action Step	Habitat Complexity	Develop and implement LWD projects in the Noyo River watershed using guidance from Albin (2006), Noyo River Watershed Enhancement Plan, or other credible watershed assessments.	2	10								Cost accounted for in install or enhance existing LWD, boulders or other instream features.
NoR-CCC-3.1.1.5	Action Step	Habitat Complexity	Encourage landowners to implement restoration projects as part of their ongoing operations in stream reaches where large woody debris is lacking.	3	60	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Consultants, Private Landowners						In-Kind	
NoR-CCC-4.1	Objective	Hydrology	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
NoR-CCC-4.1.1	Recovery Action	Hydrology	Improve flow conditions (baseflow conditions)										
NoR-CCC-4.1.1.1	Action Step	Hydrology	Promote off-channel storage to reduce impacts of water diversion (storage tanks for rural residential users) in the upper watershed.	2	60	CalFire, Campbell Timberland Management, Jackson Demonstration State Forest, Mendocino Redwood Company, NOAA RC, Private Landowners						TBD	Cost difficult to determine based on landowner participation.
NoR-CCC-4.1.1.2	Action Step	Hydrology	Promote passive diversion devices designed to allow diversion of water only when minimum streamflow requirements are met or exceeded (CDFG 2004).	1	60	Campbell Timberland Management, CDFG, Jackson Demonstration State Forest, Private Landowners, SWRCB						In-Kind	Need to work with private and large industrial timberland owners to develop water storage for summer needs.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments	
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration		
NoR-CCC-4.1.1.3	Action Step	Hydrology	Provide incentives to water rights holders willing to convert some or all of their water right to instream use via petition change of use and §1707 (CDFG 2004).	2	20	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Consultants, Private Landowners							TBD	
NoR-CCC-4.1.1.4	Action Step	Hydrology	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. Work with the City of Fort Bragg and private landowners in the upper watershed to reduce diversion during the low flow summer period.	3	20	City of Fort Bragg, County of Mendocino, NMFS PRD, SWRCB							TBD	
NoR-CCC-6.1	Objective	Passage	Address the present or threatened destruction, modification or curtailment of the species habitat or range											
NoR-CCC-6.1.1	Recovery Action	Passage	Modify or remove physical passage barriers											
NoR-CCC-6.1.1.1	Action Step	Passage	Assess and restore passage at barriers associated with the California Western Railroad.	2	10	Cal Western Railroad, CDFG, Mendocino Redwood Company	362.00	362.00					724	Cost based on treating 1 barrier at a rate of \$723,858/unit.
NoR-CCC-6.1.1.2	Action Step	Passage	Identify high priority barriers and restore passage per NMFS' Guidelines for Salmonid Passage at Stream Crossings (NMFS 2001a).	2	10	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners							In-Kind	
NoR-CCC-8.1	Objective	Riparian	Address the present or threatened destruction, modification or curtailment of the species habitat or range											
NoR-CCC-8.1.1	Recovery Action	Riparian	Improve canopy cover											

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-8.1.1.1	Action Step	Riparian	Implement riparian canopy projects in the Noyo River watershed using Albin (2006) as guidance. Tributaries to have riparian canopy restoration are: Hayshed Gulch, middle Noyo River, Duffy Gulch, Hayworth Creek, Olds Creek and its tributaries.	2	20		3,250	3,250	3,250	3,250		13,000	Cost based on treating 8 miles of high IP, at 80 acres/mile, at a rate of \$20,057/acre.
NoR-CCC-9.1	Objective	Sediment	Address the present or threatened destruction, modification, or curtailment of the species habitat or range.										
NoR-CCC-9.1.1	Recovery Action	Sediment	Improve instream gravel quality										
NoR-CCC-9.1.1.1	Action Step	Sediment	Treat high priority slides and landings identified in the MRC Noyo River Watershed Analysis or the Jackson Demonstration State Forest Road Management Plan.	1	5	CalFire, Campbell Timberland Management, Mendocino Redwood Company, Private Landowners						TBD	Cost difficult to estimate because assessments for the magnitude of the problem were not available. Additionally, many sediment sources in Core watersheds have been addressed, often through the timber harvest process and these costs should be considered an ongoing operation expense.
