

**STRATEGIC PLAN  
FOR  
MANAGEMENT OF  
NORTHERN CALIFORNIA  
STEELHEAD TROUT**



Prepared by

Department of Fish and Game  
Resources Agency  
State of California

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# STRATEGIC PLAN FOR MANAGEMENT OF NORTHERN CALIFORNIA STEELHEAD TROUT

California Department of Fish and Game<sup>1</sup>

## INTRODUCTION

The National Marine Fisheries Service (NMFS) has proposed to list steelhead trout of the Northern California Evolutionarily Significant Unit (NCU) as a threatened species under provisions of the federal Endangered Species Act (FESA). This stems from a recent status review by NMFS's Biological Review Team that indicates some populations of steelhead in the NCU are depressed and that the entire unit is likely to become endangered in the near future. Under FESA, federal rules would be established that would reduce or eliminate take of the species stemming from human activities in the environment, including angling, and a species recovery plan would be developed and implemented under direction from the NMFS.

This document lists management actions that are proposed to be continued, expanded, or implemented by the California Department of Fish and Game (Department or CDFG) to assist with steelhead rebuilding. Implementation of these options, along with comprehensive species monitoring, is recommended in lieu of listing as a threatened species.

## GEOGRAPHIC SETTING

The NCU includes all the coastal streams and watersheds accessible to steelhead trout north of the Russian River (Sonoma County) to and including Redwood Creek (Humboldt County). The Eel River is the largest hydrologic unit and steelhead stream in the area. Other important steelhead streams in the area, though much smaller in size, are the Mad, Tenmile, Noyo, Navarro, Garcia, and Gualala rivers. The steelhead trout populations of the area are believed by NMFS to possess similar biological characteristics, stemming from occasional or frequent interactions between the populations within the unit. Pursuant to FESA, northern California constitutes an Evolutionarily Significant Unit (ESU), and should be considered for listing purposes as a unit.

The NCU is a generally mountainous region within a Mediterranean climate zone that produces heavy rainfall during late fall through early spring months. The area supports moderate to dense stands of coniferous trees, mostly Douglas fir and coastal redwood. Most of the land is in private or State ownership. The California Department of Forestry (CDF) manages the State forests in the NCU. Approximately 20% of the land area is designated National Forest and is managed by the U.S. Forest Service (USFS). The geology of the area is highly unstable; natural and man-caused landslides are common throughout the area.

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<sup>1</sup> Prepared for the National Marine Fisheries Service, Southwest Region, February 4, 1998.

Steelhead and salmon are the most sought-after freshwater fishery resources of the NCU, while timber production and tourism are the most valuable economic activities of the region. Commercial fishing is important to the ports of Eureka and Fort Bragg, two of the larger cities in the area. The area is lightly populated with fewer than about 100,000 residents.

Land use activities have adversely affected steelhead habitat throughout the area. Water development, primarily dam construction on the Mad and Eel rivers, has had an impact on the downstream ecologies of those systems and, in the case of the Eel River, has blocked fish passage to the upper reaches. Dams formerly existed on the lower Mad (Sweasey) and South Fork Eel (Benbow) rivers but were removed over 20 years ago, in part to facilitate anadromous fish passage.

Mad River Hatchery is the only large-scale fish hatchery in the region. This hatchery, located near the town of Blue Lake, is owned and operated by the Department to enhance steelhead and salmon populations of coastal streams. The Department also operates a coho salmon egg-taking facility on the Noyo River near the town of Fort Bragg (the eggs are reared at Mad River Hatchery). There are numerous anadromous fish rearing facilities operated by private and non-profit organizations in this area but only three rear and release steelhead. These are located in the Eel River system and on the Gualala and Tenmile rivers. They operate under guidelines established through the Department's Cooperative Rearing Program, which requires the use of native broodstock and marking of all fish prior to release, and prohibits out-of-basin releases.

## **STEELHEAD RESOURCE**

All NCU steelhead streams support winter steelhead, and some of the very smallest streams of the area are known to support winter steelhead runs. Significant populations of summer steelhead are found in the M.F. Eel and Mad rivers, and smaller populations occur in the Van Duzen and Mattole rivers and Redwood Creek. Historically, there were steelhead stocks in the Eel and Mad river systems that exhibited the half-pounder life history similar to Klamath Mountains Province (KMP) steelhead, but habitat alteration of the smaller tributaries utilized for spawning and rearing has nearly eliminated these stocks.

