
CHAPTER 12:

IMPLEMENTATION & COSTS

“Recovery plans and the threats assessment process will provide the guide map for priority setting. Once recovery plans are in place, species protection and conservation will be facilitated by ongoing use of the plans to guide policy and decision-making. The Division will refocus its priorities from a project-by-project approach to one that focuses efforts on those activities or areas that have biologically significant beneficial or adverse impacts on species and ecosystem recovery.”

NMFS SWR PRD Strategic Plan for 2007-2011 (NMFS 2006)

INTEGRATING RECOVERY INTO NMFS ACTIONS

It is a worthy challenge to reverse the path of a species away from extinction and toward recovery. This will require fundamental changes in long-standing policies and practices both within NMFS and other management agencies, as well as with private landowners, professional organizations, communities, and individuals. These changes can only be accomplished with effective outreach and education, strong partnerships, focused recovery strategies and solution-oriented thinking that can shift agency and societal attitudes, practices and understanding.

To promote species and ecosystem conservation, NMFS must approach species conservation more strategically. NMFS will become a more proactive and effective force for conservation by focusing priorities toward those activities and areas that have biologically significant impacts. NMFS will incorporate recovery goals and actions into all of the programs and critical habitat designations under ESA section 4, ESA consultations under section 7, and permit actions under ESA section 10. NMFS will institutionalize the recovery plan goals and take every opportunity to incorporate them in daily efforts and decision-making.

Implementation of the recovery plan by NMFS will take many forms. The PRD Strategic Plan (NMFS 2006; Appendix G) describes both general and specific ways NMFS will implement the recovery plan. The Recovery Planning Guidance (NMFS 2007) also outlines how NMFS will cooperate with other agencies on plan implementation. These documents, in addition to the ESA, will be used by NMFS to set the framework and environment for plan implementation.

NMFS actions to promote and implement recovery planning shall include:

- ❑ Formalizing recovery planning goals on a program-wide basis to prioritize work load allocation and decision-making, including developing mechanisms to promote implementation (e.g., restoration);

-
- ❑ Aligning regulatory requirements (*e.g.*, section 7 consultations, critical habitat designations, and 4(d) rules) with recovery actions;
 - ❑ Promoting rapid implementation of existing restoration plans and recovery actions, particularly those directed toward Core Areas;
 - ❑ Conducting an outreach and education program;
 - ❑ Facilitating a consistent framework for research, monitoring, and adaptive management that directly informs recovery objectives and goals; and
 - ❑ Establishing an implementation tracking system that is adaptive and pertinent to annual reporting for the Government Performance and Results Act, Bi-Annual Recovery Reports to Congress, and 5-Year Reviews of each species listing status.

Working with Constituents

Successful implementation of this recovery plan will require the efforts and resources of many entities, from Federal agencies to individual members of the public. NMFS' efforts must be as far-reaching as the issues adversely affecting the species, extending beyond the direct regulatory jurisdiction of NMFS. NMFS commits to working cooperatively with other individuals and agencies to implement recovery actions and to encourage other Federal agencies to implement actions where they have responsibility, initiative, or authority. To achieve recovery, NMFS will promote the recovery plan and provide technical information and assistance to other entities that implement actions that may impact the species' recovery. For example, NMFS will work with partners on high priorities such as facilitating revisions to the water rights process, formalizing California Forest Practice Rules so they adequately protect salmonids, and working with counties (particularly Mendocino and Santa Cruz) to ensure protective measures are included in their General Plans for the highest priority areas.

Beyond NMFS' statutory authorities and obligations, we are engaged in significant outreach efforts to various constituencies to provide technical assistance regarding listed salmonids, their habitat needs, and various life history requirements. Most of the land in the CCC coho salmon domain is privately owned. Section 7 has limited reach on these private lands. Therefore, developing partnerships through providing technical assistance is critical for recovery implementation. NMFS will focus outreach and assistance efforts in key areas critical for recovery through the following actions:

