
CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL

PART I

SALMON AND STEELHEAD HABITAT RESTORATION IN CALIFORNIA



CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL

PART I SALMON AND STEELHEAD HABITAT RESTORATION IN CALIFORNIA

DEVELOPMENT OF CALIFORNIA'S PRESENT FISH HABITAT RESTORATION PROGRAM

Many Federal, State and local agencies, and Indian tribes, together with private interests, are actively involved in fish habitat improvement. Modern efforts to protect, restore, and improve fish habitat date back to the era immediately following statehood when hydraulic mining, gold dredging, and other destructive land use practices remained largely out of control. Laws prohibiting hydraulic mining and limiting many other potentially destructive land use practices had been passed before 1900, and land use controls have been gradually strengthened throughout the ensuing years. Truly comprehensive efforts to restore or improve fish habitat were coincident with the advent of the Civilian Conservation Corps in the 1930's and continued to grow with availability of Dingell-Johnson Act funds from the federal excise tax on fishing equipment.

In about 1979, the new state Forest Practices Act together with the Porter-Cologne Water Quality Act, California Environmental Quality Act, and the National Environmental Policy Act began to provide a strong basis for multi-disciplinary protection and improvement of fish habitat. The recent publications declaring the needs and benefits for an expanded program of salmon and steelhead restoration are summarized as follows:

An Environmental Tragedy - published in 1971 by the Citizen's Advisory Committee on Salmon and Steelhead Trout and the California Department of Fish and Game Staff Working Committee. This report documented 80 percent, 65 percent, and 64 percent decline in North Coast steelhead, coho and chinook runs, respectively, from 1940 to 1970. Sacramento-San Joaquin fall-run chinook experienced a 46 percent decline from 1953-1969. The report recommended aggressive action to halt the declines, which resulted in legislative action to protect stream habitat and upgrade hatcheries.

A Conservation Opportunity - published in 1972 by the Citizen's Advisory Committee on Salmon and Steelhead Trout and the California Department of Fish and Game Staff Working Committee. The report summarized legislative action taken to protect salmon and steelhead stocks. It also pointed out that fish managers and user groups needed to adopt an offensive, rather than a defensive program of fisheries management. Protecting and enhancing the resource should be stressed, rather than just reducing the losses. Major opportunities were identified in the areas of improving water quality, spawning gravel, watershed conditions, artificial fish rearing, and maintaining and enforcing scientifically sound catch regulations. Expanded Federal Anadromous Fish Act funding was recommended to help accomplish these goals.

The Time is Now - published in 1975 by the Citizens Advisory Committee on Salmon and Steelhead Trout, also known as the California Advisory Committee on Salmon and Steelhead Trout. This report summarized the recommendations and legislative actions of the first two reports and stressed that full restoration of fishery losses was needed immediately. It recommended artificial rearing projects, off-stream operations, better land use planning, expanded funding for fisheries from the State General Fund, and obtaining help from local governments in protecting fisheries.

CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL

A Prospectus For the Future - published in 1979 by the Resources Agency. This report described the Renewable Resources Investment Fund (RRIF) and how it will be used as a public investment in fisheries, forests, soils, parks, and water for future generations. In fisheries, it proposed an investment of \$25-35 million in salmon hatcheries and restoration over a 10-year period, and another \$25-35 million for habitat rehabilitation. The fishery goals were to double the salmon runs, add 600,000 fish to the annual salmon commercial fishery, 50,000 to the ocean sport fishery, and 50,000 to the river catch. This would be accomplished through artificial rearing, reconstructing spawning riffles, removing salmon migration blockages, improving stream flows, screening water diversions, and restoring watersheds. These goals were not achieved.

Investing For Prosperity - published in 1981 by the Resources Agency. This report described in detail the Geothermal Resources Fund, RRIF, and the Energy and Resources Fund. It mentioned that RRIF has been used to rear two million yearling salmon and that 100 miles of stream had been opened for salmon spawning by the California Conservation Corps. Additional fishery goals for the year 2000 were described, including increasing salmon and steelhead populations by 300,000 annually, and adding 600,000 adult salmon and steelhead annually to recreational and commercial fish landings, increasing wetland habitat from 500,000 to 750,000 acres, reopening 500 miles of salmon and steelhead habitat, acquiring 60,000 acres of key fish and wildlife habitat, restoring the Sacramento-San Joaquin Estuary fisheries, tripling the California annual oyster production, increasing abalone production by one million pounds, increasing the combined production of scallops, mussels, and clams by 100,000 pounds, providing an additional 100 million urban recreational fishing days, and improving the availability of fish and wildlife resource data. It also stated that Sikes Act funding would be supplemented with \$2 million in state funds annually for habitat improvement projects on U.S. Forest Service lands. Few of these goals were achieved.

Investing For Prosperity - An update was published by the Resources Agency in 1982. It described the 20-year plan and provided status reports of program implementation including proposed special fund expenditures for expanding Nimbus Hatchery, salmon and steelhead habitat restoration, habitat acquisition and improvement, artificial reef construction, Salton Sea Resources Utilization Plan, shellfish habitat development and enhancement, wildlife and fish habitat relationships program, and kelp restoration.

