

STRATEGIC FRAMEWORK 2018–2023

California Fish Passage Forum

Updated January 2019



Cover photo: The Carpinteria Creek fish passage project was supported by the California Fish Passage Forum in 2014. The project addressed the last major barrier to steelhead migration in the Carpinteria Creek watershed. The project created access to at least 1.27 miles of habitat by removing the undersized bridge and concrete channel to meet fish passage criteria for all steelhead life stages. The project also replaced the existing bridge with a longer spanning bridge and natural stream channel that now provides steelhead access to the perennial habitat in the headwaters of Carpinteria Creek.

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EXECUTIVE SUMMARY

Anadromous fish habitats in California have been detrimentally impacted by human-caused and natural disturbances. Man-made barriers to anadromous fish migration include road-stream crossings, irrigation diversions, dams, lack of flow, adequate migration flows, and in-stream structures. Passage impediments affect adult and juvenile fish by delaying or preventing upstream and downstream migration, preventing the use of available habitat, and possibly inflicting injury or death.

Addressing connectivity has been consistently identified as a high priority, cost-effective approach to protecting and restoring anadromous fish populations. Restoring unimpeded passage for aquatic organisms in anadromous systems is imperative for the success of all other habitat restoration activities. Both state and federal action and recovery plans identify fish passage and connectivity as major limiting factors for listed salmonids in California. It is estimated that 45 percent of California's salmon, steelhead, and trout are likely to become extinct in the next 50 years if present trends continue, and 74 percent will likely be extinct in the next 100 years if present trends continue (Moyle et al. 2017).

During the past five years, the Forum supported 18 anadromous fish restoration projects, nominated and promoted five Waters to Watch projects, supported numerous projects to advance science and data associated with anadromous fish restoration, conducted outreach, and enhanced efforts to improve how the Forum functions administratively.

In the Fall of 2017, and in preparation for a revision of its strategic framework, the Forum discussed its strengths, challenges, and opportunities. That discussion formed the basis for the content of this document.

During the next five years, the Forum seeks to focus on improving the accuracy and functionality of the Passage Assessment Database; supporting a diversity of projects associated with anadromous fish passage barrier remediation; expanding its membership to include more non-governmental entities; launching, promoting, refining, and maintaining its barrier optimization tool; engaging with other fish

habitat partnerships and fish passage practitioners to achieve mutual goals; expanding the diversity and scope of anadromous fish passage projects it supports; increasing the diversity of funding sources to support all initiatives; and supporting migration and connectivity via instream flows.

INTRODUCTION

Aquatic habitat in anadromous streams and rivers in California has been subject to substantial change and degradation. Although numerous factors have contributed to the status of these habitats, loss of connectivity within and among watersheds has been recognized in recovery plans and watershed assessment documents as a significant impediment to supporting the recovery and health of anadromous fish populations. All habitat restoration activities in anadromous watersheds are linked to the ability of migratory aquatic species to access these ecosystems.

Barrier removal or modification is a cost-effective approach to the short-term recovery of anadromous fish. Man-made barriers to fish passage include road-stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (e.g., rip-rap, concrete channels), and dams that block or delay migration. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions, i.e., affecting instream migration flows.

During the late 1990s, Washington, Oregon, and Alaska initiated coordinated statewide fish passage efforts. In November 1999, the California Natural Resources Agency (CNRA) convened a group of interested state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and other interested parties to discuss ways to restore and recover anadromous fish populations by improving fish passage at man-made barriers. This effort was part of CNRA's effort to implement an eight-point California Coastal Salmon and Watersheds Program. One of the major focal points in this program involves coordinating fish passage activities in the anadromous waters of California, and thus addressing the major limiting factor identified in most recovery plans for listed anadromous fish species. The outcome of the initial convening was the creation of the California Fish Passage Forum (Forum), a collaborative group that works to implement and coordinate fish passage activities across the anadromous waters of the state.

The Forum recognizes that funding for design, implementation, and monitoring of fish passage projects is often limited and inhibits the number of projects that can be implemented in a timely manner. To address this issue, the Forum actively seeks ways to coordinate fish passage funding, identify optimal locations to make strategic investments, contribute to science and data associated with fish passage issues, and foster new or alternative funding sources. The Forum is uniquely positioned to leverage partnerships, skillsets, and knowledge to expedite recovery and conservation of California salmonids.



OVERVIEW OF THE FRAMEWORK

The development of this framework incorporates the work of the numerous organizations that comprise the Forum, including the US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), US Forest Service (USFS), CA Department of Water Resources (DWR), CA Department of Transportation (Caltrans), CA Department of Fish and Wildlife (CDFW), CA State Coastal Conservancy (SCC), Pacific States Marine Fisheries Commission (PSMFC), California Trout (CalTrout), and American Rivers.