- ❑ Work with the counties of Mendocino, Sonoma, Marin, San Mateo, and Santa Cruz to recommend county planning and policies protective of coho salmon through FishNet 4C as well as with the individual counties;
- ❑ Continue working with Natural Resources Conservation Service, Resource Conservation Districts, and the Frost Protection Task Force to improve agricultural practices and land use practices of rural residential landowners;
- ❑ Encourage Smart Growth policies and provide outreach and education to urban planners and builders. Encourage planning that accounts for natural events such as droughts, storms, flooding, and climate change;

-
- ❑ Prioritize cooperation and assistance to landowners (including permitting assistance) proposing activities or programs designed to achieve recovery objectives;
 - ❑ Establish policies and compliance that preserve and protect stream flows required by all freshwater life stages of coho salmon;
 - ❑ Develop and distribute no-take guidelines for land use practices and other activities that may take or harm CCC coho salmon;
 - ❑ Assemble a NMFS Water Rights Team that works with the DFG and SWRCB to focus on restoring and maintaining natural streamflow regimes across the ESU;
 - ❑ Review select timber harvest plans (THPs) in Core watersheds to evaluate potential impacts to coho salmon, giving top priority to THPs associated with forest conversion;
 - ❑ Work to acquire funding and staff for full enforcement of existing protective laws, codes, regulations and ordinances across the CCC coho salmon ESU; and
 - ❑ Develop outreach and educational materials to inform the general public and inspire them to contribute to recovery.

Ongoing Regulatory Practices

The ESA provides NMFS with many tools for protecting and then recovering listed species. Generally, the ESA focuses on recovery planning provisions in section 4, cooperation with States in section 6, and direction to Federal agencies in section 7(a)(1). Specifically, the ESA focuses first on identifying species and ecosystems in danger of immediate or foreseeable extinction or destruction, and protecting them as their condition warrants. Then, the ESA focuses on preventing further declines in species' condition through the consultation provisions of section 7(a)(2); habitat protection and enhancement provisions of sections 4 and 5; take prohibitions of sections 4(d) and 9; cooperation with the state(s) in which these species are found (section 6); and needed research, enhancement, and non-Federal conservation actions (section 10).

NMFS has already utilized many of the ESA's provisions to conserve threatened and endangered species. NMFS has listed populations of salmon and steelhead in California and designated critical habitat. NMFS has worked with Federal agencies and private landowners on fishery management actions and consultations conducted under the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) and sections 7(a)(2) and 10(a)(1) of the ESA to avoid and minimize harm to these species. Significant benefits have accrued to the listed species from changes in land and water use practices. Unfortunately, CCC coho salmon populations continue to decline.

Recovery plans have a greater scope than the more reactive, project-by-project focus of most efforts taken under EFH provisions, section 7, and section 10. NMFS intends to use this broader perspective to achieve more significant and focused benefits for CCC coho salmon. NMFS will

strive to implement every action within this recovery plan for which it has authority. The Recovery Planning Guidance (NMFS 2007) describes how recovery plans will shape NMFS' actions:

“...the 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... and provide context and a framework for implementing other provisions of the ESA such as section 7(a)(2), development of Habitat Conservation Plans or Safe Harbor agreements under section 10, special rules for threatened species under section 4(d).”

The specific approaches NMFS will use when implementing various sections of the ESA and MSFCMA are discussed in detail below and summarized in Table 21. These approaches are intended to incorporate the recovery plans in the daily efforts and decision-making at NMFS in the Southwest Region. Some of these approaches address issues of staffing and workload NMFS currently faces. As a result, our commitment to implementing recovery plans extends to the ways we prioritize the many requests for technical assistance, consultations, and permits received.

Section 4 provides mechanisms to list new species as threatened or endangered, designate critical habitat, develop protective regulations for threatened species, and develop recovery plans. Critical habitat designations may be revised to reflect recovery strategies. Critical habitat is designated in specific geographical areas where physical or biological features essential to the species are found and where special management considerations or protections may be needed to preserve and protect them. Critical habitat for CCC coho salmon was designated in 1999 (64 FR 24049), and included all areas occupied by naturally spawned populations at that time. NMFS will reevaluate the designation in light of the data and criteria developed for this plan, and may designate additional habitat (including marine habitat), or currently unoccupied habitat deemed essential for the conservation of the species.