Winter steelhead typically enter fresh water from December through March and, unlike summer steelhead who enter fresh water with immature gonads, are mature and spawn soon after river entry. 'Blueback' steelhead of the smaller coastal rivers are a late-running component of winter steelhead that are popular among anglers of the coastal streams.

Adult summer steelhead enter freshwater from May through June, hold-over in deep pools of mid- to high elevation tributaries during the summer, and spawn in winter and early spring. Summer steelhead are a depressed everywhere and angling regulations have been implemented to preclude harvest of these fish.

A remnant fall-run steelhead run is believed to persist in the Mad and Eel rivers. These fish enter freshwater during August-October, migrate to the upper reaches of the basins, and spawn during winter and early spring months. Northern California (including Klamath River) fall-

run steelhead return to freshwater for non-spawning purposes (i.e., feeding) after only 3-4 months at sea. At this time they are 10-16 inches in length and are popularly known as "half-pounders" (the term "half-pounder" was actually coined in the early 1900's based on observations of the Eel River run).

NCU steelhead live one to three years in freshwater before migrating to the ocean during March through May as six to eight inch smolts. They grow rapidly in the ocean and return to freshwater to spawn and complete their cycle after one or two growing seasons at sea. (The exception to this pattern is the half-pounder life history type which enters freshwater for non-spawning purposes). A few fish, mostly females, survive to spawn a second or third time; repeat spawners can be an important component (exceeding 40%) of the winter steelhead spawning run in short-run streams.

The ocean distribution of NCU steelhead is unknown. Ocean commercial steelhead fishing is not permitted in California and at-sea observations indicate commercial salmon trollers rarely encounter them. Sport fishing is allowed for steelhead in ocean waters but landings in ocean sport fisheries are very uncommon.

Ocean natural mortality is probably highly variable between years for NCU steelhead, as it is for west coast anadromous salmonids in general. Poor ocean survival conditions can lead to low returns of salmon and steelhead, but the degree to which this has affected California steelhead runs has not been investigated.

Steelhead angling in the NCU primarily occurs from December through March. The Eel River system is second to the Klamath River in terms of steelhead production and is one of the most popular steelhead fisheries in the state. An excellent adult steelhead fishery supported by Mad River Hatchery fish takes place in the river below the hatchery from December through February each year.

Steelhead Report Card information indicates that 28% of the annual statewide steelhead angling effort takes place in streams of the NCU. These data also indicate that steelhead anglers in the NCU catch on average about 0.6 steelhead per angler trip, as compared to the statewide average of about 1.0 steelhead per angler trip. Statewide, anglers release about 70% of all steelhead caught.

Through angling regulations designed and recommended by the Department and the public and promulgated by the California Fish and Game Commission (Commission), the Department's goal is to provide angling opportunities for steelhead while protecting all stocks from over-harvest. Since the inception of the Steelhead Project in 1991, the Department has attempted to identify all streams where angling impacts to steelhead populations could be occurring, and has made many recommendations to provide greater protection for steelhead. Most of these have been adopted by the Commission.

## STATUS OF POPULATIONS

Except for the upper Eel River, recent estimates of steelhead run size are not available for any of the major winter steelhead populations in the NCU. Adult counts are available for the relatively small summer steelhead populations of the M.F. Eel, Van Duzen, Mattole, and Mad rivers and Redwood Creek.

*The California Fish and Wildlife Plan* estimated that steelhead spawning escapement in the early 1960's in the Eel River was around 82,000 adults. It is noteworthy that these estimates were based on biologists' opinions about river run sizes because no empirical data on steelhead run size were available for most streams in the NCU. Benbow dam counts on the S.F. Eel River averaged 18,800 adults in the 1940's and 3,400 adults in the 1970's. The dam was removed in 1975 because of passage concerns for chinook salmon.

*The California Fish and Wildlife Plan* estimated spawning escapement for the Mattole, Noyo, Big, Navarro, and Gualala rivers during the early 1960's was 12,000, 8,000, 12,000, 16,000, and 16,000 fish, respectively. During the 1974-75 and 1975-76 winters, mark-recapture sampling in the Gualala River produced adult run size estimates of 5,000 and 6,100 fish, respectively. The fishery catch estimates (including released fish) in those two years were 1,400 and 900 (28% and 15% catch rates), respectively. It is noteworthy that 1974-75 was a dry winter which accounted for the high catch rate that year.