The Forum is a collaborative effort among state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and other interested parties to explore and develop an effective methodology and plan to restore and recover anadromous fish populations by improving fish passage at man-made barriers. This framework helps to advance California's State Wildlife Action Plan (SWAP) and Steelhead Restoration and Management Plan (SRMP) (Appendix 1), the numerous other plans that address anadromous fish barriers, the goals and objectives of the National Fish Habitat Action Plan, and the vision and leadership of Forum representatives.

This framework defines the vision and goals, strategic objectives, conservation priorities, and strategic actions that will guide the future of the Forum, with a focus on facilitating partnerships related to data gathering, information sharing, planning, prioritizing, implementing, and monitoring fish passage efforts.

The Forum will use this framework as a guide to focus efforts at all scales to advance strategic, efficient, credibly funded, accountable investments in fish passage initiatives in California.

Finally, this framework will further the Forum's efforts to coordinate with other conservation and recovery efforts in the western United States. The collaborative nature of the Forum has led to improved cooperation among entities working on fish passage in the anadromous waters of California. The Forum has also contacted fish passage groups from other states as well as other fish habitat partnerships,

including the Pacific Marine and Estuarine Fish Habitat Partnership and the Western Native Trout Initiative.

GEOGRAPHIC SCOPE OF THE FORUM



Figure 1. The geographic scope of the Forum encompasses the anadromous waters of California.

FACTORS IMPACTING ANADROMOUS FISH HABITATS IN CALIFORNIA

Many anadromous aquatic habitats in the western United States have been highly altered from their historic condition. The habitat changes are the result of natural and human-induced stressors, including changes in runoff patterns and water storage, land use and natural resource extraction activities, spatial and temporal changes in connectivity, non-native species introductions, increased predator populations, commercial and recreational fishing, hatchery operations, natural environmental variations, and both natural and human-induced wildfires.

To address these and other stressors, habitat restoration activities, many of these locally based and relatively site-specific, have occurred in California and the Pacific Northwest. In addition, regional assessments of restoration needs and prioritization related to anadromous fish and their habitats have occurred. Many of these assessments ranked connectivity as the top priority for strategic regional restoration (Roni et al. 2002, Hooybar 2003) because connectivity-focused projects have the highest likelihood of success, are cost-effective, show immediate results, are long lasting, and can guide where other restoration activities should be implemented based on restored access to larger areas of habitat.

In California, several recent documents related to recovery and management of federally and state listed fish species have also designated fish passage as a high priority.

- The Recovery strategy for California Coho Salmon (2004) and the Steelhead Restoration and Management Plan for California (1996), both published by the California Department of Fish and Wildlife (CDFW), list fish passage as high priority recovery tasks.
- The Open Rivers Initiative (NMFS) and the National Fish Passage Program (USFWS) are based on the fundamental concept that removing fish passage barriers is a priority action for species recovery.

- National Marine Fisheries Service (NMFS) Recovery plans for coho salmon and steelhead identify fish passage barriers as a major limiting factor in the recovery of listed salmonids in California. Pacific lamprey is proposed for listing, and Green Sturgeon have been listed as Threatened, and fish passage barriers are identified as a major threat to their populations.
- Other federal (Natural Resources Conservation Service [NRCS]), state, and regional fish passage programs have been created because of fish passage barriers. The U.S. Fish and Wildlife Service (USFWS) has completed recovery plans for shortnose sucker and lost river sucker populations, and identifies removing fish passage barriers as a primary action to recovering both sucker populations.

The Forum recognizes that fish passage is an important issue to numerous aquatic species in anadromous and non-anadromous waters. The Forum also acknowledges the importance of other limiting factors for anadromous fish survival, such as healthy riparian habitat, and water quality and quantity. Many of the Forum Memorandum of Understanding signatories also work to address issues of water quality, quantity, policy and practice modifications, and other forms of in-stream and riparian habitat restoration that will improve the overall anadromous and resident fish populations within the Forum's geographic scope. The Forum recognizes, through its focus on fish passage issues, that without access to freshwater habitat, other anadromous fish restoration efforts will not succeed.



Figures 2 and 3. The top photo features an example of a fish barrier that was remediated on the Shasta-Trinity National Forest. The bottom photo features the solution to the barrier—an open-bottom arch composed of natural streambed. This barrier remediation project created newly accessible habitat for coho salmon, Klamath Mountain Province steelhead, and Pacific lamprey. Photo credits: Shasta-Trinity National Forest.

