

THE ROLE AND EFFECTIVENESS OF LOCAL AGENCY POLICIES AND PROCEDURES IN PROTECTING ANADROMOUS FISH HABITAT

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ABSTRACT

Three studies were conducted to evaluate the policies and procedures used by some local jurisdictions in California to control land use impacts on anadromous fish and their habitat. The studies covered ten California counties and most jurisdictions within the San Francisquito watershed in Santa Clara and San Mateo Counties which is tributary to San Francisco Bay. Populations of anadromous salmonids throughout California have declined precipitously over the past few decades and several species are listed as threatened or endangered under federal and state endangered species acts.

There were three components to the studies: 1) reviewing all pertinent local agency policies and ordinances; 2) conducting environmental audits at sites where land use activities had occurred; and 3) reviewing environmental and planning documents associated with land development projects. The focus was on the degree to which direct or indirect impacts on fish habitat were identified and mitigated. Recommendations for improving policies and procedures were provided on the basis of study findings.

Results of the policy and ordinance review indicated virtually no direct reference to anadromous fish habitat in any published documents. Environmental audits revealed instances of ineffective control over impacts on riparian zones, instream habitat, floodplain functions and stream flow. As a rule, jurisdictions in the urbanized counties and cities had more stringent environmental protection policies, more requirements for mitigating impacts due to land development and more detailed environmental review procedures.

The consortiums of counties that initiated two of the studies used the findings and recommendations to make changes in policies and procedures. Direct actions have occurred in most counties, such as removal of fish migration barriers and changes in road maintenance procedures. Projects beneficial to anadromous fish are also underway in the San Francisquito watershed.

Key words: anadromous salmonids, environmental planning, environmental assessment, California, Five County Group, FishNet 4C, San Francisquito Watershed Council

INTRODUCTION

Three studies were undertaken to evaluate the policies and procedures used by some local jurisdictions in northern California to control land use impacts on anadromous fish and their habitat (Harris and Kocher 1998; Harris and others 2001; Harris and Kocher 2005). The common objective of these studies was to determine the degree to which regulatory policies and procedures and direct actions such as county road maintenance acknowledged potential impacts and mitigated them. The studies were initiated by consortiums of county governments (Five Counties Group and the Fishery Network of the Central California Coastal Counties) and the San Francisquito Watershed Council. These organizations include ten California counties and all jurisdictions within the San Francisquito watershed in Santa Clara and San Mateo Counties, California.

Populations of anadromous salmonids have declined precipitously throughout California and several species are listed as threatened or endangered under state and federal endangered species acts. Many streams no longer sustain viable runs of salmon and steelhead trout (Weitkamp, 1995). Factors affecting anadromous salmonid populations include harvest levels,

habitat degradation, predation and ocean conditions. The principle ways in which local jurisdictions can affect habitat is through their regulation of land uses and ongoing maintenance and construction activities.

The Five Counties Group is comprised of staff and elected officials from Del Norte, Humboldt, Mendocino, Trinity and Siskiyou Counties. Its stated goals are to modify County plans, policies, and practices to provide or improve salmonid habitat and to upgrade training programs and monitoring and reporting procedures (<http://www.5counties.org/>). This area is relatively rural with a 1995 population of 290,000 distributed across 12 million acres, much of which is public or privately owned timber land. Population density averages 16 people per square mile. New development is found primarily around the coast or in existing towns.

The Fishery Network of the Central California Coastal Counties (FishNet 4C) includes representatives from Mendocino, Sonoma, Marin, San Mateo, Santa Cruz and Monterey Counties. FishNet 4C focuses on implementing on-the-ground restoration projects, employing best management practices during maintenance activities, and incorporating aquatic habitat protection into land use regulations and policies (<http://www.fishnet4c.org/>). The counties are a mixture of urban, rural and undeveloped land. Most development is occurring within cities with fairly low population growth in unincorporated areas. Large proportions of each county remain in rural agricultural uses or timber land. The 2000 population of 534,000 in unincorporated areas is projected to grow only by five percent by 2010.

The San Francisquito Watershed Council (SFWC) includes 30 stakeholder groups and agencies concerned with the conditions of San Francisquito Creek and its watershed (<http://www.sanfrancisquito.org/>). The watershed is highly urbanized in its lower reaches near San Francisco Bay and rural or undeveloped in much of the upper watershed. The focus of SFWC is on restoring habitat, monitoring water quality and creek trends, raising awareness about the watershed, and providing policy support for local governments. San Francisquito Creek currently sustains a small run of steelhead trout. The potential for new urban development is limited, but Stanford University is located in the watershed and could develop more than 2 million square feet of additional academic space and over 3000 new housing units. Otherwise, most land use activities involve redevelopment.

