
5.0 ASSESSMENT OF PROTECTIVE EFFORTS

“Conservation is a state of harmony between men and land.”

Aldo Leopold

5.1 FEDERAL REGISTER ASSESSMENT OF PROTECTIVE EFFORTS

Two types of assessments were conducted to assess protective efforts in context to listing and recovery: (1) Protective efforts, as evaluated pursuant to the “Policy for Evaluation of Conservation Efforts When Making Listing Decisions” (68 FR 15100); and (2) the Conservation Assessment pursuant to the Interim Recovery Planning Guidance (NMFS 2010a).

Protective efforts assessed during listing decisions are required under section 4(b)(1)(A) of the ESA and they require an assessment of a species status based solely on the best scientific and commercial data available after taking into account those efforts of a state to protect the species. In determining the efficacy of existing efforts NMFS must consider the following: (1) substantive, protective and conservation elements; (2) degree of certainty efforts will be implemented; and (3) presence of monitoring provisions that determine effectiveness and permit adaptive management.

All pertinent *Federal Register* notices, including both proposed and final listing determinations for the CCC coho salmon were reviewed (Table 5 in Chapter 4) and catalogued. The summary below outlines the described conservation efforts identified at the time of listing and a discussion on the current status of those efforts.

5.2 CONSERVATION EFFORTS AT, AND SINCE, LISTING

Conservation efforts by individuals, private organizations, State and local agencies, or Federal agencies and others for CCC coho salmon have been underway for years. These efforts have collectively improved habitats and prevented the extinction of CCC coho salmon (especially in

the Russian River and in the Santa Cruz Mountains Diversity Stratum). At the time of listing, however, it was determined that the efforts still did not reduce the level of extinction risk for coho salmon.

5.2.1 FEDERAL EFFORTS SINCE LISTING

The current status of Federal efforts outlined in the FRNs is:

- ❑ The NMFS section 7 consultation for the USACE and SCWA Reservoir Operations project (Russian River), specifically noted in 69 FR 33102, has been finalized.
- ❑ The HCP for Mendocino Redwoods Company to improve CCC coho salmon populations and habitat is still in draft. The finalization of this HCP and the development of either a statewide forestry HCP or other forestry landowner HCPs is a very high priority for the recovery of the CCC coho salmon. Fifteen of the 28 focus populations are located in areas of large tracts of forestlands owned either by private small landowners or large timber companies.
- ❑ The Pacific Coastal Salmon Recovery Fund continues to benefit CCC coho salmon and the State of California has developed a more equal distribution of the funds across all coastal salmonids and has included a specialized scoring system to ensure projects link more closely to recovery actions.
- ❑ NMFS' gravel removal guidelines continue to be utilized and are a useful tool to evaluate and reduce the impacts of gravel mining projects to ESA-listed salmonids in Mendocino and Sonoma counties.
- ❑ The NMFS/NRCS MOU was not completed.
- ❑ The NMFS and CDFG Coastal Salmonid Monitoring Program is one of the highest priorities designated in this recovery plan. While the scientific and statistical foundation for monitoring population was finalized in 2011, the "program" itself has yet to be funded or implemented on a programmatic level. Thus, consistent funding for monitoring at spatial scales relevant to recovery planning continues to be an essential conservation effort needed for CCC coho salmon.

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- ❑ Watershed partnerships: Little has developed in regards to NMFS participation in inter-agency and public watershed partnerships due to staff limitations and section 7 workloads. For CCC coho salmon recovery, it will be imperative to begin developing and supporting these partnerships. With a few exceptions, the key CCC coho salmon watersheds occur on private lands and in areas where many land management actions do not trigger ESA section 7 consultations. Use of section 7 towards recovery of CCC coho salmon will have limited benefit, except in cases where impacts are offset through the purchase of bank credits for Conservation Banks that directly benefit CCC coho salmon.
 - ❑ EPA Wetland Protection Grants: Some grants have been directed towards projects focused on improving critical limiting factors for some focus populations in the ESU.
 - ❑ Following the October 31, 1996 listing as “threatened” under the ESA (61 FR 56138), NMFS applied ESA section 9(a)(1) take prohibitions on December 30, 1996 (61 FR 56138), designated critical habitat on May 5, 1999 (64 FR 24049), and upgraded the status of coho salmon to “endangered” on June 28, 2005 (70 FR 37160). With the change in listing status to endangered, the take “limits” allowed under ESA section 4(d) for specific authorized activities contributing to the conservation of salmonids were no longer applicable.
 - ❑ The PFMC, guided by the Reasonable and Prudent Alternatives of the NMFS 1999 Supplemental Biological Opinion and Incidental Take Statement, instituted no-directed coho fisheries or retention of coho salmon in all commercial and recreational fisheries off California to protect endangered CCC coho salmon. This no-directed take or retention, and the standard that marine fisheries impacts be no more than 13.0 percent to protect endangered CCC coho salmon as indicated by projected impacts on Rogue/Klamath hatchery coho salmon, has been instituted by the PFMC every year. The current degree of impact (mortality resulting from (a) hook-and-release, (b) drop off before being boated, and (c) non-compliance) associated with existing regulations for non-retention and mark-selective coho salmon fisheries to the wild CCC coho salmon fishery, as of 2011, was estimated at 3.8%.

