



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE

Southwest Region  
501 West Ocean Boulevard, Suite 4200  
Long Beach, California 90802- 4213

OCT 19 2005



MEMORANDUM TO: Rodney R. McInnis  
Regional Administrator

FROM: Charlotte Ann Ambrose, PRD Recovery Coordinator  
North Central California Coast Recovery Domain

SUBJECT: 2005 Recovery Outline for the Evolutionarily Significant  
Unit of Central California Coast Coho Salmon  
(*Oncorhynchus kisutch*)

This memorandum requests official review and approval by the Regional Administrator, Rodney R. McInnis, of the attached "2005 Federal Recovery Outline for the Evolutionarily Significant Unit of Central California Coast Coho Salmon" in accordance with the NMFS Interim Recovery Planning Guidance (October 2004). This also serves as a notice to Headquarters that a two-week period for review of the Outline has begun. If Headquarters does not provide comments within two weeks, and the Regional Administrator has no additional comments, it may be assumed that the Outline can be approved and signed by the Regional Administrator. A copy of the approved Recovery Outline should be forwarded to the Recovery Coordinator and Headquarters within 10 days following the Regional Administrator's approval.

For any questions please contact Charlotte Ambrose at 707-575-6068.

	10-19-05		
Rodney R. McInnis Regional Administrator	Date	Concur	Do Not Concur



**2005 Federal Recovery Outline for the  
Central California Coast  
Evolutionarily Significant Unit of Coho Salmon**

*Prepared by*  
**National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Region Protected Resources Division  
North-Central California Coast Recovery Domain**

**2005 Federal Recovery Outline  
Central California Coast Coho Salmon ESU**

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**Disclaimer**

*This outline is meant to serve as an interim guidance document to outline recovery efforts, including recovery planning for the Central California Coast coho salmon Evolutionarily Significant Unit until a final recovery plan is developed and approved. A recovery outline is not subject to public review but intended primarily for internal use by the National Marine Fisheries Service as a pre-planning document. This is not a regulatory document and the recommendations and statements found herein are non-binding and intended to guide, rather than require, actions (provided funding is available). Nothing in this outline should be considered as a commitment or requirement for any governmental agency or member of the public. Formal public participation will be invited upon the release of the draft recovery plan for this Evolutionarily Significant Unit. However, any new information or comments that members of the public may wish to offer as a result of this recovery outline will be taken into consideration during the recovery planning process. Recovery planning has been initiated and the recovery plan is targeted for completion by 2007. We invite public participation in the planning process. Interested parties may contact Charlotte Ambrose, North Central California Coast Recovery Coordinator, 777 Sonoma Avenue, Room 325, Santa Rosa, CA 95404.*

## I. Purpose and Overview

The Federal Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*) mandates the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) to develop and implement plans for the conservation and survival of NMFS listed species, *i.e.*, recovery plans. According to NMFS' Interim Recovery Planning Guidance (2004):

Recovery is the process by which listed species and their ecosystems are restored and their future safeguarded to the point that protections under the Federal ESA are no longer needed. A variety of actions may be necessary to achieve the goal of recovery, such as the ecological restoration of habitat or implementation of conservation measures with stakeholders. However, without a plan to organize, coordinate and prioritize the many possible recovery actions, the effort may be inefficient or even ineffective.

The recovery plan serves as a road map for species recovery – it lays out where we need to go and how best to get there.

According to the ESA § [section] 4(f), recovery plans must contain: (1) objective measurable criteria for delisting the species; (2) descriptions of site-specific management actions necessary to achieve the plan's goal for the conservation and survival of the species; and, (3) estimates of the time and cost for implementing the recovery plan.

Primarily, a recovery plan should do the following:

- ♦ Delineate those aspects of the species' biology, life history, and threats that are pertinent to its endangerment and recovery;
- ♦ Outline and justify a strategy to achieve recovery;
- ♦ Identify the actions necessary to achieve recovery of the species; [and]
- ♦ Identify goals and criteria by which to measure the species' achievement of recovery.

Recovery plans can also serve the following secondary functions:

- ♦ Serve as outreach tools by articulating the reasons for a species' endangerment, as well as why the particular suite of recovery actions described is the most effective and efficient approach to achieving recovery for the species;

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- ♦ Help potential cooperators and partners understand the rationale behind the recovery actions identified, and assist them in identifying how they can facilitate the species' recovery;
- ♦ Serve as a tool for monitoring recovery activities; [and,]
- ♦ Be used to obtain funding for NMFS and its partners by identifying necessary recovery actions and their relative priority in the recovery process.

Recovery plans are guidance documents, not regulatory documents.

...[T]he ESA clearly envisions recovery plans as the central organizing tool for guiding each species' recovery process. They should also guide Federal agencies in fulfilling their obligations under section 7(a)(1) of the ESA, which calls on all Federal agencies to "utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species..." In addition to outlining strictly proactive measures to achieve the species' recovery, plans provide context and a framework for implementation of other provisions of the ESA with respect to a particular species, such as section 7(a)(2) consultations on Federal agency activities, [or] development of Habitat Conservation Plans....