Steelhead runs in the upper Eel River system have declined significantly. Annual counts of adults at Cape Horn Dam in the upper watershed of the main stem Eel River declined from an average of 4,400 during the 1930's to about 1,000 during the 1980's. Annual counts of wild fish at this facility have declined even more precipitously: from about 500 in the late 1980's to less than 100 in the 1990's. Recent indications are that steelhead populations have declined in the S.F. Eel River, which may be due in part to predation or other adverse effects from introduced Sacramento squawfish which are now widespread throughout the system.

Similar to the KMP, summer steelhead populations in the NCU represent a small component of the total steelhead resource. Annual surveys have been conducted in all known summer steelhead adult holding habitats since the mid-1960's for the M.F. Eel River population, and the early 1980's for the Mad and Van Duzen rivers and Redwood Creek populations. The M.F. Eel River population has fluctuated around a mean of 941 for this time period, but has shown a slight decline for the past two years. Populations in the Mattole and Van Duzen rivers and Redwood Creek are extremely small (around 10 adults each), while the population in the Mad River appears to be robust (around 500 adults). Counts made in the past two years indicate that the Mad River population has been the highest it has ever been since the survey began.

## STRATEGIC PLAN

Habitat protection and rehabilitation is the key to restoring salmon and steelhead resources throughout California, including the NCU. Fisheries management is also required to promote increased production of juvenile fish and to minimize interactions between hatchery and naturally produced fish. This Strategic Plan addresses both aspects of the NCU steelhead restoration

process. The tasks that relate directly to the issues specified by NMFS (Conservation Measures for Coastal Steelhead, January 21, 1998 - Attachment 1) are denoted with an asterisk.

## **Fishery Management**

### **Goal 1: Protect spawning adults while maintaining sustainable steelhead fisheries.**

Regulation of river sport fisheries comes under the purview of the California Fish and Game Commission.<sup>2</sup> Steelhead fishing regulations in California have been increasingly restrictive over time. In the 1970's anglers were permitted to take up to 10 "trout" per day during summer months in NCU streams and were then allowed to take up to 3 adult fish during the adult steelhead runs. Many if not all the trout taken in those fisheries were juvenile (pre-migrant) steelhead trout. In the 1980's the daily bag limits were reduced to 5 trout during summer and 2 fish during the adult runs. In the early 1990's no differentiation was made between the summer trout and adult daily bag limits: both were set at 2 fish. Recently, the limit was further reduced to only one fish greater than 22 inches, and there are several streams where the daily bag limit is zero.

Further restriction of the river fisheries may accelerate stock recovery while at the same time providing for viable steelhead fisheries for adult fish. The following tasks that pertain to changes in sport fishing regulations are described in Attachment 2, *Status of Steelhead Angling in the Northern California Steelhead ESU*. Open seasons and closures are shown in Figure 1.

\* **Task 1a. Mark all hatchery steelhead**

The public and private rearing facilities operating under the Department's Cooperative Rearing programs has been required by the Department to fin-clip all of their steelhead production prior to release. This will continue. Fin-clipping (adipose fin) of all hatchery fish has been initiated at Mad River Hatchery and all fish will be marked in this way before release. A small percentage of marked hatchery steelhead will return to fresh water this fall, however, the majority of adults will not return until fall of 1999.

\* **Task 1b. Eliminate harvest of wild (unmarked) adult steelhead until there is evidence that the population is secure.** The Department will recommend to the Commission that a daily bag limit of zero for wild steelhead be implemented for stream reaches open to angling in the NCU. Because the Mad River Hatchery population appears to be secure and healthy, the Department is recommending to the Commission that a daily bag limit of two hatchery steelhead be implemented for reaches of the Mad River that are open to steelhead angling.

\* **Task 1c. Continue to prohibit stocking of domestic trout stocks in juvenile steelhead habitat.** It is Commission policy to prohibit stocking of trout from the Department's and other's domestic trout hatcheries in anadromous waters. The Department will continue to adhere to this policy.

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<sup>2</sup> Although NMFS can regulate take under FESA, it is the Department's view that regulation of the state's citizens is more effectively carried out under State authority.