5.2.2 STATE EFFORTS SINCE LISTING

Current status of State efforts outlined in the FRNs:

- ❑ California ESA Listing: The California Fish and Game Commission listed coho salmon in the coastal streams south of the entrance to San Francisco Bay as endangered on December 31, 1995, under CESA. Protective regulations went into effect on December 2, 1996. On March 30, 1996, coho salmon throughout the CCC ESU were as listed by the California Fish and Game Commission as endangered under CESA. Protective regulations went into effect on August 29, 2005.
- ❑ On February 4, 2004, the California Fish and Game Commission adopted the California Recovery Strategy for Coho Salmon as part of the state listing. The State recovery strategy established six goals:
 - 1) Maintain and improve the number of key populations and increase the number of populations and brood years of coho salmon;
 - 2) Maintain and increase the number of spawning adults;
 - 3) Maintain the range and maintain and increase the distribution of coho salmon;
 - 4) Maintain existing habitat essential for coho salmon;
 - 5) Enhance and restore habitat within the range of coho salmon; and
 - 6) Reach and maintain coho salmon population levels to allow for the resumption of Tribal, recreational, and commercial fisheries for coho salmon in California.

To achieve these goals the plan provides a range of recommendations to address factors responsible for the decline of coho salmon including; stream flow, water rights, fish passage, water temperature, pool habitat structure, riparian habitat, watershed planning, and gravel mining activities. Recovery priorities have been included into the operations of both conservation hatchery programs (Warm Springs and Kingfisher Flat, Monterey Bay Salmon and Trout Project, in Scott Creek) and the CDFG FRGP, though currently the plan has not been evaluated for its effectiveness due to lack of funding for State monitoring programs.

- ❑ CDFG is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section

1602) requires an entity to notify CDFG of any proposed activity that may substantially modify a river, stream, or lake. CDFG has improved level of project review under the 1603 to comply with revised CEQA standards.

- Development and implementation of EPA TMDL Programs: The State (and EPA) has established a number of TMDL's in watersheds for various constituents (*i.e.*, sediment, temperature, nutrient, *etc.*) in the CCC ESU to reduce pollutant loads to impaired water bodies. Schedules have been developed for establishing all required TMDLs over a 13-year period (see web site for more information at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r1_06_303d_reqtmdls.pdf) for the State. Approved TMDLs are improving CCC coho salmon habitats in some watersheds (*e.g.* Garcia River, Mendocino County, CA); in other watersheds substantial progress or improvement is needed (*e.g.*, San Lorenzo, Santa Cruz County, CA). These differences are largely the result of staff availability and varying implementation schedules time by the various Regional Water Quality Control Boards. NMFS expects the development and implementation of TMDLs will improve CCC coho salmon ESU designated critical habitat in the long-term; however, their efficacy in protecting coho salmon habitat will be unknown for years to come. Implementation and monitoring to determine the effectiveness of the TMDLs process is needed. A number of additional water quality issues need to be addressed to protect and conserve CCC coho salmon. For example, impacts to fish habitat from agricultural practices have not been closely regulated. The State of California does not have regulations that directly manage agricultural practices, but instead relies on the TMDLs under the CWA to improve water quality from all sources and parties, including agricultural sources. Numerous streams in the CCC ESU are currently impacted by agricultural practices, but do not have TMDLs (SWRCB 2010), and many are not scheduled for completion until 2019. The majority of TMDLs focus on sediment and temperature requirements with little focus on pesticide toxicity. Pesticide toxicity has been identified as a new cause of stream impairment in California.