As part of the pre-planning phase of recovery planning, policy guidance (NMFS 2004) requires the development of a Recovery Outline. A recovery outline is intended primarily for internal use by NMFS as a pre-planning document that: (1) presents a preliminary conservation strategy to guide recovery actions in a systematic, cohesive manner until a recovery plan is available and (2) provides a pre-planning framework for recovery plan development and decision-making. This recovery outline has been developed to guide the recovery planning process for the CCC coho salmon ESU and provide public notice of NMFS' intent to prepare a draft recovery plan.

The NMFS Southwest Region Protected Resources Division in Santa Rosa, California (SWR Santa Rosa), is responsible for facilitating the development of recovery plans for the following listed salmon and steelhead Evolutionarily Significant Units (ESUs): Central California Coast steelhead (*Oncorhynchus mykiss*), Northern California steelhead (*Oncorhynchus mykiss*), California Coastal Chinook (*Oncorhynchus tshawytscha*) and Central California Coast coho salmon (*Oncorhynchus kisutch*) (CCC coho salmon). The NMFS Strategic Plan for 2005 establishes a high priority focus on recovery plan development over the next five years. SWR Santa Rosa will proceed with recovery planning by developing draft ESU specific recovery plans in the following sequence: CCC coho salmon ESU, California Coastal Chinook salmon ESU,

Central California Coast steelhead ESU and Northern California steelhead ESU. Each plan will contribute to a final multi-species recovery plan.

## **II. Introduction**

**Species Name:** Central California Coast coho salmon (*Oncorhynchus kisutch*)

**Listing Status:** Endangered [Effective August 29, 2005]

**Date Listed:** June 28, 2005 [Final Rule June 28, 2005, 70 FR 37160]

**Lead Field Office/Contact Biologist:** North Central California Coast Recovery Domain (NCCC Domain), Charlotte Ambrose, Recovery Coordinator, NMFS, 777 Sonoma Avenue, Room 325, Santa Rosa, California 95404.

**Available Information & Treatment of Uncertainties:** Good *et al.* (2005) found expanded analyses since the 1996 listing of the CCC coho salmon ESU that includes presence-absence, juvenile abundance for 13 river basins, smolt counts from two streams and one adult time series information for a population with mixed wild and hatchery fish. Good *et al.* (2005) concludes: coho salmon continue to decline within the ESU; breeding groups have been lost from significant parts of the CCC coho salmon ESU historical range; and, in the southern portion of the range distinct populations are either nearing extinction or extinct.

## **III. Recovery Status Assessment**

**Range:** All naturally spawned populations of CCC coho salmon ESU from Punta Gorda in northern California south to and including the San Lorenzo River in central California, as well as populations in tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system (Weitkamp *et al.* 1995). Four artificial propagation programs are considered part of this ESU: the Don Clausen Fish Hatchery Captive Broodstock Program, the Scott Creek/King Fisher Flats Conservation Program, the Scott Creek Captive Broodstock Program, and the Noyo River Fish Station egg-take coho hatchery program (70 FR 37160). The artificially propagated stocks have been found to be genetically no more than moderately divergent from the natural populations (70 FR 37160).

**Historical Demographic and Genetic Structure:** The ESA requires that recovery plans for listed species include objective, measurable criteria that can be used to determine when species can be removed from the list. These criteria must include both an explicit analysis of threats under the five listing factors in addition to evaluation of population or demographic parameters.

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The North-Central California Coast Domain (NCCCD) Technical Recovery Team (TRT) is responsible for developing the biological viability criteria for the CCC coho salmon ESU for the recovery plan.

Salmon and steelhead populations have persisted for hundreds of years with pressures from ecological and evolutionary dynamics played out across the landscape and over time. This historical perspective, absent anthropogenic influences, establishes a baseline for evaluating current and future scenarios of salmon and steelhead status and viability (Agrawal *et al.* 2005). The NCCCD TRT has completed their draft technical memorandum “An analysis of historical population structure for Evolutionarily Significant Units of Chinook salmon, coho salmon and steelhead in the North Central California Coast Recovery Domain” (Agrawal *et al.* 2005) that provides this historical perspective for the CCC coho Salmon ESU. The methods and assumptions that serve as the foundation to their analysis can be found detailed in their report but depend “almost entirely on (1) results from the connectively-viability analysis to putative populations... and (2) analyses of available genetic data”. Additional recovery plan products expected from the TRT in 2006 include population viability criteria, ESU viability criteria and recommendations for monitoring and research.