- \* Task 1d. Create and maintain sufficient sanctuary areas for rearing steelhead where there would be no angling. The Department will recommend to the Commission that tributaries be closed year-round to all fishing (see Figure 1).
- \* Task 1e. Recommend terminal gear restrictions to minimize hook-and-release mortality of juvenile steelhead. Mortality of wild juvenile steelhead that must be released because of bag limit restrictions can be minimized by applying prudent terminal gear restrictions (i.e. barbless hooks and bait restrictions). For all reaches in the NCU that will be open to summer trout angling, the Department is recommending that gear be restricted to artificial lures with barbless hooks for the summer trout season. For all reaches that will be open to adult steelhead angling, the Department is recommending that gear be restricted to barbless hooks and, for six of these reaches, gear will be further restricted to artificial lures.
- \* Task 1f. Close all summer steelhead holding areas to fishing. Currently, all known summer steelhead holding areas in the NCU, except for the Mad River, are closed to all angling year-round. The Department is recommending to the Commission that this reach of the Mad River be closed year-round to all angling.
- \* Task 1g. Delay the opening of the summer trout fishing season to protect emigrating wild steelhead smolts from angling impacts. The Department is recommending to the Commission that the summer trout fishing season open on the fourth Saturday in May, instead of the last Saturday in April.

**Goal 2. Manage hatcheries so they don't interfere with natural steelhead production.**

Hatcheries can potentially affect natural fish production through competition if hatchery fish use the natural environment for extended rearing following release from the hatchery, or if the adults spawn with naturally produced adults. Also, large hatchery fish returns can encourage catch-and-release fishing which can result in mortality of incidentally caught naturally produced fish. Hatcheries can also harbor diseases. Mad River Hatchery and the Cooperative Rearing Facilities in the NCU operate under policies to minimize interactions between hatchery and naturally produced fish and to minimize diseases.

Policy 2a. Continue to rear hatchery fish to a minimum of 6 inches and release them at the hatchery during March-May upon attainment of minimum release size. This is the policy at all State hatcheries in the NCU and will be strictly adhered to. Fish which do not reach release size/time criteria are held over an additional year or released into a non-anadromous water.

- \* Task 2a. Mark all hatchery fish and conduct spawning surveys to determine the extent of straying of hatchery fish into natural areas. See Task 1d for status of hatchery fish marking. These surveys can be conducted in conjunction with the monitoring program as described in Goal 3. If it is determined that significant straying of hatchery fish to natural spawning habitat is occurring (10% to 30% straying rate), the Department will consider reducing hatchery fish release numbers or modify its release or rearing practices to

encourage hatchery fish homing. Additional funding is needed to conduct the spawning area surveys.

Policy 2b. Allow all steelhead to enter the hatcheries and use naturally produced fish (unmarked), when available, in preference to hatchery fish (marked) for spawning. It is the current policy of the Department to allow all steelhead to enter the hatcheries and to spawn all fish up to the capacity of the hatchery, making sure to take eggs from throughout the run. Under a large return situation, this policy would favor spawning of naturally produced fish over hatchery fish.

Policy 2c. Limit hatchery fish production to current levels. Allowing selective harvest of hatchery fish could increase public pressure to produce more hatchery fish, which could be detrimental to natural fish production, for reasons discussed above. It could also increase straying of hatchery fish into natural areas. This policy is intended to notify the public that the Department has no intention of increasing hatchery fish production, because of the potential negative impact increased hatchery fish production could have on natural fish production.

Policy 2d. Ensure regular health checks of hatchery fish by Department pathologists. Hatcheries can harbor or encourage fish diseases due to crowding in hatchery raceways. Department pathologists make health checks at all hatcheries during each rearing cycle and take corrective action in the event of a disease outbreak.

Policy 2e. Diseased lots of hatchery fish will be destroyed unless they can be effectively treated and meet release size and time criteria. This is current Department policy and will be strictly adhered to.

Task 2b. Review the operating procedures of all Cooperative Rearing facilities. The Cooperative Rearing facilities are required to submit five-year management plans to the Department, which must be approved by the Department before they can begin operating. The Department will undertake a review of the plans currently in place to determine if additional, more protective measures are necessary to protect wild stocks in the system.

**Goal 3. Monitor the Recovery of NCU Steelhead Runs.** The success of the proposed rebuilding plan for NCU steelhead runs must be documented in order to evaluate the various management and recovery measures that are proposed to be implemented, as well as to allow for adaptive management. The monitoring can either be direct, utilizing fishery-independent sampling techniques, or indirect, involving sampling of the fisheries themselves. Direct sampling is the preferred technique but is very costly, or not feasible in the case of winter steelhead because of frequent high winter flow conditions. The Department recommends the following specific actions for consideration, some of which can be implemented immediately by redirecting existing personnel and resources. However, a funding source will need to be identified to implement a monitoring program on a permanent basis. Estimated cost for each new or augmented task is shown, and total estimated budget is shown in Table 1.