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- ❑ The California Resources Agency development of a state-wide coho salmon conservation program, to serve as a basis for NMFS 4(d) protective regulations, was not completed prior to NMFS reclassifying CCC coho salmon from “threatened” to “endangered” status.
 - ❑ State sport fishing regulations no longer allow retention of CCC coho salmon in California inland or nearshore waters. Impacts associated with incidental capture from freshwater recreational fishing still occur. Freshwater steelhead sport fishing is allowed in many rivers and streams where CCC coho salmon persist, including many of the focus watersheds identified in the plan. There is some overlap in run-timing between CCC coho salmon and adult steelhead (October through late February); adult CCC coho salmon have been misidentified by recreational anglers and incidentally caught and retained. This is particularly a concern in the Russian River watershed where both conservation hatchery coho salmon and traditional hatchery steelhead are adipose fin-clipped.
 - ❑ Forestry: NMFS has participated in BOF meetings since 1998 and has encouraged the State of California to adopt State Forest Practice Rules protective of salmonids and pursue development of a section 10(a)(1)(B) permit (*e.g.*, HCP) that authorizes incidental take of listed salmonids under the ESA modeled from the Washington State Forest Practice HCP (including their monitoring and adaptive management process). While revisions and improvements to the Forest Practice Rules have been realized, they do allow operations to occur in salmonid watersheds that are less protective than standards under west coast forestry HCP’s that authorize incidental take. At the time of listing the Board of Forestry did not adopt CDFG’s proposal to designate coho salmon as a sensitive species pursuant to 14 CCR 898.2(d). Since listing under the ESA, populations of coho salmon continue to decline and this species is still not a BOF designated sensitive species. Provisions for sensitive species designation allow the BOF to adopt special management practices for sensitive species and their habitats. Additionally, the majority of extant CCC coho salmon populations persist on forestlands and sensitive species designation could provide increased protections from potential timber harvest impacts. NMFS, CALFIRE, and the BOF did not fully develop or adopt develop no-take guidelines for timber harvest activities that could impact coho salmon. In 2010, the BOF adopted the Anadromous Salmonid Protection (ASP)

rules. The BOF's primary objectives in adopting the ASP rules were to: (1) ensure rule adequacy in protecting listed anadromous salmonid species and their habitat, (2) further opportunities for restoring the species' habitat, (3) ensure the rules are based on credible science, and (4) meet Public Resources Code (PRC) § 4553 for review and periodic revisions to the FPRs. The coastal watersheds south of San Francisco Bay were specifically excluded from the increased protections to salmonids provided by the ASP rules, despite the fact coho salmon in these watersheds are critically close to extirpation. Currently, the inadequacies of the FPRs that remain unresolved are: (1) rate of harvest; (2) winter operations; (3) road planning, construction, maintenance and decommissioning; (4) loss of riparian function and chronic sediment input from streamside roads; (5) unstable areas; (6) planning, implementation and enforcement; (7) exemptions and conversion's and (8) watershed analysis. Until a watershed analysis process is put in place in California the rules will continue to be decoupled from addressing the limiting factors to salmonids. Furthermore, aggressive wood placement programs should be considered in the interim. The primary objective of the FPR core zone is streamside bank protection to promote bank stability, wood recruitment by bank erosion, and canopy retention. The primary objective for the inner zone is to develop a large number of trees for large wood recruitment. Even the outer zone has additional wood recruitment as an objective. Retaining large trees that are most conducive to recruitment are a priority in Class I watercourses with confined channels in the coastal anadromy zone. One weakness of this paradigm is that coho salmon cannot wait for banks to erode, nor wait for large trees to develop, nor rely on chance that a tree conducive to falling into the stream will actually fall into the stream. Coho salmon need large wood in streams now if we are to recover the population.

- ❑ FRGP: Many projects have been implemented within the CCC coho salmon ESU under the CDFG FRGP, and CDFG conducts implementation monitoring to track the success and benefits of these efforts. These projects include instream restoration, monitoring, fish passage improvements, upslope sediment remediation, and many other enhancement efforts. FRGP programmatic permit coverage from numerous regulatory agencies expedites regulatory approval, this coverage is a major additional benefit for grantees. FRGP has

recently revamped its' program to coordinate more effectively with both the State and Federal priorities. Furthermore, a more equitable distribution of funds is underway to ensure projects for all federally listed salmonids are being represented.