The Tragedy Continues - published in 1986 by the California Advisory Committee on Salmon and Steelhead Trout. The earlier findings of the Citizens Advisory Committee on Salmon and Steelhead Trout are updated. The conclusions are: 1) Salmon and steelhead production and utilization are important parts of the state's economy; 2) There has been a significant loss or degradation of suitable habitat and a resulting reduction in production; 3) Immediate action must be taken to begin to reverse these trends and restore this valuable resource. The report discusses issues that should be incorporated in a management and restoration plan and lists issues recommended for legislative action. The report states in reference to habitat: "Specifically, it is almost always more cost effective to prevent damages than to clean up afterward." and: "It is extremely important to base restoration efforts on a sound plan, beginning at the state level, as the need for restoration of salmonid populations is urgent and only limited resources are available for the task."

Restoring the Balance - published in 1988 by the California Advisory Committee on Salmon and Steelhead Trout. This report once again identified salmon and steelhead conservation problems and

CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL

restoration opportunities. Problems and opportunities in this report were grouped by watershed. A focused, well-managed program of habitat protection and repair was proposed. It would require changes in water allocation policies and practices so that adequate stream flow and appropriate water temperatures would be provided for salmon and steelhead throughout the year. Also the need for innovative education programs to inspire environmental awareness was proposed. This report led to the passage of "The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act".

The present program is the product of the State's efforts to comply with both federal and State legal and policy requirements and directives. Those laws and policies that most directly influence fish habitat restoration activities in California are included for reference in Appendix A.

ORGANIZATION AND FUNDING OF CALIFORNIA'S FISH HABITAT RESTORATION PROGRAM

Fisheries management and habitat restoration in California are principally responsibilities of the California Department of Fish and Game (DFG). Other agencies active in the effort include the California Conservation Corps (CCC), California Department of Transportation (CALTRANS), California Department of Forestry and Fire Protection (CDF), California Department of Water Resources (DWR), Regional Water Quality Control Boards (RWQCB), Environmental Protection Agency (EPA), United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), United States Forest Service (USFS), United States Bureau of Land Management (BLM), AmeriCorps, Natural Resources Conservation Service (NRCS), County Resource Conservation Districts (RCD=s) and numerous local agencies. The DFG program is centrally administered through Inland Fisheries Division and includes seven administrative regions responsible for fish management, production, and habitat in their respective geographic areas.

Initial efforts were almost entirely funded under the Federal Aid in Sport Fishing Restoration Act, using Federal funds from excise taxes on sporting equipment. In 1980, the Energy and Resources Fund was used to contract with CCC to set up a cooperative fisheries restoration project. This million-dollar-a-year program has continued to the present. Passage of the Bosco-Keene Assembly Bill 951 in 1981 made an additional \$1 million available for cooperative fish restoration projects. Since the early days of the salmon restoration effort there has been a series of funding sources including: Senate Bill 400, Assembly Bill 1705, Propositions 19, 70 and 99, Commercial Salmon Trollers= Enhancement Fund, Steelhead Report Card, and most recently Senate Bill 271, authored by Senator Mike Thompson.

Currently, public funding for fish habitat and fish rearing programs can come from sales of angling licenses and stamps, permit fees, federal excise taxes on angling equipment and items associated with angling, penalty assessments, the State General Fund, sales of environmental license plates, transfer of funds to the Fisheries Restoration Account through the state budget act, mitigation accounts, and statewide initiatives specifying fish habitat as a beneficiary.

Over the years, funding for restoration work has also been supported by private sector cooperative efforts that have involved matching funds, in-kind contributions, and volunteer efforts. Today, this concept of cooperation between the public and private sectors is a growing and powerful force in watershed restoration in California.

CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL

This pool of funds and effort has sustained the DFG stream habitat restoration program. The level of expertise of both public and private cooperators has increased significantly and a high-quality program that incorporates the best in public and government involvement and commitment has emerged in California. However, the task of restoring California's watersheds and anadromous fisheries remains formidable and can only be successful with greatly increased public and private cooperation and commitment.

FISHERY RESTORATION PLANNING OBJECTIVES

Prior to planning a fishery restoration program or project, a clear definition of the problem or issue to be addressed must be developed. Next, and often a more difficult step, clearly identifiable objectives that reflect the intent and capabilities of the proponent must be developed. Those objectives must be clearly developed to enable formulation of an appropriate, detailed work proposal. They will dictate the type and level of pre-project inventories necessary to assess the present condition of the fish resource and to estimate the probable benefit of the proposed work. In the Eel and Russian rivers the Department of Fish and Game (Department) has established Basin Planning Projects (BPP) to facilitate and/or conduct these and other planning activities. These two projects are producing tributary reports with restoration recommendations, and general basin plans within their respective watersheds. DFG is currently expanding its basin planning efforts based upon the progress made by these projects. The Salmon Restoration Project (SRP), based in Fortuna, also conducts tributary inventory activities throughout the State. Additionally, the Department has recently produced a statewide steelhead management plan to provide general guidance for improving that fishery.

The design of fish habitat restoration projects requires identification of the specific habitat factors limiting fish production, beginning with the factor most critically affecting the final quantity and quality of adult fish produced. Identification of the critical habitat needs for the fishery under consideration, through file searches or new field studies, will determine the scope, direction and probable monetary investment required to meet project objectives. The methods described in this manual will help the planner identify critical fish habitat needs, develop suitable restoration work plans, and determine the appropriate level of post-project evaluation and monitoring needed to assess the effectiveness of the work.