According to Agrawal *et al.* (2005), functionally independent populations of CCC coho salmon were likely to have occupied many moderate to large watersheds along the coast under historical conditions, but environmental conditions have been less than ideal for coho salmon along the coast between the Russian River and the Golden Gate. Historical populations of CCC coho salmon likely persisted in regions of the Bay that resembled the environmental conditions of coastal basins. Historical populations of coho salmon in smaller watersheds are thought to have been dependent on immigration from the larger populations for long-term persistence.

According to Agrawal *et al.* (2005), following are definitions of the three population classes:

- ♦ “Functionally Independent Populations” are those with a high likelihood of persisting over 100-year time scales and conform to the original definition of independent “viable salmonid population.”
- ♦ “Potentially Independent Populations” have a high likelihood of persisting in isolation over 100-year time scales, but are too strongly influenced by immigration from other populations to exhibit independent dynamics.
- ♦ “Dependent Populations” have a substantial likelihood of going extinct within a 100-year time period in isolation, yet receive sufficient immigration to alter their dynamics and extinction risk, and presumably increase persistence or occupancy.



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The following list provides the NCCCD TRT conclusions on functionally independent and potentially independent populations of coho salmon in the CCC coho salmon ESU. Historical populations of coho salmon in watersheds not mentioned by name are considered dependent populations.

Abalobadiah Creek (Dependent)	Novato Creek (Dependent)
Alameda Creek (Dependent)	Noyo River ( <b>Functionally Independent</b> )
Albion River ( <b>Functionally Independent</b> )	Pescadero Creek ( <b>Functionally Independent</b> )
Alder Creek (Dependent)	Petaluma River (Dependent)
Americano Creek (Dependent)	Pilarcitos Creek (Dependent)
Aptos Creek (Dependent)	Pine Gulch (Dependent)
Arroyo Corte Madera del Presidio (Dependent)	Point Arena Creek (Dependent)
Arroyo de los Frijoles (Dependent)	Pomponio Creek (Dependent)
Big River ( <b>Functionally Independent</b> )	Pudding Creek (Dependent)
Big Salmon Creek (Dependent)	Redwood Creek (Dependent)
Bodega Harbor (Dependent)	Russian Gulch (Dependent)
Brush Creek (Dependent)	Russian Gulch (Dependent)
Cascade Creek (Dependent)	Russian River ( <b>Functionally Independent</b> )
Caspar Creek (Dependent)	Salmon Creek (Dependent)
Corte Madera Creek (Dependent)	San Francisquito Creek (Dependent)
Cottaneva Creek (Dependent)	San Gregorio Creek (Dependent)
Coyote Creek (Dependent)	San Leandro Creek (Dependent)
DeHaven Creek (Dependent)	San Lorenzo Creek (Dependent)
Drakes Bay (Dependent)	San Lorenzo River ( <b>Functionally Independent</b> )
Elk Creek (Dependent)	San Mateo Creek (Dependent)
Garcia River ( <b>Functionally Independent</b> )	San Pablo Creek (Dependent)
Gazos Creek (Dependent)	San Vicente Creek (Dependent)
Greenwood Creek (Dependent)	Schooner Gulch (Dependent)
Guadalupe River (Dependent)	Scott Creek (Dependent)
Gualala River ( <b>Functionally Independent</b> )	Scotty Creek (Dependent)
Hare Creek (Dependent)	Sonoma Creek (Dependent)
Howard Creek (Dependent)	Soquel Creek (Dependent)
Jackass Creek (Dependent)	Stemple Creek (Dependent)
Juan Creek (Dependent)	Stevens Creek (Dependent)
Jug Handle Creek (Dependent)	Ten Mile River ( <b>Functionally Independent</b> )
Lagunitas Creek ( <b>Functionally Independent</b> )	Tunitas Creek (Dependent)
Little River (Dependent)	Usal Creek (Dependent)
Mallo Pass Creek (Dependent)	Waddell Creek (Dependent)
Mill Creek (Dependent)	Wages Creek (Dependent)
Miller Creek (Dependent)	Walker Creek ( <i>Potentially Independent</i> )
Napa River (Dependent)	Whitehouse Creek (Dependent)
Navarro River ( <b>Functionally Independent</b> )	Wilder Creek (Dependent)

**Biological Assessment:** Half of the identified “functionally independent” historical populations of CCC coho salmon are believed extirpated. Low effective population size, low over winter and summer survival of juveniles; limited smolt production; low productivity; reduced spawning success; and limited spatial distribution throughout the ESU are the principle limiting population factors that currently suppress prospects for recovery of the ESU. The threats influencing these limiting factors are pervasive throughout the ESU and vary among populations within the ESU. Most threats are associated with quantity and quality of instream and riparian habitats and water. Current and continued degradation and loss of habitats is critically affecting the survival and productivity of CCC coho salmon ESU populations over the short- and long-term. Limiting factors are inexorably linked to one-another relative to cause and effect (*e.g.*, a degraded floodplain and channel structure can lead to sedimentation process dysfunction and estuarine degradation which leads to reduced survival of salmonids). While not all factors affect CCC coho salmon equally, these and other factors must be addressed at varying levels to achieve survival and, thus, recovery of this ESU:

- ♦ **Loss of Channel Complexity, Floodplain and Estuarine Habitats:**
  - Loss of side-channel, alcove, tributary, pool, floodplain and estuarine habitats from anthropogenic disturbances.
  - Decreased stream channel sinuosity and habitat complexity due to excessive removal of habitat forming structures (*e.g.*, large woody debris and boulders).
  - Decreased streambank integrity due to riparian disturbances.
  - Stream channel alterations for flood control purposes and gravel mining.
  - Other flow and channel alterations leading to complete/partial loss of channel and estuarine habitats and/or function.
  - Estuary breaching or dredging.
- ♦ **Loss of Riparian Habitats:**
  - Simplification or removal of riparian areas due to land uses such as timber removal, agriculture and urbanization.
  - Introduction of invasive and non-native vegetation.
- ♦ **Sediment:**
  - Disruption of the natural sediment routing mechanisms (*e.g.*, excess sediment in stream channels) from land use activities such as timber harvest operations, agriculture practices and urbanization.
- ♦ **Water Quantity:**
  - Flow alteration from large dams.
  - Water diversions.
  - Wells and aquifer pumping.
  - Seasonal dams.
  - Impermeable surfaces leading to increased runoff and less aquifer recharge.
- ♦ **Water Quality:**
  - Point and non-point source pollution from agricultural and urban runoff.
- ♦ **Access:**
  - Passage obstructions (*e.g.*, dams, culverts, sediment retention structures and bridges) to historical habitats.

- Water impoundments, hydroelectric facilities, push up dams for small riparian diversions, surface and subsurface water withdrawals, and water conveyance and flood control systems.
- Adequacy of fish passage devices and screened diversions.

#### **IV. Threats ~ Listing Factors Assessment**

The Secretary of Commerce has determined, through the regulatory process, that the CCC coho salmon ESU is an endangered species because of the combination of the following factors outlined in the 1996 Federal Register Notice (October 31, 1996, 61 FR 56138) and the more recent final rule (June 28, 2005, 70 FR 37160):

##### **1) Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range**

Water diversions for agriculture, flood control, and domestic purposes have greatly reduced or eliminated historically accessible CCC coho salmon habitat and degraded remaining habitat. Forestry, agriculture, mining and urbanization have degraded, simplified, and fragmented CCC coho salmon habitat. Studies indicate that in most western states, about 80 to 90 percent of historical riparian habitat has been eliminated. The destruction or modification of estuarine areas has resulted in the loss of important rearing and migration habitats. Losses of habitat complexity and habitat fragmentation have also contributed to CCC coho salmon decline. Sedimentation from extensive and intensive land use activities (*e.g.*, timber harvests, road building, livestock grazing, and urbanization) is recognized as a primary cause of habitat degradation throughout the range of CCC coho salmon ESU.

*The loss, damage and change to the CCC coho salmon natural habitat are primary driving factors in the decline of this species.*

##### **2) Overutilization for Commercial, Recreational, Scientific, or Educational Purposes**

Collection for scientific research and education programs has had little or no impact on CCC coho salmon populations. Most of the scientific collection permits are issued to environmental consultants, Federal resource agencies, and universities by the California Department of Fish and Game. Regulation of take is controlled by conditioning individual permits.

Retention of coho salmon by commercial troll fishers has been prohibited since 1993 and recreational ocean fisheries since 1994/1995. The conservation objective set by the Pacific Fishery Management Council for the past five seasons has been an overall ocean exploitation of less than 13 percent for CCC coho salmon ESU. Recreational fishing is prohibited for coho

salmon throughout the central California coast and incidental mortality, including poaching, is predicted to be low due to migration timing and the season for recreational fishing of steelhead (Good *et al.* 2005).

*Both freshwater and ocean harvest impacts to coho salmon have been reduced, which has contributed to reducing the extinction risk for the ESU.*

### **3) Disease or Predation**

Infectious disease can influence adult and juvenile salmon survival. They are exposed to numerous bacterial, protozoan, viral, and parasitic organisms in spawning and rearing areas, hatcheries, migratory routes, and the marine environment. In general, very little current or historical information exists to quantify changes in infection levels and mortality rates attributable to these diseases. However, studies have shown that naturally spawned fish tend to be less susceptible to pathogens than hatchery-reared fish. Coho salmon have co-evolved with specific communities of these organisms, but the widespread use of artificial propagation has introduced exotic organisms not historically present in a particular watershed. Habitat conditions such as low water flows and high temperatures can exacerbate susceptibility to infectious diseases.