ASSESSMENT METHODOLOGY

All three studies used the same process (Harris and Kocher 1998, Harris et al. 2001, and Harris and Kocher 2005). The first step was to solicit the involvement of each jurisdiction (city, county or special district) within each study area. After obtaining commitment to participate, meetings were held with staff from each jurisdiction to introduce and explain the project and determine which land management activities were occurring that had potential to affect fish and their habitats. The range of activities considered included both those regulated by the jurisdictions such as land development as well as their direct actions such as road maintenance.

Each study had three components: 1) reviewing all relevant policy documents and ordinances from each jurisdiction to determine the degree to which they contained provisions to protect anadromous fish and their habitats from the identified activities; 2) conducting field inspections i.e., environmental audits, at typical development sites to determine whether policies and practices were adequately implemented and were protecting fish habitat; and 3) reviewing environmental and planning documents for a selection of development projects processed by the jurisdictions. The field inspections were conducted by teams consisting of the authors, representatives from the jurisdictions where the projects were located and specialists in fisheries and/or erosion control. The policy and case study reviews and field inspections examined effectiveness at preventing runoff modifications, riparian clearing, sedimentation, bank stabilization, channel clearing, water quality impairment, and migration barriers.

POLICY RESULTS

Most policy documents reviewed for this assessment said little about fish habitat conservation. A notable, although outdated exception was the salmon and steelhead management plan included in the Mendocino General Plan. Jurisdictions differed in how well their policies protected instream habitat, riparian corridors, water quality, instream flow, and fish passage. Policies regarding prevention of sedimentation and water quality impacts on streams were strongest. There were no explicit policies or regulations addressing fish migration barriers and maintaining instream flow. Regulations were more stringent within the state-designated Coastal Zones for coastal counties. Jurisdictions holding National Pollutant Discharge Elimination System (NPDES) permits also had stricter policies to prevent impacts to water quality and hydrologic regimes since they require jurisdictions to enact storm water quality protection ordinances.

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Runoff modification: Streamflow can be affected by development through withdrawals of water for domestic use and through increases in accumulated run off from surfaces hardened by development. Little local policy was found on withdrawal of stream water, since this is mostly regulated by state or local water agencies. The primary policy tool found to prevent changes in runoff created by development was the NPDES permit. All of the San Francisquito jurisdictions regulated storm water through storm water pollution prevention ordinances required by their NPDES permits. These typically require landowners to obtain a permit for discharge into city storm sewers and allow jurisdictions to require storm water retention measures in new developments and significant redevelopments.

Most jurisdictions without NPDES permits did not have implementing ordinances. Four of the five FishNet 4C counties had language within their general plans requiring runoff rates not to be changed from pre-development levels although not for all county areas. In the 5 County area, policies to require infiltration and minimize surface runoff existed only in subdivision regulations and near streamside management zones in Humboldt County.

Riparian buffers: Riparian vegetation is a critical component of high quality fish habitat whose status is largely determined by how streamside areas are managed. A common strategy to protect riparian vegetation is to identify streamside management areas, give the areas special status and then restrict activities that may take place there by riparian ordinance. The distribution of riparian ordinances throughout the study area was uneven. In the Five County area, only one county defined and protected riparian buffers and then, only in non-urban areas. Two other counties' general plans called for riparian protection standards, but none had yet been established. In the FishNet 4C area, riparian buffers were defined for four of six counties. Two of the five city jurisdictions in the San Francisquito watershed had riparian corridor policies.

Sedimentation: Land development and construction activities may release sediment into anadromous fish streams unless adequately controlled. County and city governments have the legal authority to control the size, timing and location of grading and vegetation clearing done in conjunction with construction. Jurisdictions with NPDES permits had stronger policies in place to prevent sedimentation including grading ordinances and controls on wet season (winter) grading. Most rural counties did not have grading ordinances or NPDES permits.