Task 3a. Assess winter steelhead adult abundance. Monitoring winter steelhead runs in the majority of the NCU will be very difficult, given the fact that the majority of winter steelhead migrate on high winter flows when maintenance of a weir or counting device is usually not feasible. Counts of winter steelhead adults are made at the Van Arsdale Fisheries Station on the upper mainstem Eel River, and this program will continue.

The only other feasible counting site is at the old Benbow Dam site on the S.F. Eel River, which is presently the site of a removable recreational dam. To obtain steelhead counts at this site, a permanent weir and ladder that can withstand very high flows will need to be constructed. **Estimated cost: \$2 to 5 million.**

In the mid 1970's, the Department conducted the Coastal Steelhead Project to evaluate the use of artificial rearing to enhance angler success in several coastal streams. As part of this project, run size estimates and angler harvest was assessed in the Mad, Gualala, and Garcia rivers. Adults were trapped and tagged using large fyke traps and gill nets, and were later recovered by creel censusing. Implementing some aspects of this former study could allow us to estimate run sizes in some of these same rivers. **Estimated first year cost: \$220,000**

Task 3b. Assess summer steelhead adult abundance. The Department conducts summer dive surveys in adult holding habitat on the M.F. Eel, Van Duzen, Mattole, and Mad rivers. Summer dive surveys are conducted in Redwood Creek by Redwood National Park personnel. These surveys cover nearly 100% of the adult summer holding habitat on these streams. These programs are ongoing and will continue

Task 3c. Establish juvenile steelhead index reaches. Index reaches in the Eel river system and several other coastal stream systems will be identified and censused annually by electrofishing and/or dive surveys. This will allow relative comparison of juvenile abundance/density trends in the basins. This work will augment established juvenile index sites described below:

1. Steiner Environmental Consultants survey established index reaches in the upper Eel River system annually, as part of a mandated Federal Energy Regulatory Commission flow and habitat study for the Potter Valley Hydroelectric Project.
2. The Department's Eel River Basin Planning project conducts annual surveys in established index reaches in the Van Duzen, S.F. Eel, and Mattole river watersheds to monitor juvenile salmon and steelhead.
3. Department Region 3 personnel conduct annual surveys in established index reaches to monitor juvenile steelhead and coho salmon in the M.F. Eel river and other drainages of the north central coast.

**Estimated first year cost: \$173,000**

**Task 3d. Identify and monitor health of key habitats.** The Department has an intensive and ongoing program to monitor health and status of anadromous fish habitat in the Eel River and other north coast drainages. This program is described under Goal 5 and in Attachment 3, *Status Update of North Coast and Central Valley Steelhead Management Actions*. We believe that no additional programs are necessary to accomplish this task.

**Task 3e. Conduct steelhead angler surveys to assess harvest and angler use.** The Steelhead Report Card, required for all steelhead anglers by state legislation, was recently renewed for another five-year period. Additional funding for steelhead monitoring and restoration programs could be generated by increasing the cost of the card (currently \$3.15), but would require legislation. Oregon and Washington charge much higher fees for their cards (over \$10.00). The Steelhead Report Card provides valuable annual information on steelhead angler effort, catch, and area of residence.

During the mid 1970's, the Department conducted annual angler surveys in the Mad, Gualala, and Garcia rivers, as part of the Coastal Steelhead Project. This project could be reinitiated, and Redwood Creek could be added. **Estimated first year cost: \$265,000.**

Table 1. Estimated first year cost for new and augmented monitoring tasks (Goal 3)

Task	Estimated Cost
3a. Assess winter steelhead adult abundance	
Benbow Dam reinstallation	\$ 2 to 5 million
Coastal stream run size assessment	\$220,000
3c. Juvenile Abundance/Density Index	\$173,000
3e. Coastal stream angler surveys	\$ 265,000
TOTAL:	\$2.7 to 5.7 mil

**Goal 4. Provide management and technical oversight to achieve timely rebuilding of NCU steelhead resources.** Restoration, management, and monitoring will need to be coordinated between the Department, NMFS, other land and resource management agencies, and the public. Development of tasks, and setting goals, objectives, and time schedules will need to be a joint effort by the Department and NMFS. Using information obtained by tasks identified under Goal 3, the agencies will identify recovery thresholds, implement necessary management actions, and receive and consider public input to the recovery process. The Department and NMFS will need to work closely with existing management entities in the NCU.