Introductions of non-native species and habitat modifications have resulted in increased predator populations in numerous rivers and lakes. Predation by marine mammals (harbor seals and California sea lions) is a concern due to the increase in their numbers along the Pacific Coast combined with the dwindling run sizes of CCC coho salmon. Most studies show, however, that salmonids appear to be a minor component of the diet of marine mammals and predation is coincidental with migration rather than dependent upon them. Predation by seabirds can also influence the survival of juvenile salmon.

*While localized effects of disease and predation may be occurring across the range, these factors are believed to be minor relative to the coastwide decline of the CCC coho salmon ESU population.*

### **4) Inadequacy of Existing Regulatory Mechanisms**

NMFS staff conduct section 7 consultations with other Federal action agencies that fund, conduct or authorize projects in the range of the CCC coho salmon ESU and provide technical assistance on Habitat Conservation Planning. Under the Pacific Coastal Salmon Recovery Program, NMFS

provides annual grants to the State of California to assist salmon recovery efforts in coastal watersheds.

A coho salmon recovery plan was formally approved and adopted by the California Fish and Game Commission on February 5, 2004, and a decision was made to formally list coho salmon under the California ESA. The State is developing an implementation plan to prioritize identified recovery actions. The State has integrated the coho recovery plan with its coastal salmonid habitat restoration grant program to ensure high priority recovery plan actions in high priority watersheds receive a greater likelihood of funding. The long-term prospects for plan funding and implementation are uncertain.

The North Coast Region Water Quality Control Board is updating its North Coast Basin Plan, which will establish water quality standards for all of the northern California rivers and streams. These plans will also incorporate newly developed Total Maximum Daily Load standards that are being developed for those water bodies that are listed as impaired under section 303(d) of the Federal Clean Water Act. These plans will likely help reduce human impacts to the aquatic environments and thus protect coho salmon.

The California Land Stewardship Institute manages a statewide voluntary certification program through the Resource Conservation Districts (*i.e.*, Fish Friendly Farming) for viticultural practices designed to reduce soil erosion and sediment input to salmonid streams.

Counties have formed, under the FishNet 4C Memorandum of Understanding, to coordinate efforts such as road maintenance, fish barrier assessment and removal, riparian and grading ordinances, erosion control, implementation of bioengineering projects. Some counties are additionally developing guidelines for their public works departments that enhance or protect salmonid habitat.

Local water districts, watershed councils, sub-watershed groups, landowners, environmental groups, non-profit organizations and others throughout the range of the CCC coho salmon ESU are developing restoration plans and have worked to implement habitat restoration projects.

*Despite the Federal and non-Federal efforts, due to funding and implementation uncertainties and the voluntary nature of many programs, the regulatory mechanisms that exist do not provide sufficient certainty that combined Federal and non-Federal efforts are reducing threats to CCC coho salmon ESU.*

### 5) Other Natural and Manmade Factors Affecting the Species' Continued Existence

Long-term trends in rainfall and marine productivity associated with atmospheric conditions in the North Pacific Ocean may have a major influence on coho salmon production. The paucity of high quality near-shore habitat, coupled with variable ocean conditions, makes freshwater rearing habitat more essential for the survival and persistence of the CCC coho salmon ESU.

Good *et al.* (2005) indicates that artificial propagation of coho salmon within the CCC coho salmon ESU has been reduced since the 1996 listing of CCC coho salmon ESU as threatened. Propagation continues at the Noyo River and Scott Creek facilities, and two captive broodstock populations have recently been established (Don Clausen Fish Hatchery and the Scott Creek Captive Broodstock Program). Genetic diversity risk associated with out-of-basin transfers appears to be minimal, but diversity risk from domestication selection in the remaining hatchery programs remains a concern (Good *et al.* 2005). An assessment of the effects of these four artificial propagation programs on the viability of the ESU in-total concluded that they decrease risk of extinction to some degree by contributing to increased ESU abundance and diversity, but have a neutral or uncertain effect on the productivity or spatial structure of the ESU.

*The two captive broodstock programs will hopefully contribute to future abundance and improved spatial structure of the ESU, but out-planting benefits are uncertain. Genetic diversity risk associated with out-of-basin transfers appears to be minimal, but diversity risk from domestication selection and low effective population sizes in the remaining hatchery programs remains a concern.*

### V. Conservation Assessment

Protective efforts, as evaluated pursuant to the "Policy for Evaluation of Conservation Efforts When Making Listing Decisions" (68 FR 15100), across the geographic area of the CCC coho salmon ESU were evaluated when the ESU was listed as threatened in 1996 (61 FR 56138) and most recently when the ESU was upgraded to endangered (69 FR 33102; 70 FR 37160). Efforts ranging in scope from regional conservation strategies to local watershed initiatives were evaluated. While these and other efforts are underway, and collectively enhance the potential that populations and habitats of the CCC coho salmon ESU can be protected, they have been found as not providing sufficient certainty of implementation and effectiveness to substantially ameliorate the level of assessed extinction risk for this ESU (70 FR 37160).