All FishNet4C and San Francisquito jurisdictions had ordinances to regulate erosion and sedimentation. Grading project applications required by erosion control plans specifying erosion and runoff control measures. Counties provided standards to developers that required exposed areas be planted, seeded, or bermed, with possible storm water detention and cash bonds for performance. All had policies in place to require additional review, planning, and increased erosion control measures for winter grading. None of the Five County group jurisdictions had grading ordinances in effect outside the coastal zone. One county's general plan called for adoption of a grading ordinance. However, this had not yet happened.

Bank stabilization: Modification of stream channels can reduce available fish habitat. Although the California Department of Fish and Game (CDFG) and the US Army Corps of Engineers are the primary agencies regulating activities in stream channels, local jurisdictions become involved when private or public landowners install bank stabilization measures or clear channels when flooding endangers streamside property. All the jurisdictions reviewed had language in their general plans advocating retention of natural stream channels. However, hardened bank stabilization structures abounded throughout the study area as a result of past stabilization project design standards. All jurisdictions are currently attempting to take a softer approach by putting more of an emphasis on riparian vegetation and less on permanent hardening.

Each of the FishNet 4C counties imposes requirements on private landowners to obtain permits for bank stabilization. Permit requirements commonly include hydrologic analysis to demonstrate avoidance of negative impacts on downstream flooding or erosion. As a rule, these permits do not require applicants to evaluate the cumulative effects of their projects on fish habitat.

An innovative approach is being taken in the San Francisquito Creek watershed. Their Joint Powers Authority is attempting to develop some uniformity in bank stabilization approaches across jurisdictions by developing a bank stabilization and revegetation master plan. The plan identified 10 alternative treatment options for landowners undertaking bank stabilization and provides guidelines (including fisheries guidelines) for implementation.

Channel clearing: There are very few formal policies on channel maintenance in the reviewed jurisdictions' general plans and ordinances. Public entities generally carry out channel maintenance through Memorandums of Understanding or blanket Streambed Alteration Agreements with CDFG which impose mitigations including conditions on the timing of clearing and restrictions on equipment in the stream bottom. One of the FishNet 4C counties has a general plan requirement that all modifications of riparian vegetation for flood control purposes conform to an approved river management plan. Another is

developing performance standards for management and removal of large wood and live vegetation from channels as part of its Stormwater Pollution Prevention Program.

Water quality protection: Degraded water quality due to pollutants in runoff from urban and suburban areas is a major problem for aquatic life. All jurisdictions reviewed identified the need to maintain high water quality standards for drinking water and the environment in their policies. However, jurisdictions in the study area with NPDES permits, primarily cities and more densely populated counties, had more stringent protections of water quality in place than those who did not hold permits, namely rural counties. All of the jurisdictions in the San Francisquito Creek watershed had specific storm water pollution prevention ordinances to comply with their NPDES permits. They also participated within countywide NPS pollution control programs including the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) and the San Mateo Countywide Stormwater Pollution Prevention Program (STOPPP). None of the rural 5 County jurisdictions had NPDES regulations.

Migration Barriers: Culverts and bridges over anadromous fish streams may create a barrier to migration of fish when not properly sized or installed. The California Department of Fish and Game and U.S. Army Corps of Engineers has authority over stream channel projects and imposes conditions on new crossings to prohibit creation of barriers. However, many local jurisdictions are the "owners" of existing older culverts or instream structures that block fish passage.

The only mention of fish migration barriers found in any of the local policies reviewed was in the Mendocino County salmon and steelhead management plan (5 Counties Group) which articulates the goal of improving the quantity and quality of salmon and steelhead habitat in each watershed by removing barriers to at least 100 miles of habitat each year until all potential habitat is available.

FIELD INSPECTION RESULTS

The assessment process also involved tracking the environmental review and mitigations imposed on projects by local jurisdictions. The California Environmental Quality Act (CEQA) requires environmental review for projects subject to a discretionary permit such as a subdivision or a conditional use permit. Case studies and field inspections showed that discretionary projects were more likely to have conditions imposed to reduce impacts on fish habitat in all jurisdictions than projects such as construction of a single family home on an existing lot not subject to environmental review through CEQA. This was true for several of the impacts considered - runoff retention measures and riparian corridors were most likely to be imposed when CEQA review was required.

At the scale of the single family home, mitigation requirements including storm water retention measures were extremely rare. (One exception to this was found in the City of Menlo Park, where on site retention of runoff was required when redeveloping or adding as little as 500 ft².) Riparian encroachment occurred often, even in jurisdictions with riparian ordinances, when no other development options were available on existing lots.