- ❑ Coastal Salmon Initiative: The Coastal Salmon Initiative of the California Resources Agency, initiated in July 1995, was a conservation program based on voluntary measures and incentives to protect fish and wildlife habitat while protecting economic interest of communities within the range of coho salmon. The effort ended soon after the 1996 Federal listing of CCC coho salmon as threatened.
- ❑ Hatchery Practices: Current conservation hatchery practices are viewed as beneficial and necessary for CCC coho salmon. Monitoring is currently being conducted on these populations, though the numbers of fish released are only recently approaching the level at which significant adult returns could be expected. Disease transmission (including bacterial kidney disease) has been substantially reduced due to strict screening and treatment protocols. Utilization of excess broodstock within the Warm Springs Captive Broodstock Program has resulted in additional recovery efforts in watersheds where coho salmon were extirpated within the ESU. These activities should continue, with appropriate monitoring. The continuation of the Scott Creek/King Fisher Flat Captive Broodstock Program (privately owned and managed by the Monterey Bay Salmon and Trout Project) is a high priority until a regional program or larger facility in Santa Cruz are developed.
- ❑ Hatchery Practices: The Noyo River Fish Station egg-take program began in 1962 and was the only fish culture facility in California that has focused exclusively on coho salmon. Eggs collected at Noyo Egg Taking Station were reared to yearlings at Mad River Hatchery (Humboldt County). These yearlings were planted in the Noyo River with the object of maintaining the run to the station. Early in the program operation (1962-1967), stocked coho salmon were from a mix Noyo River, Pudding Creek, Alsea (Oregon), and Klaskanine (Oregon) of egg sources. Subsequent efforts relied almost exclusively on Noyo River coho eggs. Coho salmon from Noyo River broodstock were also occasionally planted in various other locations (Brown *et al.* 1994). The program was discontinued in 2004.

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- ❑ Watershed Protection Program: Under Proposition 13 (Water Code, Division 25, Chapter 5, Article 2) grants were available to municipalities, local agencies, or nonprofit organizations to develop and implement local watershed management plans to reduce flooding, control erosion, improve water quality, and improve aquatic and terrestrial species habitats. Monies are no longer available and no new applications are being accepted. The last biennial report was in 2003.
 - ❑ The California Natural Communities Conservation Planning Program was intended to form the basis of protective regulations by NMFS under section 4(d) of the ESA, which is no longer available due to the CCC coho salmon listing as endangered. This program was never realized.
 - ❑ Water Diversions: On May 4, 2010, the State Water Board adopted a policy for water quality control titled “Policy for Maintaining Instream Flows in Northern California Coastal Streams.” The policy contains principles and guidelines for maintaining instream flows for the purposes of water right administration. The geographic scope of the policy encompasses coastal streams from the Mattole River to San Francisco and coastal streams entering northern San Pablo Bay and extends to five counties: Marin, Sonoma, and portions of Napa, Mendocino, and Humboldt Counties. Implementation of the Policy for Maintaining Instream Flows in Northern California Coastal Streams should result in major benefits to coho salmon in the northern portions of the CCC ESU if properly implemented and enforced. The policy includes provisions to address seasons of diversions, minimum bypass flows, maximum cumulative diversions, onstream dams, and assessment of cumulative effects for new water diversion applications. The policy does not apply to previously authorized water diversions. Numerous unpermitted and out-of-compliance water diversions are present in the CCC ESU. Resources are lacking to monitor and enforce these diversions to ensure adequate instream flow is available for rearing coho salmon.

5.2.3 LOCAL GOVERNMENT EFFORTS SINCE LISTING

The status of efforts by local government agencies outlined in the FRNs includes:

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- ❑ FishNet 4C: This group has been meeting quarterly for the past 12 years and participation includes County Supervisors and staff, RCDs, Special Districts and Federal and State agency representatives. It has conducted extensive training on watershed process, road maintenance, salmon life cycle, biotechnical bank stabilization, sediment reduction efforts, fish migration barrier removal training, *etc.* Coordination between the counties and implementation of projects to remove barriers, upgrade roads, improve policies, develop permit streamlining for projects, *etc.* has benefited coho salmon.
 - ❑ Five Counties Salmonid Conservation Program: A Memorandum of Understanding between NMFS and five northern California counties (the Five Counties Salmonid Conservation Program which includes Mendocino County) was developed to create standardized county routine road maintenance manual to assist in the protection of ESA listed species and their habitat. This manual includes best management practices (BMPs) for reducing impacts to listed species and the aquatic environment, a five-county inventorying and prioritization of all fish passage barriers associated with county roads, annual training of road crews and county planners, and a monitoring framework for adaptive management. In 2007, ESA authorization of the Five Counties Salmonid Conservation Program's routine road maintenance program was approved. Potential benefits resulting from implementation of this program apply to Mendocino County only and not to the rest of the CCC ESU; however, it is unknown whether Mendocino County consistently uses the manual as part of their road work.