NoR-CCC-9.1.1.2	Action Step	Sediment	NMFS and other landowners will work with RCD or NRCS to encourage sediment reduction assessments (first for subwatersheds in Core areas, then for Phase I areas).	2	10	CalFire, Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners, RCD						In-Kind	Since majority of watershed is owned by private timber companies, much of the road network has likely been assessed.
NoR-CCC-9.1.1.3	Action Step	Sediment	Locations for sediment catchment basins should be identified, developed and maintained, where appropriate.	2	60	CalFire, Campbell Timberland Management, Mendocino Redwood Company, Private Landowners	250.00	250.00	250.00	250.00	250.00	3,000	This infrastructure is likely present in many of the Noyo subwatersheds. Additional sites may be installed as part of the timber harvest plan process and the cost for construction will likely be absorbed on a harvest plan by harvest plan basis. Ongoing maintenance will likely occur as part of yearly evaluation prior to the winter period. Maintenance costs are estimated at \$50,000/yr.
NoR-CCC-10.1	Objective	Viability	Address the present or threatened destruction, modification, or curtailment of the species habitat or range										
NoR-CCC-10.1.1	Recovery Action	Viability	Increase spatial structure and diversity										

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)					Comments	
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25		Entire Duration
NoR-CCC-10.1.1.1	Action Step	Viability	Promote development of a life cycle station (Gallagher and Gallagher 2005). A likely location would be at the former egg taking station located on the South Fork Noyo River in the Jackson Demonstration State Forest.	2	10	Campbell Timberland Management, Jackson Demonstration State Forest, Mendocino Redwood Company, Private Landowners	117.50	117.50				235	Cost for a life cycle station estimated at \$234,600/station. Cost does not account for maintenance or data management.
NoR-CCC-10.1.1.2	Action Step	Viability	Continue and improve upon monitoring activities to determine the population status of salmonid adults and smolts in the mainstem and its tributaries.	2	10	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NMFS PRD, Private Landowners	335.00	335.00				670	Cost for annual adult spawner ground surveys estimated at \$16,650/year and smolt outmigration estimated at \$50,300/year for N. Central Coast diversity stratum.
NoR-CCC-10.1.2	Recovery Action	Viability	Increase abundance										
NoR-CCC-10.1.2.1	Action Step	Viability	Work with existing permittees to rescue juvenile coho salmon that are under an imminent risk of stranding and mortality and relocate to suitable habitat when deemed appropriate by NMFS and CDFG.	3	100	Campbell Timberland Management, Jackson Demonstration State Forest, Mendocino Redwood Company, Private Landowners						In-Kind	Inter-agency coordination will continue as part of doing business to rescue juvenile coho salmon until habitat conditions are restored to prevent imminent risk of stranding and mortality.
NoR-CCC-11.1	Objective	Water Quality	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
NoR-CCC-11.1.1	Recovery Action	Water Quality	Implement actions to maintain and restore water temperatures to meet habitat requirements for CCC coho salmon in specific streams (CDFG 2004).										
NoR-CCC-11.1.1.1	Action Step	Water Quality	Implement riparian canopy projects in the Noyo River watershed using Albin (2006) as guidance. Tributaries to have riparian canopy restoration are: Hayshed Gulch, middle Noyo River, Duffy Gulch, Hayworth Creek, Olds Creek and its tributaries.	2	40	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners							Cost accounted for in riparian recovery actions.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-11.1.1.2	Action Step	Water Quality	Improve riparian and instream conditions in rearing habitats by establishing riparian protection zones that extend the distance of a site potential tree height from the outer edge of a channel, and by adding LWD.	3	30	CalFire, Campbell Timberland Management, CDFG, Jackson Demonstration State Forest, Mendocino Redwood Company, NMFS, Private Landowners							Cost of this action step is likely covered through future THPs in the watershed.