RESPONSES TO THE ASSESSMENTS

The final product for each study was a report that was presented to each of the collaborative groups. All three reports identified gaps in policy and procedures and recommended changes to improve fish habitat protection. To track progress in implementation of these recommendations, we contacted staff from each group in early 2007. Actions taken since each assessment was completed (1998, 2001, and 2005 respectively) are described below. Each collaborative group has focused on prevention of slightly different impacts.

Five Counties Group: It is common knowledge that many streams on California's north coast are impaired by excessive sediment. Several of the recommendations in the report for this group pertained to erosion control. In response, the group developed a road maintenance manual that was adopted by all five counties. All counties are conducting road inventories to identify problem sites that are or could potentially contribute sediment to streams. As of early 2007, 1739 miles of road had been inventoried leading to identification of 7289 problem sites that could ultimately deliver 2.5 million cubic yards of sediment to streams. One county has adopted a grading ordinance and one has updated its ordinance. Two counties have developed draft grading ordinances.

All five counties have inventoried county culverts on fish bearing streams. A total of 144 barrier removal or modification projects have been completed to date, restoring access to 119 miles of habitat.

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The Five Counties Group has also worked on developing local capacity to work on fish habitat conservation by providing contracted biological services to member jurisdictions. They have educated county staff about salmon life history and water quality and conducted workshops on designing stream crossings for fish passage. They have also provided local representation to state conservation efforts, helping to develop the state Coho Salmon Recovery Plan.

FishNet 4C: This group also developed a road maintenance manual that was adopted by four of five counties. Two counties have evaluated and designated sites away from streams for temporary or permanent storage of soil and debris. Three counties are reorganizing and improving their grading policies. Three counties are conducting road upgrading projects

Four of five counties have conducted fish barrier assessments and all county-owned barriers have been prioritized for treatment. One county has funded a fish passage program with a dedicated Senior Planner

One county developed a ten-year plan to evaluate fish instream flow needs. To improve protection of riparian areas, one county is developing a new riparian protection ordinance. To reduce instream habitat modification, two counties are using or developing fish-friendly channel maintenance practices.

San Francisquito Watershed Council: Collaborative actions on fish barriers were already well underway in the San Francisquito Watershed at the time of the assessment (2005). The Council had already completed a study on fish migration barriers and implemented 11 barrier remediation projects. An additional 14 barriers need modification and plans are under way to improve passage three barriers with multiple landowners. The Council recently finished a runoff reduction demonstration project to educate the local populace on ways to reduce impervious surfaces using permeable concrete, pavers, and rain gardens.

CONCLUSIONS

The process used to conduct these studies could not have worked without the participation and active engagement of each jurisdiction. Local staff was important for identifying significant issues, choosing sites for field evaluation and providing documentation for case study reviews. As a consequence of local involvement, the studies were not just academic exercises but led to real changes in management.

Collaborative groups comprised of local jurisdictions have shown themselves to be important agents for improvement of aquatic habitat in California. Their ability to engage local decision makers and leverage funding has empowered local people to take action in protecting salmonid habitat. They are also politically attuned to conservation strategies that will work in their areas. For these reasons, the Five Counties Group has focused extensively on sedimentation and migration barrier impacts. FishNet 4C has focused on these issues as well as protection of instream flow, riparian areas and channel habitat. The San Francisquito Watershed Council has focused mostly on preventing impacts to streamflow from impervious surfaces and improving fish passage.

Political dynamics can be an impediment to improvement in environmental management at the local level. This is reflected in the fact that despite a thorough understanding of the habitat impacts caused by sedimentation and riparian clearing, several jurisdictions have not been able to enact grading and riparian ordinances.

It is somewhat ironic that the study area with the strongest environmental management policies and practices, San Francisquito, is also the place where development pressures are relatively limited and fish stocks are least productive. The northern rural counties have most of the high quality habitat and largest runs of anadromous salmonids. They are also challenged with protecting this habitat in a political environment that is not keen on strong regulatory measures. The Five County Group, in particular, has emphasized voluntary measures, incentives and tending to problems with public infrastructure rather than increased regulation.

It could be concluded that jurisdictions with gaps in their regulatory protection of anadromous salmonid habitat should increase their level of regulation. That may be possible in some locations but not others.