Unlike endangered species, which are automatically subject to the prohibitions of section 9, special regulations must be developed under section 4(d) to prohibit take of threatened species. Tailored 4(d) section 9 take prohibitions and regulatory limits that contribute to the recovery of the species may be developed for threatened species. However, because CCC coho salmon are listed as endangered, section 7(a)(2), section 10 processes are the only legal mechanisms available under the ESA to address activities that may result in take.

Table 26: Recovery Plan Implementation under the ESA and MSFCMA by NMFS

Authority	Description	Implementation Actions
ESA Section 7	Section 7(a)(1) Interagency Cooperation (Use of authorities)	Use threats assessments and recovery actions to guide Federal partners to further the conservation of CCC coho salmon.
ESA Section 7	Section 7(a)(2) Interagency Cooperation (Consultation)	Use recovery criteria and objectives to determine effects of proposed actions on the likelihood of species' recovery, and to develop conservation recommendations and reasonable and prudent measures and alternatives.
	<i>Note: Permits issued under section 10(a)(1) of the ESA also undergo section 7 consultation prior to issuance.</i>	Use threats assessments and recovery strategy to prioritize consultations when making workload decisions.
		Prioritize consultations for actions that implement recovery strategy or specific recovery actions.
		Streamline consultations for actions with little or no effect on recovery areas or priorities.
ESA Section 9	Section 9 Enforcement	Prioritize actions and areas deemed of greatest threat or importance for focused efforts to halt illegal take of listed species.
		Develop no-take guidelines for land use activities associated with high threats in Core Areas, Phase I, and Phase II Areas.
ESA Section 10	Section 10(a)(1)(A) Research and Enhancement Permits	Prioritize permit applications that address research and monitoring needs identified in the recovery plan.
	Section 10(a)(1)(B) Incidental Take Permits	Prioritize cooperation and assistance to landowners proposing activities or programs designed to achieve recovery objectives.
		Standardize monitoring methods in HCPs to conform to TRT research needs and the recovery plan template.
Magnuson-Stevens Fishery Management	Fishery Management	Implement fishery regulations to maintain salmon harvest levels at or below those necessary to allow the recovery of listed salmon and steelhead.
		Implement fishery regulations to reduce bycatch of salmon in Federally-managed fisheries.

ESA Section 4

Section 4 provides mechanisms to list new species as threatened or endangered, designate critical habitat, develop protective regulations for threatened species, and develop recovery plans. Critical habitat designations may be revised to reflect recovery strategies. Critical habitat is designated in specific geographical areas where physical or biological features essential to the species are found and where special management considerations or protections may be needed to preserve and protect them. Critical habitat for CCC coho salmon was designated in 1999 (64 FR 24049), and included all areas occupied by naturally spawned populations at that time. NMFS will reevaluate the designation in light of the data and criteria developed for this plan, and may designate additional habitat (including marine habitat), or currently unoccupied habitat deemed essential for the conservation of the species.

Unlike endangered species, which are automatically subject to the prohibitions of section 9, special regulations must be developed under section 4(d) to prohibit take of threatened species. Tailored 4(d) section 9 take prohibitions and regulatory limits that contribute to the recovery of the species may be developed for threatened species. However, because CCC coho salmon are listed as endangered, section 7(a)(2), section 10 processes are the only legal mechanisms available under the ESA to address activities that may result in take.

ESA Section 5

Section 5 is a program that applies to land acquisition with respect to the National Forest System. No National Forest lands are present within the range of CCC coho salmon. It is unlikely new National Forests will be established within this species range in the foreseeable future. Therefore, this program will not benefit coho recovery.

ESA Section 6 and the PCSRF

Section 6 describes protocols for consultation and agreements between NMFS and the states for the purpose of conserving threatened or endangered species. California is currently developing a section 6 agreement with NMFS.