**Goal 5. Ensure compliance with environmental laws and regulations.** Existing laws and regulations already provide protection for NCU steelhead populations. The current problem lies in ignorance of, or purposeful disregard for the rules. In that regard, the public can and will contribute to the rebuilding if 1) deterrence measures are properly enforced and 2) the rules are explained to them.

Task 5a. Hold public meetings to discuss threats to the resource and explain pertinent federal and state laws and regulations. This should be a collaborative effort involving state and federal biologists and law enforcement officers. Meetings should be held at least once annually in each major town and at the facilities of each major logging and mineral extraction operation. The public should be made aware of what constitutes a violation of existing laws and regulations and how and where violations can be reported (e.g., CalTIP, local Department offices).

Task 5b. Enforcement personnel will meet and confer regularly. Federal and State enforcement officers (CDFG, USFS, BLM, CDF, BIA) must be cross-deputized, whenever possible, in order to more effectively and efficiently enforce one another's rules. These entities should also meet regularly to scope particular or potential problem areas and discuss changes in rules or agency policies. This is a coordination effort that can be implemented immediately at little or no cost.

**Goal 6. Protect, enhance, and monitor essential steelhead habitat.** Since 1982, the Department has spent over \$39 million in grants that have provided benefits to anadromous fish species, including steelhead. These projects have been primarily related to habitat restoration, using a variety of funding sources to perform the work (see Attachment 3, *Status Update of North Coast and Central Valley Steelhead Management Actions*, for a more detailed report of restoration actions). The following is a brief summary of tasks that are performed by the Department to protect and enhance essential steelhead habitat.

Task 6a. Expand watershed and instream habitat analysis and restoration program. Past land-use practices have reduced instream habitat quality and quantity. Side-stream and up-slope conditions often continue to degrade habitats as storm flows influence unstable areas. Habitat for several life history stages of steelhead can be negatively influenced because of sedimentation, temperature increases, channel blockage, and loss of critical channel features, such as shade trees and large-woody debris.

This program conducts stream and side-slope surveys that quantify and qualify the condition of crucial fish habitats and the processes that influence them. As limiting factors for anadromous fish are identified through this effort or private citizen efforts, proposals for solutions are developed and funded through a grants process. Projects can also be approved for education, watershed planning, forest improvement, project maintenance and monitoring, watershed organization support and assistance and private sector training and education projects.

New funding for coastal projects and additional technical staff for this program totals \$43 million over six years. This is an expanded program over previous years which have

proven highly successful in identifying and correcting watershed problems. The new emphasis on education will help reduce future watershed problems. Additional training in the form of a watershed academy will be available for Agency staff that approve permits in CDF, DFG and county government.

The California Department of Fish and Game pursues a variety of activities and programs aimed at protecting and restoring coastal salmonids. These actions are focused in five interrelated program elements:

1. Watershed conservation, protection, and restoration, which aims to conserve habitats and ecosystems, rather than focusing on a species-by-species protection approach.
2. Fisheries monitoring, research, and data management, which uses standardized protocols to collect angler use data, habitat inventories and research results so that these parameters can be of use to the resource management community.
3. Regulatory authority to fulfill Legislative intent, current laws and statutes and the policies of the Fish and Game Commission.
4. Public awareness and support, fostering understanding for the actions needed to protect natural resources and involve local constituencies in decisions that affect their communities.
5. Fishery management support, which includes harvest regulations and hatchery production to replace losses associated with water development projects.

Specific actions within these broad program elements that are currently being accomplished (except Fishery Management Support, which is discussed elsewhere in this report) are described below.

### **1. Watershed Conservation, Protection and Restoration**

**Watershed Academy.** The Department, the California Department of Forestry and Fire Protection (CDF), the State Water Resources Control Board (SWRCB), the North Coast Regional Water Quality Control Board (RWQCB), and NMFS are cooperating to sponsor a "watershed training academy" for agency staff, Registered Professional Foresters (RPF), and watershed coordinators who conduct projects, advise landowners, or approve permits. This is the second year of the academy (200 graduates are anticipated). Course content includes the technical aspects of:

- a. Salmonid life history and instream beneficial uses
- b. Watershed assessment and evaluation of cumulative effects
- c. Recognition of potential impacts and high risk areas
- d. Hillslopes, roads, stream crossings, streamside zones, fish barriers

- e. Mitigation, protection, restoration methods
- f. Monitoring theory and methods.