One issue not thoroughly addressed in these studies is the impact of existing development on habitat. Although these impacts may be observed virtually anywhere, there is no regulatory basis for mitigating them in most cases. Public education is needed to help reduce ongoing adverse effects. Also, in some cases, environmental retrofit programs may be needed. For example, residential developments contributing to non-point source pollution or hydrologic impacts could be retrofit to

reduce these impacts. Clearly, the status of anadromous salmonids in California is so dire that any and all positive approaches should be considered.

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FIGURES AND TABLES

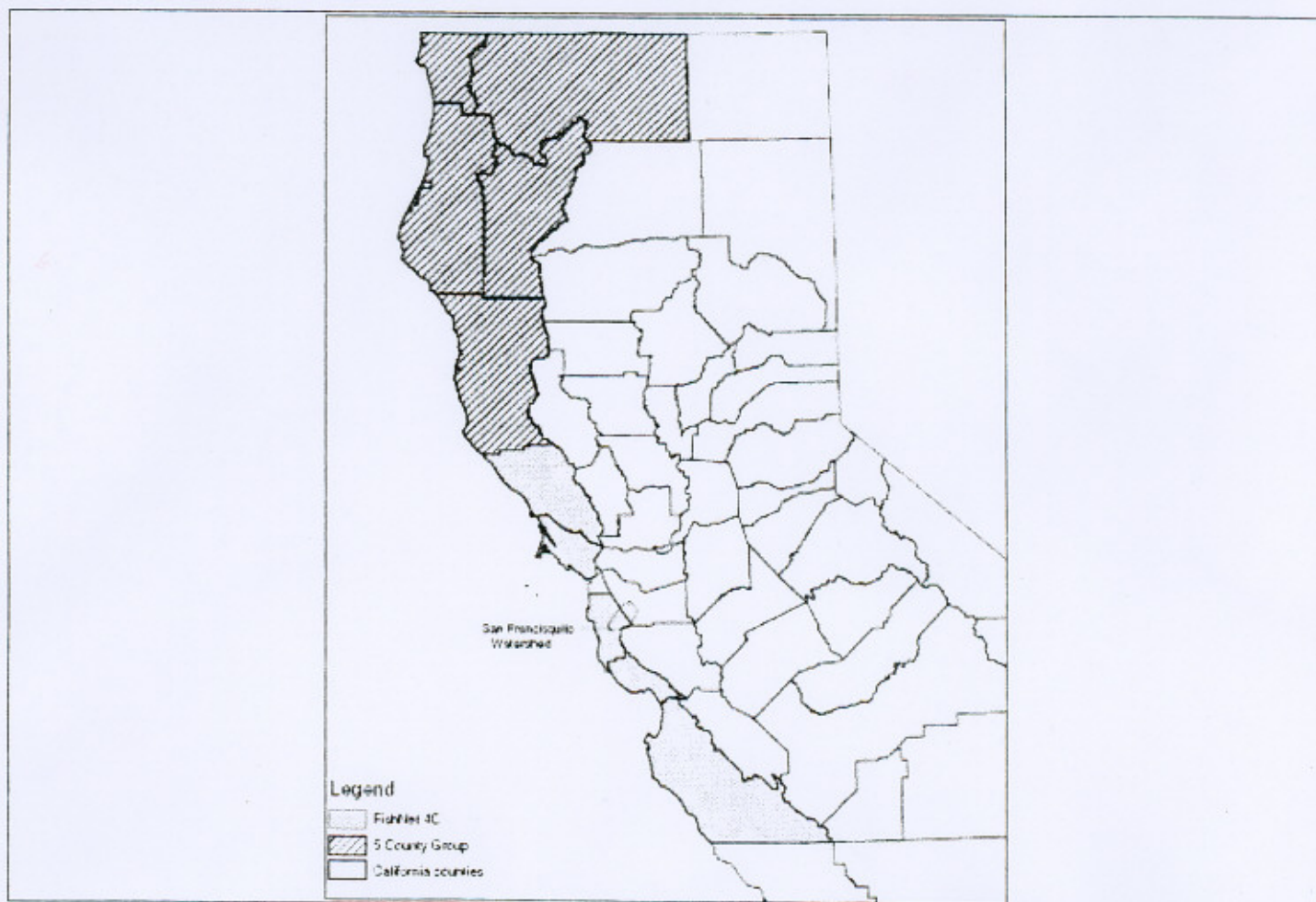


Figure 1. California Jurisdictions covered by assessment projects.