As another means of providing funding to the states, Congress established the PCSRF to contribute to the restoration and conservation of Pacific salmon and steelhead populations and their habitats. The states of Washington, Oregon, California, Idaho, Nevada, and Alaska, and the Pacific Coastal and Columbia River tribes receive PCSRF appropriations through NMFS each year. The funds supplement existing state, tribal, and local programs to foster development of Federal-state-tribal-local partnerships in salmon and steelhead recovery and conservation. NMFS has established memoranda of understanding (MOU) with the states of Washington, Oregon, California, Idaho, and Alaska, and with three tribal commissions on behalf of 28 Indian tribes. The MOUs establish criteria and processes for funding priority PCSRF projects.

NMFS intends to work with California to ensure the CCC coho salmon recovery strategy and priorities are included in the allocation of funding for projects. NMFS also intends to use PCSRF reports to highlight areas and actions pertinent to recovery that might not occur in the absence of PCSRF funds.

ESA Section 7

Section 7(a)(1) provides that 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 by carrying out programs for the conservation of endangered species..." Section 7(a)(1) allows a Federal agency the discretion to give the conservation of endangered species a high priority. "Conservation" is defined in the ESA as those measures necessary to delist a species. In other words, the theme is *recovery*. To date, other Federal agencies have not fully embraced section 7(a)(1) requirement to develop conservation programs for CCC coho salmon. To prompt Federal agencies to develop conservation programs, NMFS shall:

- ❑ Establish a framework for cooperation to further the purposes of the ESA that specifically outlines a process for coordinating and implementing appropriate recovery actions identified in recovery plans (e.g., MOU similar to a now-expired 1994 MOU between Bureau of National Affairs Inc. 1994 and Agencies which expired in 1999).
- ❑ Prepare, and deliver after recovery plan approval, a letter to other appropriate Federal agencies outlining their section 7(a)(1) obligations and opportunities, and discussing salmonid conservation and recovery priorities;
- ❑ Encourage development of Conservation Bank Agreements for creating an array of conservation bank sites that will provide credits as compensation for actions that may affect anadromous salmonids within the NCCC recovery domain. Focus conservation bank sites in key CCC coho salmon watersheds, particularly in Core and Phase I areas;
- ❑ Encourage meaningful and focused mitigation, in alignment with recovery goals for restoration and threat abatement, for all actions that incidentally take coho salmon or affect their habitat in Core areas and Phase I and Phase II expansion areas;
- ❑ Encourage Federal partners and their constituents to include recovery actions in project proposals; and

The purpose of section 7(a)(2) is to "insure that any action authorized, funded, or carried out by [a Federal agency] is not likely to jeopardize the continued existence of any [listed species] or result in the destruction or adverse modification of [a listed species' critical habitat]." The theme is not one of recovery but of avoiding "jeopardy" to the species or "adverse modification" of critical habitat. Federal agencies request interagency consultation with NMFS (and/or USFWS) when they determine an action may affect a listed species or its critical habitat. NMFS then conducts an analysis of potential effects of the action. In the process of consultation, NMFS expends considerable effort to assist agencies in avoiding and minimizing the potential effects of proposed actions, and to ensure agency actions do not jeopardize a species or destroy or degrade

habitat. Consultations have helped avoid and minimize direct take but have not led to recovery of CCC coho salmon.

Because section 7(a)(2) applies only to Federal actions, its applications are limited. In the CCC ESU there are few Federal lands and a large proportion of lands are in private ownership. Most of the land use practices on private ownership that impact salmonids do not trigger interagency consultation. This lack of consultation nexus is due in large part to the USACE's Clean Water Act section 404(f) exemptions for farming, logging, and ranching activities. These exemptions eliminate Federal oversight and review for these land management activities, including actions adversely affecting coho salmon and their habitat. Without a nexus, the contribution section 7(a)(2) provides to CCC coho salmon recovery is limited.