5.2.4 NON-GOVERNMENTAL EFFORTS SINCE LISTING

The status of efforts by non-government agencies outlined in the FRNs includes:

- ❑ The effectiveness of conservation efforts of numerous local non-governmental organizations, while likely benefiting CCC coho salmon, is unknown in terms of increasing coho salmon populations. While CDFG conducts project monitoring associated with all PCSRF funded projects, there is no larger oversight body that conducts implementation and effectiveness monitoring for all local, state and federal funding sources to determine whether these actions are successful, or are benefiting the populations of CCC coho salmon

as a whole – this is partially related to the lack of a statewide coordinated trend and abundance monitoring program.

- ❑ The Fish Friendly Farming Program provides guidance for agricultural properties to manage agricultural land to decrease soil erosion and sediment delivery to streams and improve riparian conditions. This effort has resulted in education, outreach and improvements in agricultural practices. While the program addresses water infrastructure concerns (passage barriers, screening criteria, *etc.*) it has not addressed streamflow impacts to salmon from diversions on participating ownerships and does not necessarily provide standards that achieve a “no take” standard.
- ❑ The California Rangeland Management Plan has not been evaluated.
- ❑ Habitat restoration and planning efforts are ongoing within many watersheds in the CCC ESU. Many watershed assessments have been completed and information has been used to identify limiting factors for anadromous salmonids and prioritize restoration efforts and threat abatement actions. Habitat restoration has included projects to improve fish passage, remediate sources of upslope sediment, improve carrying capacity, and improve water quality. Many of these projects are carried out by watershed organizations, RCDs, agencies, and private companies including, but not limited to Campbell Timberland Management, California Coastal Conservancy, Committee for Green Foothills, Santa Cruz RCD, Pescadero Conservation Alliance, Peninsula Open Space District, Mill Valley Streamkeepers, Friends of Corte Madera Creek, San Mateo RCD, Sotoyome RCD; Marin County RCD, Mendocino County RCD, Coastal Watershed Counsel, National Park Service – Point Reyes, Garcia River Watershed Advisory Group, Noyo Watershed Alliance, Jackson Demonstration State Forest, County of Santa Cruz, Soquel Demonstration State Forest, Mendocino Redwood Company, Midpeninsula Open Space District, CalPoly – San Luis Obispo, Big Creek Lumber Company, San Mateo County Parks, California Department of State Park – Mendocino County, California Department of State Parks – Santa Cruz County, Goldridge RCD, Trout Unlimited, Gualala Redwoods Watershed Council, Circuit Riders, Occidental Arts and Ecology Center, Lompico Watershed Conservancy, Redwood Forest Foundation, Mendocino Land Trust, Conservation Fund, and The Nature Conservancy.

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- ❑ Many RCDs provide assistance to voluntary landowners in developing and implementing best management practices to reduce impacts from their activities (*i.e.*, timber harvest, road building, livestock grazing, agriculture, *etc.*) affecting water quality. Continued implementation of these programs should abate some threats to coho salmon and their habitats in many watersheds in the CCC ESU. Many RCDs within the CCC ESU assist local agriculture and local conservation groups to apply for and use State and Federal grants for habitat restoration purposes. Other organizations such as the Garcia River Watershed Advisory Group, SPAWN, Sonoma County Water Agency, and the California Farm Bureau also have provided assistance to landowners in assisting landowners in developing and implementing best management practices.

5.2.5 ADDITIONAL EFFORTS SINCE LISTING

The status of some protective efforts not outlined in FRNs includes:

- ❑ In accordance with the California Fish and Game Commission's direction as well as statutory requirements, CDFG established the range-wide Coho Salmon Recovery Team (CRT). CDFG sought innovative and creative ideas in the development of a strategy that balances coho salmon recovery with other interests. The CRT is made up of 21 members from a wide range of interests, professions, and perspectives which represents county, State, and Federal governments, tribes, commercial and recreational fishing, forestry, agriculture, ranching, water management, and environmental interests. The CRT first met and commenced working in December 2002. The team addressed many significant issues affecting coho salmon range-wide which were incorporated into the California Recovery Strategy for Coho Salmon (CDFG 2004). The CRT continued meeting after completion of the recovery strategy and in recent years has convened on average of two times per year to address issues ongoing implementation of the recovery strategy and recent developments regarding the continued decline of coho salmon in the State.
- ❑ In 2003, NMFS received a petition to delist those populations of the CCC coho salmon ESU that spawn in coastal streams south of the entrance to San Francisco Bay. The petition was eventually accepted by NMFS (75 FR 16745) on April 2, 2010, which triggered a formal

status review focused on determining whether the populations south of the entrance to San Francisco Bay were part of the ESU, what the appropriate southern boundary of the ESU should be, and the biological status of any revised ESU. NMFS determined the petitioned action was not warranted. In conducting this status review, new information became available indicating that the range of the ESU should be extended southward (Spence *et al.*, 2011). This information included observations of coho salmon in Soquel Creek in 2008, genetic analysis of tissue samples indicating that the fish from Soquel Creek were closely related to nearby coho salmon populations in the ESU, and the ecological similarity of Soquel and Aptos creeks with other nearby creeks that support coho salmon. Based on this information, on April 2, 2012, the southern boundary of the ESU was expanded of the San Lorenzo River to include any coho salmon found in Soquel and Aptos creeks (77 FR 19552).

- ❑ In 2011, the CDFG and NMFS formed the Priority Action Coho Team (PACT). The mission of PACT is for NMFS and DFG, in the context of their authorities and the State and Federal coho salmon recovery plans to: (1) collaborate with other agencies and community entities, (2) seek to identify clear objectives, develop specific priority action plans, and (3) identify new and available resources to expedite immediate actions to prevent imminent extirpation of populations within the CCC coho salmon ESU. PACT recommendations are expected to be completed within a year.
- ❑ The Austin Creek Conservation Bank was signed in 2010 and is the first NMFS approved Conservation Bank in the CCC coho salmon ESU. The property is roughly 400 acres and lies along several stream miles of upper East Austin Creek and Devils Creek in the Russian River watershed and adjacent to Austin Creek State Recreation Area. The bank agreement is on file at the SWR's North Central California Coast Office. The bank targets Central California Coast coho and steelhead and has credits for riparian and upland habitats that maintain natural stream processes. The service area is a 2-tiered system. The primary service area includes Marin and Sonoma Counties, and may be utilized for mitigation and conservation. The secondary area includes the entire Central California Coast coho and steelhead ESU/DPSs, and may be used for conservation purposes. Phase 1 of the bank has included input of large wood structures and covers 144 acres. Phase 2 of the bank proposes

future addition of the adjacent 296 acres remaining in the parcel. The bank owner has initiated restoration and is allowing the Russian River Coho Salmon Captive Broodstock Program staff to outplant juvenile coho salmon on the property. Wild coho salmon adults spawned on the property in 2011 and their young were confirmed by snorkel surveys. To continue the good work, NMFS and other agencies should continue to ask project proponents to consider banks as a way of offsetting impacts.

- ❑ The NOAA Restoration Center (NOAA RC) administers the Community-based Restoration Program. The program's objective is to bring together citizen groups, public and nonprofit organizations, industry, corporations and businesses, youth conservation corps, students, landowners, and local government, State and Federal agencies to restore fishery habitat around the coastal U.S. The program funds projects directly, and through partnerships with national and regional organizations and has provided funding, input, and project review for numerous high priority projects in the CCC coho salmon ESU.
- ❑ Trout Unlimited is funding a staff position in the Lost Coast Diversity Stratum to provide grant writing assistance to landowners. This program has been very successful in helping to obtain grants (including FRGP) focused on key restoration projects such as unsecured large woody debris projects in watersheds with focus populations.
- ❑ Sonoma-Marin Saving Water Partnership represents 10 water utilities in Sonoma and Marin counties who have joined together to provide a regional approach to water use efficiency. The utilities are the Cities of Santa Rosa, Rohnert Park, Petaluma, Sonoma, Cotati; North Marin, Valley of the Moon and Marin Municipal Water Districts, Town of Windsor and Sonoma County Water Agency. Each of these utilities has water conservation programs to assist homeowners in reducing water use. Effective water conservation programs are essential to reducing impacts associated with water diversions in the CCC ESU.
- ❑ Frost Protection: NMFS HCD, Sonoma County District Attorney, and CDFG are actively working to address impacts associated with spring water diversions from the Russian River and tributaries to salmonids associated with the practice for frost protection for vineyards.
- ❑ From 1999 through 2006, NOAA OLE, CDFG Game Wardens, and the Sonoma County District Attorney worked together to address unpermitted summer dams in Sonoma