**Sustained Yield Plans for Forest Landowners.** The Board of Forestry (BOF) requires landowners over 5,000 acres to develop a plan that demonstrates the continual flow of high quality forest products to the mill. The Department supplies support to the CDF for technical analysis whenever the landowner wishes to incorporate protection measures for endangered species or candidates such as anadromous fish. Presently all large coastal landowners are developing plans that include protective measures, watershed analysis and monitoring for their timber operations. Completion of these plans for most large landowners is anticipated in 1996 and 1997.

**Eel River Basin Planning.** The Department has initiated a habitat inventory and fishery restoration program within the Eel River Basin. To date over 200 streams have been surveyed, habitat problems identified, and reports produced of recommended actions. A significant part of this effort has involved community-based information gathering and discussion. Workshops have been held (Eelswap and Eelthink) to elicit the views of the local constituencies as well as the scientific and resource use communities. The Department will continue and expand these efforts. An Action Plan for the Eel River, which will guide restoration throughout the area, has been drafted and is nearly complete.

**Migration Barrier Removal.** The Department will continue to coordinate habitat improvement and barrier removal programs in the NCU using local contractors and the California Conservation Corps. Opportunities still exist, including fish passage at many small dams and correction of passage at improperly placed culverts, even after an aggressive program to find and remove these types of barriers within the past ten years.

**Unscreened Diversions Program.** The Department's program to identify unscreened water diversions that are detrimental to juvenile salmon and steelhead has almost exclusively focused its activities in the Central Valley and Sacramento-San Joaquin Delta, where large agricultural diversions are common. This program will be expanded to coastal areas, so that diversions needing screens can be identified on a priority basis.

## **2. Fisheries Monitoring, Research and Data Management**

**Monitoring Program for Forest Operations.** The BOF has supported a Monitoring Study Group since 1989. The Department has conducted field studies sponsored by this group and under contract to the CDF. These studies tested monitoring techniques and made recommendations for future programs. The final report has been released and lays the ground work for cooperative monitoring between agencies and landowners. This work will continue with cooperative agreements and contracts for in-channel and hillslope field monitoring.

**Instream Flow Studies.** The Department conducts instream flow studies to determine the minimum flow necessary for the maintenance of fish populations. These studies are conducted by teams under contract to other agencies interested in water appropriations through dams and wells. Several coastal streams have been studied and reports published. Presently, Central Valley streams are under study.

**Sensitive Species and Habitats Mapping Project.** The Department is mapping (through GIS and other techniques) important sensitive species, rare habitats, natural plant communities, and riparian and associated habitat areas along north coast and inland areas to increase the effectiveness of its project analysis. This information is becoming available over the Internet via the State California Environmental Resources Evaluation System (CERES) program.

**Forest Reptiles and Amphibian Working Group (FRAWG).** The Department has sponsored and is participating in the FRAWG. This group, composed of timberland owners and agency representatives, are investigating methods to conduct forest operations compatibly with amphibians and reptiles. These studies promise to add value to salmonid protection methods.

### **3. Regulatory Authority**

**Project Review.** The Department reviews project proposals circulated to agencies under the California Environmental Quality Act (CEQA). Specific mitigation measures are recommended to lead agencies which reduce risk, offset damage, or restore past damage to salmonid areas. Projects reviewed include: water appropriations and water rights permits, timber harvesting plans, dams, stream crossings, and construction projects. This project review allows the Department to maintain liaison with Federal and State agencies and participate in the Fish and Wildlife Coordination Act, National Environmental Policy Act, Clean Water Act, State Water Code, Federal and State Endangered Species Acts, CEQA, Forest Practices Act, Fish and Game Code and other administrative and public resource codes.

**Gravel Extraction Agreement.** The Department has developed an agreement with the North Coast Gravel Extraction Industry which is also used by the Army Corps of Engineers in their Letter of Permission process. This agreement protects river environments from gravel extraction problems for salmonids through:

- a. stream profile transects
- b. fish and other wildlife surveys
- c. habitat mapping
- d. monitoring changes from baseline measurements
- e. endangered species agreements
- f. annual operator/agency meetings to determine necessary changes

**Pesticides and Toxic Materials Monitoring Program.** The Department maintains laboratories for the purpose of testing toxicities to fish from outfalls and nonpoint source discharges in support of its own codes and other State water laws. Several inland and marine water systems are monitored annually and specific discharges are investigated for toxic background. Testimony is provided to RWQCB for basin plan requirements and to District Attorneys for criminal cases.