The limited effectiveness of 7(a)(2) to protect and recover CCC coho salmon might be best illustrated by the current status of the population south of San Francisco Bay. Coho salmon were listed by the State of California as endangered in 1994. In their 1993 listing petition to the Fish and Game Commission, the County of Santa Cruz Fish and Wildlife Commission predicted coho salmon might go extinct between 2008 and 2010. Since the follow-up Federal listing in 1996, NMFS has conducted numerous section 7 consultations in this area, yet the species' current abundance trend in Santa Cruz and San Mateo counties continues steeply downward. For example, Scott Creek in Santa Cruz County was the last remaining stream south of San Francisco with all three coho year classes still present. Unfortunately, the strong year class (the 2008 cohort) remaining at Scott Creek was decimated due to extremely poor ocean conditions. Many fisheries experts, based on the implications of this loss, now believe coho salmon are on the verge of complete extirpation south of San Francisco. Unless dramatic changes in the regulatory process and oversight, land and water management practices, restoration focus, and ocean conditions, occur in the very near future, the earlier predictions by the Santa Cruz Fish and Wildlife Commission may, unfortunately, be realized.

Currently, NMFS expends significant staff time and resources on conducting section 7 consultations (funded mandates). Implementation of this recovery plan will require improvements to the application of section 7(a)(2) consultation process across the ESU. In order to devote more resources to recovery action implementation and to ensure section 7(a)(2) consultations are effective, NMFS will utilize its authorities to:

- Use recovery criteria, objectives, and ongoing monitoring efforts as a reference point to determine effects of proposed actions on the likelihood of species' recovery;
- Place high priority on consultations for actions that implement the recovery strategy or specific recovery actions;
- Develop and maintain databases to track the amount of incidental take authorized and the effectiveness of conservation and mitigation measures;
- Incorporate recovery actions in formal consultations as Reasonable and Prudent Measures, Reasonable and Prudent Alternatives, and Conservation Recommendations;

-
- ❑ Prioritize staff time to carefully and consistently consider short- and long-term impacts to watershed processes when conducting jeopardy analyses for Federal actions occurring in CCC coho salmon Core areas and Phase I expansion areas;
 - ❑ Focus staff priorities, to the extent possible, away from section 7 compliance in watersheds not designated as a priority for recovery and direct efforts to recovery implementation by developing 4(d) rules for low impact activities, etc.;
 - ❑ Streamline consultations for actions with little or no effect on recovery areas or priorities. Develop streamlined programmatic approaches for actions not posing a threat to the survival and recovery of the species;
 - ❑ Apply the VSP framework and recovery priorities to evaluate population and area importance in jeopardy and adverse modification analysis;
 - ❑ Work with established conservation bank programs to influence conservation bank agreements and actions that provide measurable contributions to threat abatement and recovery.

In addition, in an effort to be more proactive in leading conservation efforts, NMFS will utilize its authorities to encourage:

- ❑ Amendments to the USACE section 404 Clean Water Act exemptions for farming, logging, and ranching activities. Terminating section 404(f) exemptions for discharges of dredged or fill material into waters of the United States associated with certain normal agricultural activities (defined as logging, ranching, and farming) would allow interagency consultations in key dependent and independent watersheds and provide incidental take coverage for individuals, corporations, and agencies engaged in those activities;
- ❑ The Federal Emergency Management Agency (FEMA) to fund upgrades for flood-damaged facilities to meet the requirements of the ESA and facilitate recovery;
- ❑ The Environmental Protection Agency (EPA) to prioritize actions on pesticides known to be toxic to fish and/or are likely to be found in fish habitat, and to take protective actions, such as restrictions on pesticide use near water;
- ❑ The FHWA and Caltrans to develop and follow pile driving guidelines approved by NMFS for bridge construction projects in key dependent, independent, and other watersheds with extant coho salmon populations;
- ❑ Development of section 7 Conservation Recommendations based on recovery actions to help prioritize Federal funding towards recovery actions (NFMS, USFWS, NRCS, EPA, *etc.*) during formal consultations;
- ❑ All Federal agencies who designate a non-Federal representative to conduct informal consultation or prepare a biological assessment to ensure the associated documentation

comports to 50 CFR 402.14(c) prior to initiating consultations with NMFS. Compliance with these requirements will increase consultation effectiveness and timeliness;

- ❑ All Federal agencies, or their designated representatives, to field-review projects and actions upon completion, to determine whether the projects were implemented as planned and approved. Encourage all Federal agencies, or their designated representatives, to report findings of field review to NMFS; and
- ❑ Federal agencies to coordinate and develop programmatic incidental take authorization for activities that contribute to the recovery of CCC coho salmon, and to streamline their permitting processes, particularly for restoration or recovery actions.