## VI. Preliminary Recovery Strategy

**Recovery Priority Number:** A Priority Number of “1” was assigned to the CCC coho salmon ESU in accordance with the Recovery Priority Guidelines (55 FR 24296, Section B) and indicates the priority of the species for recovery plan development and implementation. This ranking for the CCC coho salmon ESU is based on a high degree of threat, a high recovery potential and an anticipated conflict with development projects or other economic activity. The Biological Review Team (Good *et al.* 2005) formed to conduct a status review of coho salmon populations in Washington, Oregon and California unanimously agreed that natural populations of coho salmon in the CCC coho salmon ESU are presently in danger of extinction (Weitkamp *et al.* 1995; Good *et al.* 2005). This determination was made due to: 1) substantially low abundance of coho salmon from historical levels [*e.g.*, more than 50 percent of coho streams no longer have spawning runs]; 2) long-term downward trends; 3) degraded habitats; 4) threats to genetic integrity due to hatchery plantings; and 5) recent droughts and changes in ocean productivity (Weitkamp *et al.* 1995; Good *et al.* 2005). A high potential for recovery is possible for the CCC coho salmon ESU based on the likelihood that freshwater impacts can be substantially controlled or reduced through habitat protection, implementation of best management practices and focused restoration. Over 80 percent of the range of CCC coho lies under private ownership. Forestry is the predominate land use; however, high levels of forest conversion to agriculture and urbanization are currently underway. Imminent land use changes are anticipated to conflict with the conservation needs of the CCC coho salmon ESU.

### **Recovery Vision Statement:**

- ♦ Develop and implement a recovery plan for the conservation and survival of the CCC coho salmon ESU pursuant section 4(f)(1) of the Federal ESA and the most recent judicial and policy guidance.
- ♦ All methods and procedures, which are necessary, shall be used to bring the CCC coho salmon ESU to the point at which the measures pursuant to the Federal ESA are no longer necessary. Such methods and procedures shall result in the establishment and maintenance of a viable population of the CCC coho salmon ESU to include increases in abundance, population growth rate, population spatial structure and greater genetic/life history diversity.

### **Priorities to Address Low Effective Population Size and Limited Spatial Distribution:**

- ♦ Conduct and improve research and monitoring on distribution, status and trends.

- ♦ Protect and restore watershed and estuarine habitat complexity and connectivity.
- ♦ Improve freshwater habitat quantity and quality.
- ♦ Promote and improve operations of current recovery hatcheries and develop Hatchery and Genetic Management Plans to minimize negative influences of hatcheries.
- ♦ Improve enforcement of fishery rules and regulations.

**Priorities to Address Low Winter and Summer Survival of Juveniles, Limited Smolt Production, Reduced Spawning Success and Low Productivity:**

- ♦ Focus freshwater habitat restoration (*e.g.*, erosion control, bank stabilization, riparian protection and restoration and reintroduction of large woody debris).
- ♦ Improve riparian protections and habitats.
- ♦ Balance water supply and allocation with fisheries' needs through water rights programs, identification and designation of fully appropriated watersheds, development of passive diversion devices and/or offstream storage, elimination of illegal water diversions, and improved criteria for water drafting, storage and dam operations.
- ♦ Improve agricultural, instream gravel mining and forestry practices.
- ♦ Improve county/city planning, regulations (*e.g.*, riparian and grading ordinances) and county road maintenance programs.
- ♦ Improve State road maintenance and management.
- ♦ Remove/upgrade man-made fish passage barriers (*e.g.*, watercourse crossings, dams and others) in high priority watersheds and stream reaches.
- ♦ Screen water diversion structures in anadromous fish bearing streams.
- ♦ Replace existing outdated septic systems and improved wastewater management.
- ♦ Promote concept of multi-uses/recycling of water to increase water supply (*e.g.*, use of tertiary treated wastewater for golf courses and other appropriate uses).
- ♦ Identify and treat point and non-point source pollution to streams from wastewater, agricultural practices and urban environments.
- ♦ Modify channel and flood control maintenance practices, where appropriate, to increase stream and riparian complexity.
- ♦ Eliminate artificial breaching of sandbars for improvements in channel and estuarine habitats.
- ♦ Improve understanding of life-stage survival at the sub-population scale through focused research and monitoring.
- ♦ Provide outreach to Federal action agencies regarding section 7(a)(1) and the carrying out of programs that conserve and recover Federally listed salmonids.
- ♦ Encourage enforcement, improved performance and needed revisions to pertinent State and local rules and regulations such as Forest Practice Rules, Urban Stormwater Permits and others.