County. Many of these unpermitted dams were located on the Russian River and its tributaries. Working in close coordination, the agencies worked to bring dam owners and operators into ESA and CEQA compliance. NMFS PRD developed a guidance document in 2001, regarding summer impoundment and a series of mitigation measures to minimize impacts for existing and newly proposed impoundments. This effort led to cessation of a number of dam operations, dam removal, or owners/operators bring dams into compliance with applicable laws. Today, far fewer summer dams are installed and habitat quality is anticipated to have significantly improved.

- ❑ Critical monitoring efforts are occurring in some focus watersheds in the ESU, including Scott Creek, Lagunitas Creek, Caspar Creek, Pudding Creek, and Noyo River. In the Lost Coast Diversity Stratum, CDFG is evaluating techniques to determine coho salmon and steelhead spawning escapement estimates effective for monitoring population status and trends. Methods used by CDFG include use of annual spawning ground surveys for long term regional monitoring where adult population sizes are estimated annually in a rotating panel design that samples 10% of all spawning habitat using one or a combination of commonly used techniques including live fish or redd counts and or salmon carcass counting. These estimates are calibrated at life cycle monitoring stations where known estimates of returning adults from total counts or capture-recapture experiments are used to calibrate spawning ground escapement estimates. Adoption of these protocols, expansion of the monitoring program, and landowner cooperation is essential for assessing the status of CCC coho salmon in the ESU. CDFG has expanded the program into the Santa Cruz Mountains Diversity Stratum.
- ❑ Campbell Timberlands Management, The Nature Conservancy, the Conservation Fund and private foresters and loggers have worked together to implement several extensive restoration projects using unsecured wood to increase instream habitat complexity in key watersheds. This collaboration includes the use of loggers and their equipment for tree falling and wood placement.
- ❑ Sustainable Conservation worked with the Corps to develop a programmatic biological assessment for restoration projects within the regulatory jurisdiction of NMFS' PRD NCCO.

A biological opinion was issued in 1996, which authorizes a wide-suite of restoration activities to cover a total of 500 projects for ten years. CDFG wrote a consistency determination of CCC coho salmon and the program is administered by the NOAA RC and the Corps. This program provides an expedited permitting pathway for projects that do not receive FRGP funding (which has numerous programmatic permits) that may incidentally take listed salmonids. To date, an average of only ten projects per year have been authorized. The underuse of this programmatic permit is likely due to the lack of comprehensive permit coverage from other agencies (such as the California Coastal Commission, USFWS, CDFG's LSAA, *etc.*).

- ❑ Coastal Streamflow Stewardship Project: Trout Unlimited and CEMAR are selecting and assessing four to six coastal watersheds from Northern California down to the Santa Barbara (California) area, and working with landowners in those pilot watersheds to develop water management tools and identify projects to protect and reconnect stream flow – including coordinating diversions and implementing rotation schedules, storing winter water for summer use, and improving irrigation efficiency. Two watersheds with focus populations, San Gregorio Creek and Grape Creek (tributary to Dry Creek, tributary to the Russian River) are included in the project. California's current system of water right administration frequently fails to protect water users as well as salmon and steelhead, and it discourages innovative efforts to restore and protect stream flows. Traditionally, water diverters have been regulated individually, if at all, with little regard to how their actions relate to other diversions in the area or contribute to cumulative impacts on the stream. Insufficient water flows are a key limiting factor to many focus populations, particularly for the summer rearing lifestage. In light of climate change and future population growth, adverse impacts to streamflow will likely increase without major efforts to address this limiting factor. The Coastal Streamflow Stewardship Project offers an opportunity to try to balance human water demand with fisheries life history requirements. If successful, programs such as will provide a much needed tool for CCC coho salmon recovery.
- ❑ Major land purchases by conservation organizations have occurred in watersheds with focus populations since listing. Examples include purchase (1) of much of Big Salmon Creek

and lower portions of Big River by the Conservation Fund, (2) portions of San Gregorio Creek by Midpeninsula Open Space District, (3) large portions of San Vicente Creek by Trust for Public Land, The Nature Conservancy, Peninsula Open Space Trust, Land Trust of Santa Cruz County, Save the Redwoods League, and Sempervirens Fund, (4) Usal Creek by Redwood Forest Foundation and funded in part by the Wildlife Conservation Board, and (5) portions of the Garcia River by The Conservation Fund with support of The Nature Conservancy. These purchases are critical conservation measures to ensure important watersheds with focus populations are protected from parcelization, subdivision, and conversion from forestlands to agriculture (particularly vineyards) or rural residential land uses. Many of the aforementioned conservation organizations are working actively to expedite habitat restoration actions with direct benefits to CCC coho salmon.