ESA Section 9

Section 9 prohibits any person from harming members of listed species including direct forms of harm such as killing an individual, or indirect forms such as destruction of habitat where individuals rear or spawn. The recovery plan will assist NMFS' Enforcement personnel by targeting key watersheds essential for species recovery. Core recovery areas identified in this plan should be considered the highest priority areas for oversight. NMFS PRD staff will work closely with NMFS Enforcement to identify threats and other activities believed to place coho salmon at high risk of take and/or extirpation. Actions will include the following:

- ❑ NMFS will prioritize actions and areas deemed of greatest threat or importance for focused efforts to halt illegal take of listed species;
- ❑ Land use activities identified as high priority threats in each watershed will be evaluated for their potential to take or harm coho salmon. No-take guidelines will be developed and implemented for all land use activities associated with high threats to coho salmon, focusing on Core and Priority I Areas;
- ❑ When take has occurred in a high priority area, NMFS PRD will work with OLE, to the extent feasible, to develop a take statement;
- ❑ NMFS OLE will work with the DFG, in conjunction with the Joint Enforcement Agreement, to increase patrols and landowner outreach in critical watersheds, particularly during droughts, when coho salmon are at greater threat of unauthorized taking; and

ESA Section 10

Section 10(a)(1)(A) provides permits for the authorization of take for scientific research, or to enhance the propagation or survival of listed species. Typically NMFS has authorized conservation hatcheries and research activities under section 10(a)(1)(A). Section 10(a)(1)(B) provides permits for otherwise lawful activities that incidentally take listed species. Habitat conservation plans minimizing and mitigating the incidental take of listed species from non-Federal activities are prepared under section 10(a)(1)(B). Currently, both processes take a significant amount of time to implement and recovery plans have not been available to guide priorities for permit issuance. To improve the section 10 authorization process, NMFS will utilize its authorities in the following ways:

Section 10(a)(1)(A) Research Permits

- Explore securing a regional coordinator and expanding staff assigned to research permits.
- Prioritize permit applications that address identified research and monitoring needs in the recovery plan, and/or enhance the survival of populations of CCC coho salmon (*e.g.*, captive broodstock programs). Develop streamlined approaches to permitting similar types of research and monitoring in the 28 focus watersheds.
- Evaluate proposed activities against the identified threats, recovery strategy, and recovery actions identified in the plan.
- Develop and maintain a tracking database to output real-time information for NMFS staff on current research taking place, locations and findings..

Section 10(a)(1)(B) Habitat Conservation Plans

We recommend all future HCPs where coho salmon are a covered species adopt the viability and threats assessment protocols established in this recovery plan. Adoption of these guidelines will facilitate standardization and could help in the tracking of recovery actions and threats abatement. Additionally, adoption of the assessment protocols should streamline jeopardy analysis and assist applicants in identification of limiting factors and strategically targeting beneficial and conservation and mitigation opportunities and locations. Finally, adoption of the assessment protocols will facilitate consistency in the development of standards to determine the appropriate levels of mitigation necessary to ensure the continued existence of CCC coho salmon. The Habitat Conservation Planning Handbook stresses the need for consistency of mitigation measures for a species and for specific standards. Although, not a preferred option (according to the USFWS/NMFS HCP Handbook), if offsite mitigation is necessary this recovery plan can be used to direct mitigation toward identified high priority watersheds. Priority should be given to Core areas, followed by areas designated as Phase I and then Phase II. In some circumstances off-site mitigation may provide greater recovery benefits than onsite mitigation (*e.g.*, if an HCP's covered activities occur in a non-focus watershed where the species no longer persists).