## **VII. Preliminary Recovery Action Plan**

*Goal: Ensure NMFS is fulfilling its obligation under the Federal ESA to conserve and recover the CCC coho salmon ESU population to the extent it is healthy, harvestable, and sustainable and is providing substantial environmental, cultural, and economic benefits. NMFS Santa Rosa shall focus primarily on linking and coordinating ESA programs to recovery planning and developing stronger and more collaborative partnerships with Federal and non-Federal entities whose decisions affect salmon recovery. Privately owned lands represent a large proportion of the range of the CCC coho salmon ESU. Thus, while those actions outlined below are expected to contribute to the reduction of threats to the ESU, the success of recovery will hinge on stakeholder confidence in the process, the credibility of the final document and the extent of implementation across the landscape for identified recovery actions.*

### **Federal Programs and Recovery Planning:**

#### Section 4(f)(1) ~ Recovery Planning

- ♦ Create a database which integrates ESA programs such as critical habitat designations, section 7 consultations, habitat conservation plans, section 4(d) rules and other decision-making processes with recovery planning products.

#### Section 6 ~ Cooperation with States

- ♦ Coordinate with The State of California on the development of a section 6 agreement.

#### Section 7 ~ Interagency Cooperation

- ♦ Outreach to other Federal action agencies to improve fulfillment of ESA section 7(a)(1) obligations which states: “all Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act [the ESA] by carrying out programs for the conservation of endangered species and threatened species.”
- ♦ Identify, and take action on, methods to improve interagency cooperation.
- ♦ Develop a streamlined section 7 consultation process in the Santa Rosa office and re-allocate staff time towards salmon recovery plan development and implementation.
- ♦ Identify a consistent suite of conservation measures that can be used in section 7 consultations to address threats to the CCC coho salmon ESU.
- ♦ Develop a tracking system of permits and implementation/effectiveness of recommendations (e.g., incidental take; terms and conditions).

- ♦ Create a dialog with other State and Federal agencies regarding overlapping and diverging responsibilities such as water allocations and competing listed species needs.

Section 9 ~ Enforcement

- ♦ Coordinate with the NMFS Office of Law Enforcement and enforcement attorneys during the recovery plan development.

Section 10(a)(1)(A) ~ Research Permitting

- ♦ Develop a formal process that outlines and prioritizes research needs and allows for a streamlined permitting process for applications that address priorities.
- ♦ Improve the application procedure to assist the applicant in providing NMFS with a complete application upon the first submission for more efficient and timely processing.
- ♦ Improve the tracking system of annual report submissions by applicants to NMFS.
- ♦ Compile annual reporting data in a geo-referenced database.

Section 10(a)(1)(B) ~ Habitat Conservation Program

- ♦ Educate pertinent parties on the value of the habitat conservation planning program.
- ♦ Improve and streamline the habitat conservation planning processes to encourage landowner participation.

Southwest Region Program Coordination

- ♦ Foster higher levels of coordination of activities within, or unique to, specific NOAA divisions and programs in California that support recovery of CCC coho salmon ESU.
  - Improve communication between Sustainable Fisheries Division, Protected Resources Division and Habitat Conservation Division;
  - Apprise Santa Cruz Laboratory of recovery planning events and progress;
  - Invite NOAA Restoration Center into planning processes to align restoration activities and priorities with specific recovery needs of CCC coho salmon ESU.
- ♦ Apply and utilize other pertinent laws to effectively target mitigation measures to reduce threats to CCC coho salmon ESU (*e.g.*, Fish and Wildlife Coordination Act).
- ♦ Initiate coordination with various funding sources such as the Natural Resources Conservation Service to highlight possible Farm Bill funding priorities (*e.g.* Environmental Quality Incentives Program, Conservation Security Program, Wildlife Habitat Incentive Program, *etc.*).
- ♦ Increase efficiency and support the development of NMFS documents based on the best available scientific and commercial information by developing a spatially-linked (geo-referenced) relational database that provides the best available information on the distribution, abundance and productivity of listed salmonids.

Southwest Region Programs Completed or Underway

- ♦ Regional General Permit 12: Army Corps of Engineers permit to streamline California Department of Fish and Game restoration grant funding activities (*Completed*).
- ♦ Complete programmatic permit with Army Corps of Engineers to authorize restoration projects not permitted under California Department of Fish and Game grants process (*Completion date August 2006*).
- ♦ State bill signed by the Governor endorsing California Department of Fish and Game and NMFS diversion guidelines as an interim measure for maintaining instream flows to protect fisheries (Public Resources Code, Division 10, Section 10800 – 11005).
- ♦ Water Rights Program and Guidelines for limiting diversions to high flow months and maintaining adequate bypass flows (*Underway*).
- ♦ California Department of Fish and Game/NMFS Water Diversion Guidelines (*Completed*).
- ♦ Gravel Mining Guidelines (*Completed*).
- ♦ Timber Harvest Guidelines (*in draft ~ completion date January 2006*).
- ♦ Fish Friendly Farming program (*Underway*).