- ❑ The County of Santa Cruz stopped funding their Public Works Department from routinely removing large woody material from streams in Santa Cruz County in 2010. The County Planning Department is now reviewing all accumulations of large woody material in consultation with a hydrologist and staff from NMFS and CDFG in order to assess potential impacts to infrastructure and passage. This program has reduced the quantity of instream wood removed from key streams with focus populations and significant improvements to habitat and anticipated to accrue overtime.
- ❑ The California Coastal Conservancy works with local governments, other public agencies, nonprofit organizations, and private landowners to purchase, protect, restore, and enhance coastal resources, and to provide access to the shore. The California Coastal Conservancy and has been funded primarily by State general obligation bonds and from the State's general fund. The Coastal Conservancy has undertaken numerous projects which include, (a) land acquisition, (b) resource restoration, (c) resource enhancement, (d) funding for watershed assessments, and (e) land use conservation and site reservation. In 2004, the California Coastal Conservancy funded and helped to create the Integrated Watershed Restoration Program (IWRP) to help navigate the complexities of watershed work in Santa Cruz County. IWRP is a voluntary framework for watershed partners to communicate with each other. It is designed to help remove the stumbling blocks for watershed projects. One

of the main objectives of IWRP is to coordinate the relevant State and Federal agencies on the identification, funding, and implementation of watershed restoration projects. IWRP is administered by the Santa Cruz County RCD and has been instrumental in “fast-tracking” the design, permitting, and implementation of important restoration projects benefiting coho salmon in the Santa Cruz County. Project implementation has proven to be quicker than the projects funded through FRGP. The success of IWRP has led to expansion of the program to Monterey and San Mateo Counties.

5.2.6 PRIORITY CONSERVATION EFFORTS

While Federal, State, county and non-governmental efforts are underway, and collectively enhance the potential that populations and habitats of the CCC coho salmon ESU can be protected, they do not provide sufficient certainty of implementation and effectiveness to substantially ameliorate the level of assessed extinction risk for CCC coho salmon. The fact that CCC coho salmon continue to decline is an indication that conservation efforts may need refocusing, expansion, and/or restructuring to align with the highest priorities to, first, prevent this species’ extinction and, second, provide for its long-term survival. Given all of the ongoing conservation efforts, the following efforts are considered the highest priority for future continuation:

- ❑ Continuation and funding for the two Captive Broodstock Programs;
- ❑ Continuation and funding of restoration and monitoring projects by FRGP and PCSRF;
- ❑ Funding and implementation of the California Coastal Salmonid Monitoring Program;
- ❑ Implementation of Coho Priority Action Coho Team recommendations necessary to prevent the extinction of CCC coho salmon; and
- ❑ Development of public/private partnerships to involve private landowners in CCC coho salmon recovery (*e.g.*, Safe Harbor agreements, Conservation Banks, Habitat Conservation Plans, *etc.*).

Conservation efforts of very high priority that were anticipated at the time of listing for implementation but currently remain unrealized, or not fully realized, include:

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- ❑ Mendocino Redwood Company HCP: The company owns portions of six high priority recovery watersheds (focus populations) in Mendocino and Sonoma counties; watersheds currently supporting extant coho populations. Finalization of the HCP is strongly encouraged.
 - ❑ Other HCPs: HCPs in development at time of listing (*i.e.*, Jackson Demonstration State Forest and Georgia-Pacific Corporation now Hawthorne Timberlands Inc. managed by Campbell Timberland Management) have been discontinued. These should be investigated for possible continuation, in collaboration with the USFWS, to focus on securing these forestlands for the long term due to the high number of watersheds where current populations of CCC coho salmon persist.
 - ❑ The California Recovery Strategy for Coho Salmon has been finalized and was relied upon in the development of this recovery plan. The priorities described in the Strategy, and this recovery plan should guide implementation of the PCSRF/FRGP funds as discussed above.



Photo Courtesy 44: Large wood input into Ten Mile River, Campbell Timberlands, Mendocino County; *David Wright, Campbell Timberlands Management.*