Within this framework NMFS will utilize its authorities to:

- Prioritize cooperation and assistance to landowners proposing activities or programs designed to achieve recovery objectives.
- Standardize monitoring methods in HCPs to the TRT's identified research needs and the recovery plan template. Consistent data collection techniques and the ability to compare similar data sets over space and time will set the framework for the five year review and help track recovery progress.
- Encourage the State Board of Forestry to seek no-take rules or apply for a statewide Forestry HCP (similar to that developed for Washington State); and
- Prioritize areas and actions where threat abatement has the potential to provide the most significant contribution to species recovery, based on the threats assessment developed and updated as part of the recovery plan; and

Section 10(j) Experimental Populations

Among the significant changes made in the 1982 amendments to the ESA was the creation of section 10(j), which provides for the designation of specific populations of species listed as "experimental populations" so long as they are wholly separate from other non-experimental populations. Under section 10(j), reintroduced populations of endangered or threatened species established outside the current range but within the species' historical range may be designated, at the discretion of NMFS, as "experimental," lessening the ESA's regulatory authority over such populations. Because these populations are not provided full ESA protection, management flexibility is increased, local opposition is reduced, and more reintroductions are possible.

Two types of experimental population designations exist: essential and nonessential. An essential experimental population is a reintroduced population whose loss would be likely to appreciably reduce the likelihood of the survival of the species in the wild. These populations are treated as threatened species (with special rules) for the purposes of section 9 of the ESA. Therefore, they can be managed with greater flexibility with regard to incidental take and regulated take.

A nonessential experimental population is a reintroduced population whose loss would not be likely to appreciably reduce the likelihood of the survival of the species in the wild. These populations, besides being treated as threatened species, are treated as proposed species for the purposes of section 7. The establishment of experimental populations is a valuable tool for use in the recovery of some listed species

To facilitate the implementation of species reintroduction, and to minimize the regulatory prohibitions that may create opposition to reintroduction programs, candidate reintroduction areas in the Domain should be considered for 10(j) rule proposals. Additional analysis is needed to determine if specific populations should be proposed as essential or non-essential. However, we have evaluated reintroduction potential for several historic, currently unoccupied habitats and recommend that 10(j) rules be developed for several watersheds within the San Francisco Bay diversity strata, and possibly for other areas where extirpation has occurred.

Fisheries Management and EFH

CCC coho salmon habitat is located in an area identified as Essential Fish Habitat (EFH) for the Pacific Coast Salmon Fishery Management Plan (FMP) under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). NMFS will implement fishery regulations to maintain salmon harvest levels at or below those necessary to allow for the recovery of listed salmon. Recovery strategies and objectives will serve as a guide when providing conservation recommendations for actions that may adversely affect EFH. In addition, NMFS will work to implement fishery regulations to reduce bycatch of salmon in Federally-managed fisheries.

Coordination with other NMFS Divisions

Other line offices and programs within NOAA can contribute significantly to recovery. NMFS PRD staff will coordinate with the SWFSC, NMFS Habitat Conservation Division, OLE, and NOAA Restoration Center to assist in recovery planning and implementation across the NCCC Domain. In addition, collaboration with other NOAA line offices and NMFS Programs are also expected to benefit recovery efforts.

TIME AND COST ESTIMATES

Section 4(f) of the ESA requires that recovery plans include “estimates of the time required and the cost to carry out those measures needed to achieve the Plan’s goal and to achieve intermediate steps toward that goal” (16 U.S.C. 1531-1544, as amended). NMFS estimates recovery for CCC coho salmon, like for most of the ESA-listed Pacific Northwest salmon and steelhead, will take 50 to 100 years. The list of actions is extensive and many uncertainties exist in predicting the course and cost of recovery. Such uncertainties include biological and ecosystem responses to recovery actions, status of the larger economy, and the offset of costs as NMFS and other entities implement their laws and policies as a matter of practice in doing business.

The analysis and consideration of recovery costs were derived primarily from three sources: (1) Recovery Strategy for California Coho Salmon (DFG, 2004); (2) Habitat Restoration Cost References for Salmon Recovery Planning (Thompson and Pinkerton, 2008) and (3) coordination with NOAA Restoration Center Office in Santa Rosa, California. Costs were developed, where possible, for many (but not all) lower level recovery actions in each population (e.g., watershed). These are displayed in associated implementation tables in Chapter 10. Costs for each population were not aggregated to determine a total cost. This would result in an inaccurate cost estimate due to the high number of actions not assigned a cost and the uncertainty associated with the current cost estimates. NMFS is working at a regional scale and across all recovery domains to develop a consistent method of assigning costs to individual recovery actions. Thus, for the purposes of this public draft recovery plan NMFS is requesting information from the public and finds the Recovery Strategy for Coho Salmon (DFG, 2004) is a relevant general reference for the likely costs for CCC coho salmon recovery.