Southwest Region Programs Anticipated

- ♦ Bank Stabilization Guidelines
- ♦ Groundwater Management Guidelines
- ♦ Desalination Management Guidelines

**State, County, City and Local Agency Coordination with Recovery Planning:**

- ♦ Identify on-going efforts and assess their effectiveness in facilitating recovery of the CCC coho salmon ESU.
- ♦ Assess roles, responsibilities and opportunities with other agencies to identify possible program streamlining.
- ♦ Evaluate the recently developed, and State approved, February 2004 Recovery Strategy for California Coho Salmon and integrate, where appropriate, into the draft Federal CCC coho salmon ESU Recovery Plan.
- ♦ Continue staff participation in county General Plan updates and county programmatic strategies such as FishNet 4C and Santa Cruz county Integrated Watershed Resources Program (*Continuous*).
- ♦ Conduct outreach to, and work with, agencies such as water and sewer districts on the types of best management practices to support CCC coho salmon ESU recovery.
- ♦ Provide guidance to State Water Resources Control Board and county governments on ground water management and issuance of well permits.

- ♦ Facilitate dissemination of salmon life history information and best management practices to other agencies and their staff including engineers, maintenance crews, consultants and others for activities that affect the recovery options of salmon.
- ♦ Create a dialog regarding overlapping and diverging responsibilities such as water allocations and competing listed species needs.

**General Outreach:**

- ♦ Develop outreach plans and conduct outreach to the public, stakeholders and private organizations (*e.g.*, Sustainable Conservation, Natural Resources Conservation Service, Nature Conservancy, Resource Conservation Districts, schools, media, etc...).
- ♦ Promote recognition of entities improving their practices for the benefit of CCC coho salmon.

**VIII. Pre-planning Decisions**

**Product:** Draft Recovery Plan for CCC coho salmon ESU

**Scope of Recovery Effort:**

Species  X  Recovery Unit      Multi-Species      Ecosystem    

**Recovery Plan Preparation:** NMFS, Southwest Region Protected Resources Division, will initiate the preparation of a draft recovery plan for CCC coho salmon ESU (using the most recent Recovery Planning Guidance from October 2004) concurrent with the TRT distribution of the draft reports being prepared for the salmon and steelhead ESUs in the North Central California Coast Recovery Domain. NMFS will work closely with the California Department of Fish and Game to ensure appropriate integration and collaboration between the State Coho Recovery Planning process and the Federal recovery planning process. Primary authorship of the Recovery Plan is the responsibility of NMFS. Outreach by NMFS to State, Federal and private partners will be central to the recovery effort.

**Administrative Record:** The administrative record will be located in the Santa Rosa office.

**Schedule for Draft Modules of CCC coho salmon ESU Recovery Plan:**

*Summer 2005*

- ♦ Complete Recovery Outline
- ♦ Publish Notice of Intent to Prepare a Recovery Plan

*Winter 2005*

- ♦ Initiate recovery planning website for public outreach

*Summer 2006*

- ♦ Develop Recovery Plan Background Modules

*Fall 2006*

- ♦ Develop Conservation Efforts Module
- ♦ Develop Threats Assessment Module
- ♦ Develop Biological Needs and Constraints Module

*Winter 2006/2007*

- ♦ Develop Strategy for Recovery Module
- ♦ Develop Recovery Goals Module
- ♦ Develop Recovery Objectives Module

*Spring 2007*

- ♦ Develop Recovery Implementation Schedule
- ♦ Complete Draft Recovery Plan

**Outreach and Stakeholder Participation:** While NOAA Fisheries is responsible for adopting recovery plans, the plans will have a greater likelihood of success if they are developed in partnership with entities that have the responsibility and authority to implement recovery actions. Privately owned lands represent a large proportion of the range of the CCC coho salmon ESU. Thus, the success of recovery will depend, in a large part, on stakeholder confidence in the process and the credibility of the final document. In the Spring of 2006, NMFS will begin a series of outreach events, workshops and presentations in various forums to ensure high levels of communication and interaction with the public, stakeholders and agencies throughout the development and finalization process.

**IX. Anticipated Recovery Planning Actions**

(1) NMFS has appointed a TRT for the North Central California Coast Recovery Domain comprised of scientists tasked to develop biological viability criteria for the four ESUs in the Domain. The final products from the TRT are expected in 2006.

(2) NMFS PRD staff are currently developing a strategy to initiate the development of the recovery plan per the most recent Federal guidelines to include inter- and intra-agency coordination and collaboration on regulatory operations, public input and plan development.

(3) NMFS PRD will coordinate with NMFS Habitat Conservation Division, Restoration Center, Science Center and other NOAA cooperators to ensure consistency and effectiveness in the recovery plan development.

(4) NMFS PRD will work with pertinent parties such as other Federal agencies, State agencies, county/city governments and others to evaluate best management practices and existing regulatory programs for integration into recovery planning.

(5) NMFS will begin outreach efforts to ensure the highest level of public participation in the process. Outreach will consist of website updates on recovery plan process, public meetings, development of educational materials and public input on the draft recovery plan.

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