NoR-CCC-11.1.1.3	Action Step	Water Quality	Promote streamside conservation measures, including conservation easements, setbacks, and riparian buffers (DFG 2004).	2	20	Campbell Timberland Management, CDFG, Mendocino Land Trust, Mendocino Redwood Company, NMFS PRD, NOAA RC, NRCS, Private Landowners							
NoR-CCC-11.1.1.4	Action Step	Water Quality	Work with landowners to purchase easements on water rights to encourage the maintenance of surface flows.	3	20	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Private Landowners, SWRCB						TBD	
NoR-CCC-19.1	Objective	Logging	Address the present or threatened destruction, modification or curtailment of the species habitat or range										
NoR-CCC-19.1.1	Recovery Action	Logging	Prevent increased landscape disturbance										
NoR-CCC-19.1.1.1	Action Step	Logging	Complete comprehensive assessment/implementation of erosion control measures in the entire North Fork River basin (CDFG 2004).	2	5	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NOAA RC, Trout Unlimited	30.00					30	

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-19.1.1.2	Action Step	Logging	Encourage all permanent and year-round access roads beyond the THP parcel be surfaced after harvest completion with base rock and road gravel, asphalt, or chipseal, and disconnected from the stream network as appropriate.	2	40	Campbell Timberland Management, CDFG, Mendocino Redwood Company, NMFS PRD, NOAA RC, Private Consultants, Private Landowners						In-Kind	
NoR-CCC-19.1.1.3	Action Step	Logging	New THPs should identify problematic legacy roads within WLPZ's, decommission them, and revegetate the area with appropriate native species.	1	10	CalFire, CDFG, Mendocino Redwood Company, Private Consultants, Private Landowners, Trout Unlimited						In-Kind	
NoR-CCC-19.1.1.4	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	Board of Forestry, CalFire, CDFG, Mendocino Redwood Company, NMFS PRD, Private Consultants						In-Kind	
NoR-CCC-19.2	Objective	Logging	Address the inadequacy of existing regulatory mechanisms										
NoR-CCC-19.2.1	Recovery Action	Logging	Prevent increased landscape disturbance										
NoR-CCC-19.2.1.1	Action Step	Logging	Assign NMFS staff to conduct THP reviews of the highest priority areas within the Noyo River watershed.	1	60	CalFire, CDFG, Mendocino County, NMFS PRD, RWQCB						In-Kind	Discouraging incompatible land uses can likely be done through existing regulatory channels utilizing staff time.
NoR-CCC-19.2.1.2	Action Step	Logging	Establish greater oversight and post-harvest monitoring by the permitting agency of operations within Core, and Phase I CCC coho salmon areas.	2	40	Board of Forestry, CalFire, Mendocino Redwood Company, NMFS PRD, Private Consultants						In-Kind	

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments	
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration		
NoR-CCC-19.2.1.3	Action Step	Logging	NMFS staff should provide recommendations on potential restoration projects that could be incorporated into timber harvest plans.	2	10	CalFire, Campbell Timberland Management, NMFS PRD, Private Consultants, Private Landowners							In-Kind	
NoR-CCC-23.1	Objective	Roads/Railroads	Address the present or threatened destruction, modification, or curtailment of the species habitat or range											
NoR-CCC-23.1.1	Recovery Action	Roads/Railroads	Prevent impairment to instream substrate/food productivity (impaired gravel quality and quantity)											
NoR-CCC-23.1.1.1	Action Step	Roads/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.	2	5	Campbell Timberland Management, Mendocino Redwood Company, NMFS PRD, Private Consultants, Private Landowners, Trout Unlimited	50.00						50	
NoR-CCC-23.1.1.2	Action Step	Roads/Railroads	Limit winter use of unsurfaced roads and recreational trails by unauthorized and impacting uses to decrease fine sediment loads.	2	20	CalFire, Campbell Timberland Management, CDFG, Mendocino Redwood Company, Private Landowners								In-Kind
NoR-CCC-23.1.1.3	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.	3	10	Campbell Timberland Management, Mendocino County Department of Public Works, Mendocino Redwood Company, Private Landowners	102.50	102.50					205	Cost for road inventory estimated at \$927/mile. Assume 25% of road network inventoried per year.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-23.1.1.4	Action Step	Roads/Railroads	Encourage County of Mendocino to address and adequately maintain the Sherwood Ridge Road. Encourage County of Mendocino to completely close and monitor gates and barriers during the winter period.	2	10	Campbell Timberland Management, Mendocino County Department of Public Works, Mendocino Redwood Company, Private Landowners						In-Kind	This likely already exists for large timberland owners in the basin.