The State of California conducted a comprehensive cost analysis for coho salmon recovery in 2004. To generate cost estimates, they reviewed historical project data, but did not correct the costs to reflect inflation or the ever increasing cost of project implementation. The total cost for recovering CCC coho salmon across two ESUs (the Southern Oregon Northern California and the CCC ESU) was estimated by California. The estimate included direct fiscal costs of physically performing a recovery action, such as the expenditure required to purchase, plant, and maintain riparian vegetation. The estimate also included socioeconomic costs such as foregone income from land taken out of production to provide riparian buffers. NMFS subtracted costs identified for the Southern Oregon Northern California ESU and for the Shasta and Scott River Pilot Program, to arrive at an estimate of between at between \$3,848,658,328.00 and \$5,130,658,328.00 (depending on Alternatives implemented) (DFG, 2004) to achieve recovery for CCC coho salmon.

This estimate may under or over estimate the full cost of implementation, because not all costs could be quantified, and some costs may be incurred even without implementation of the plan. In addition, the State Plan made recommendations that differ from those presented in this plan. The State Coho Recovery Strategy for California Coho Salmon also notes that these costs were presented in the simplest possible terms: the current dollar cost of completing the action in 2004.

NMFS produced a report providing information on costs associated with restoration activities (Appendix H) (Thomson and Pinkerton 2008). Data from publicly available sources were used to obtain estimates of restoration costs for a variety of restoration activities. All costs described in the report pertain to direct expenditures on restoration and do not include economic opportunity costs (*e.g.*, foregone profits associated with restrictions on livestock grazing, timber harvest and other activities). The information in the report is difficult to apply in the CCC coho salmon ESU. The report contains extensive data from the northernmost part of California, Oregon, Washington, and Idaho, where costs (labor, materials, equipment, *etc.*) are likely to be lower than on the Central Coast of California. The report offers ranges of costs applicable at the ESU scale. Actual costs may vary widely from one watershed to another and across the extent of the NCCC Domain due to differences in regional labor costs, property values, availability of expert contractors and materials, and permitting issues, *etc.*

Although there are differences between the State Coho Recovery Plan and the Federal CCC coho salmon recovery plan, NMFS will use the State cost estimates as they currently represent the best available information most relevant to the CCC coho salmon ESU. During the public comment period, we will further evaluate the cost analysis with assistance from the NMFS Science Center, NOAA Restoration Center and others including additional requests to the public for more precise cost estimates associated with restoration, monitoring and threat abatement.

In closing, we find it imperative to acknowledge that healthy salmon populations provide significant economic benefits. Entire communities, businesses, and jobs have been built around the salmon of California. Based on studies that examined streams in Colorado and salmon restoration in the Columbia River Basin, the San Joaquin River, and the Elwha River, the value of California coho salmon recovery could be significantly larger than the fiscal or socioeconomic costs of recovery (DFG 2004). Importantly, the general model for viewing cost versus benefits must be viewed in terms of long-term benefits derived from short-term costs. Recovery actions taken on behalf of coho salmon are likely to benefit other listed species in the NCCC Domain, thus increasing the cost effectiveness of the actions. Habitats restored to highly functioning conditions offer tangible benefits such as improved water quality, and less tangible benefits such as reduced expenditures on bank stabilization or flood control. Restoration activities will generate positive socioeconomic benefits. Because of the direct and indirect economic value of salmon as a resource for fishing, recreation and tourism related activities, each dollar spent on salmon recovery may generate thousands of dollars for local, state, Federal, and tribal economies. In other words, salmon recovery is best viewed not as a cost, but as an investment and opportunity to diversify and strengthen the economy. The dollars required to recover salmon should be made available without delay such that the benefits can begin to accrue as soon as possible.