**Timber Tax Credit Program.** A statute was enacted in 1994 that taxed softwood exports, producing a fund that allows landowners accomplishing certain fishery restoration projects to claim a credit of up to 10 % of the cost of doing this work. The Department administers and reviews the applicability of the projects submitted prior to the tax credit being approved by the Franchise Tax Board. This program will facilitate projects throughout the NCU.

#### **4. Public Awareness and Support**

Many of the Departments' coastal salmon restoration programs require a high level of public awareness and support. Those associated with watershed planning and protection must occur in full recognition of community-based knowledge and acceptance. The Department is committed to developing the partnerships needed to create and sustain the long-term efforts that will produce healthy watersheds and fisheries.

Task 6b. Continue to negotiate water releases. Department staff undertakes the review of all water diversions that are licensed under federal and state law. This work will continue.

Task 6c. Continue to issue 1600 permits. Department Regional headquarters issue stream alteration permits pursuant to Fish and Game Code sections 1600 et seq. Guidelines have been established for setting terms and conditions for proposed stream bed modifications which are made part of the permits. Department biologists and wardens ensure that permit conditions are followed.

Task 6d. Implement the Governor's Watershed Initiative. In July 1997, the Governor issued Executive Order W-159-97. In this Executive Order, the Governor re-affirmed California's commitment to protecting and restoring our water, fish and wildlife resources through multiple species, watershed based planning and implementation. He established a Cabinet-level Watershed Protection and Restoration Council. He charged this Council with the development of a "Watershed Protection Program, which shall include an anadromous Salmonid Conservation Element for the purposes of providing conservation efforts necessary to lead to the promulgation of a 4(d) rule by NMFS under the Federal Endangered Species Act."

The Governor recognized that "...a cooperative effort with the federal government, local governments, landowners, fishery representatives, local groups involved in watershed activities, environmental interests, resource-based businesses, other interested parties and the public is critical to the success of such efforts."

Substantial parts of the program already exist and are in process of being implemented (see 6a). Additional elements of the Program are now being developed. The State Conservation Program will include three elements:

1. State-level efforts: This program will address those activities for which protection responsibility lies with the state. These efforts include:

1) The Watershed Protection Council's first informational report, which describes the existing State conservation programs.

2) The California Steelhead Restoration and Management Plan, which was finalized in February 1996.

3) The Phase II WORKPLAN for development of the State Watershed Conservation Program. This highlights where additional efforts will be made, and for which we seek NMFS's substantive participation. It includes monitoring, regulatory enforcement, audit of regulatory compliance, independent science review, coordination with federal entities, and a coordinated State-federal program to support community-based watershed restoration efforts.

4) The State is committed to reviewing its existing forest regulations, their implementation and enforcement to determine their adequacy. NMFS has now agreed to participate in this effort. The independent science panel will also assist in this effort.

2. Local Government efforts: The state program seeks to assist local governments in addressing those responsibilities for which "the buck stops" with local government. These efforts include:

1) The Five County Coho Transboundary WORKPLAN, which we believe is a model for county level efforts

2) A similar effort now being developed with the 5 counties within the Central Coast Coho ESU.

3. Community-based efforts: State and local governments seek to jointly develop a cohesive program with the federal government to foster and support voluntary, community-based protection and restoration efforts. These efforts include:

1) Rangeland Water Quality Management Plan, which was formally adopted in July 1995. This provides a mechanism for rangeland managers to address water quality needs. Both the State Water Resources Control Board and EPA Region IX have supported this approach. To date, plans for over 300,000 acres of Rangeland have been adopted. The approach is evolving. By way of example, in the Garcia River landowners have committed to develop such plans for most of the watershed within a fixed period of time. Several State-wide resource producer

associations are examining its application to address ESA issues as well as Clean Water Act

2) Restoration Examples: There are hundreds of fishery and watershed restoration projects either completed or now underway in California. In fact, the State of California expended over \$60 million for stream and fishery restoration from 1981 to 1996. Recent legislation, SB 271, allocates an additional \$43 million over a six year period. Additionally, the Governor's 98-99 budget proposes significant bond funds to support watershed efforts State-wide.

3) Russian River Cooperative Watershed Program: This is one example of the type of community-based watershed effort now in development. The California Resources Agency has partnered with the U.S. Army Corps of Engineers and two County governments in launching this effort. More recently, the EPA, NMFS and Fish and Wildlife Service have agreed to participate. The effort is based on the principles and concepts underlying the Governor's Executive Order.