NoR-CCC-23.1.1.5	Action Step	Roads/Railroads	Design and implement a program of BMPs for road maintenance on private roads similar to the program for public roads (Sommarstrom et al., 2002).	1	20	Mendocino County Department of Public Works, NOAA RC, Private Landowners						In-Kind	Work with Mendocino County DOT to develop cost estimate for BMP cost in Noyo River watershed.
NoR-CCC-23.1.1.6	Action Step	Roads/Railroads	Restoration projects that upgrade or decommission high risk roads in Core areas should be considered an extremely high priority for funding (e.g., PCSRF).	1	10		1,555	1,555				3,110	Cost based on decommission 259 miles of riparian road network at a rate of \$12,000/mile. Cost to upgrade would equal \$5,439,000.
NoR-CCC-23.1.1.7	Action Step	Roads/Railroads	Fully implement the Noyo River TMDL.	3	30	Campbell Timberland Management, CDFG, Mendocino Redwood Company, Private Landowners, RWQCB						In-Kind	
NoR-CCC-23.2	Objective	Roads/Railroads	Address the inadequacy of existing regulatory mechanism										
NoR-CCC-23.2.1	Recovery Action	Roads/Railroads	Prevent increased landscape disturbance										
NoR-CCC-23.2.1.1	Action Step	Roads/Railroads	Establish a moratorium on 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	100	CalFire, Campbell Timberland Management, CDFG, Mendocino County, Mendocino Redwood Company, NMFS PRD, Private Landowners						In-Kind	

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-23.2.1.2	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, Campbell Timberland Management, Mendocino County, Mendocino Redwood Company, NMFS PRD, Private Landowners						In-Kind	This recommendation should be considered standard practice.
NoR-CCC-23.2.1.3	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.	2	60	Cal Western Railroad, CalFire, California Department of Mines and Geology, Campbell Timberland Management, Mendocino Redwood Company, NRCS, Private Landowners, RWQCB						TBD	Costs may vary depending on number of road crossings.
NoR-CCC-23.2.1.4	Action Step	Roads/Railroads	Ensure all existing and new road and railway crossings minimize potential sediment delivery to the stream environment and allow upstream and downstream passage of adult and juvenile coho salmon.	2	20	Cal Western Railroad, CDFG, NMFS HCD, NOAA RC						In-Kind	
NoR-CCC-24.1	Objective	Severe Weather Patterns	Address the inadequacy of existing regulatory mechanisms										
NoR-CCC-24.1.1	Recovery Action	Severe Weather Patterns	Prevent impairment to stream hydrology.										
NoR-CCC-24.1.1.1	Action Step	Severe Weather Patterns	Develop and implement critical flow levels for the mainstem Noyo River impacted by water diversions for the City of Fort Bragg.	3	10	CDFG, NMFS, Private Landowners, SWRCB	31.50	31.50				63	Cost for stream flow model estimated at \$63,005/project.
NoR-CCC-24.1.1.2	Action Step	Severe Weather Patterns	If predicted flows are below a level considered critical to maintain viable rearing habitat for salmonids, measures to reduce water consumption should be initiated by municipal water suppliers and other users in the watershed through conservation programs.	3	60	CDFG, NMFS, Private Landowners, SWRCB						TBD	This action is predicated on above actions. Cost is expected to be minimal due to relatively few diversions in the watershed.

Recovery Strategy Number	Level	Targeted Attribute or Threat	Action Description	Priority Number	Action Duration (Years)	Recovery Partners	Costs (\$K)						Comments
							FY 1-5	FY 6-10	FY 11-15	FY 16-20	FY 21-25	Entire Duration	
NoR-CCC-24.1.1.3	Action Step	Severe Weather Patterns	Identify and work with water users to minimize depletion of summer base flows during drought years.	3	10	Campbell Timberland Management, City of Fort Bragg, Mendocino Redwood Company, Private Consultants, Private Landowners						TBD	Cost depends upon landowner participation.