FISH SPECIES IMPACTED BY PASSAGE BARRIERS IN CALIFORNIA

Anadromous Species

California streams and rivers with access to the ocean were historically home to several native anadromous fish species. These include Chinook salmon, coho salmon, chum salmon, pink salmon, steelhead/rainbow trout, coastal cutthroat trout, green sturgeon, white sturgeon, Pacific lamprey, river lamprey, eulachon, and threespine stickleback. American shad and striped bass are also prevalent non-native anadromous species in many systems.

Historically, anadromous fish passage efforts in California have focused on Chinook salmon, coho salmon, and steelhead. Pink salmon have only occurred rarely in California since the latter half of the 20th century. Chum salmon are slightly more common than pink salmon, but have a limited presence in California. Coastal cutthroat trout are a State of California Species of Special Concern, but have no federal status and have generally not been the focus of fish passage efforts. Passage impacts on green and white sturgeon are almost exclusively limited to large dams, therefore, passage improvement projects for sturgeon are complex, expensive, and uncommon. Efforts are underway in the Pacific Northwest to analyze and mediate the impact of barriers on lampreys. These efforts are often linked to passage projects associated with salmon and steelhead and once refined, will likely consist mainly of additions or alterations to traditional salmonid passage designs. Passage does not likely have a major impact on eulachon as they are found in the lower reaches of coastal rivers and streams and spend very little time in freshwater. Threespine sticklebacks are very adaptable and demonstrate a wide variety of life history strategies that likely greatly reduce the impact of barriers.

Other Species

California has a limited number of federally listed fish species, or fish species included in the State Wildlife Action Plan, that occur in anadromous waters. Delta smelt are listed as threatened under the federal and California Endangered Species

Act (ESAs). Longfin Smelt are listed as threatened under the California ESA, but are not listed federally. Both delta and longfin smelt have been subjected to degradation of their native habitats, however passage is not considered an important factor in the declines of these species.

Shortnose suckers are listed as endangered under the federal and California ESAs. Klamath largescale suckers are included in the SWAP but are not listed under the federal or California ESA. Both sucker species are uncommon in the anadromous reach of the Klamath River.

The Forum will continue to focus on fish passage assessment, prioritization, and implementation for salmonids and lamprey. Additionally, the Forum will consider actions to address other anadromous and resident species in anadromous watersheds as the need arises and cost-effective passage methods are developed.



Figure 4. The salmon life cycle. Graphic credit: Beth Campbell, USFWS Stockton office.

HISTORY OF THE FORUM



California's historically bountiful anadromous fishery depends on the ecological integrity of dozens of streams and rivers that flow into the Pacific Ocean along the state's 1,100-mile coastline. These streams provide the habitat that salmonids and other anadromous fish require during the spawning and juvenile phases of their life.

During the 19th and 20th centuries, as roads, bridges, and dams were built on public and private lands along waterways, and as water was diverted by various means, thousands of barriers were erected, blocking the passage of anadromous fish. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions. Consequently, many salmon, steelhead, cutthroat trout, lamprey, and sturgeon populations have experienced significant declines, and the sport and commercial fisheries that depended on some of these populations have, in many cases, vanished.

Man-made barriers to fish passage include road/stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (rip-rap, concrete channels, e.g.), and dams that block or delay migration. In some cases, previously installed fish passage structures, such as fish ladders, act as barriers because of poor design, or construction, operation, and lack of maintenance.

In October 1999, the California Resources Agency (CNRA) established the eight-point California Coastal Salmon and Watersheds Program, which called for the coordination of state, federal, and local partners working toward the goal of restoring salmon and steelhead populations to naturally sustainable levels. At the time, fish passage, although recognized as a major threat to anadromous fish species in California, was also determined to potentially yield the greatest cost-

efficiency for short-term restoration activities. Based on this recognition, the program included an objective to coordinate fish passage activities in California.

To accomplish this objective, the CNRA convened a group of interested state, local, and federal agencies, fisheries conservation groups, researchers, restoration contractors, and others to discuss ways to improve fish passage at man-made barriers. The success of this coordination led to the establishment of the California Fish Passage Forum, of which many agencies and organizations are members.

The Forum identified the need for improved efforts to identify barriers, evaluate and prioritize restoration opportunities, and implement projects in a timely fashion. It also targeted administrative, financial and technical impediments to addressing these issues, including information gaps, lack of watershed-level assessment and planning, and poorly coordinated project review and permitting processes. Forum participants worked together to develop short-term solutions for these types of problems for several known high priority fish passage projects. The Forum also established subcommittees for coordinating activities related to fish passage inventory and assessment protocols, data format and access protocols, information and literature collection, permitting, training, and public education and outreach.

THE PASSAGE ASSESSMENT DATABASE

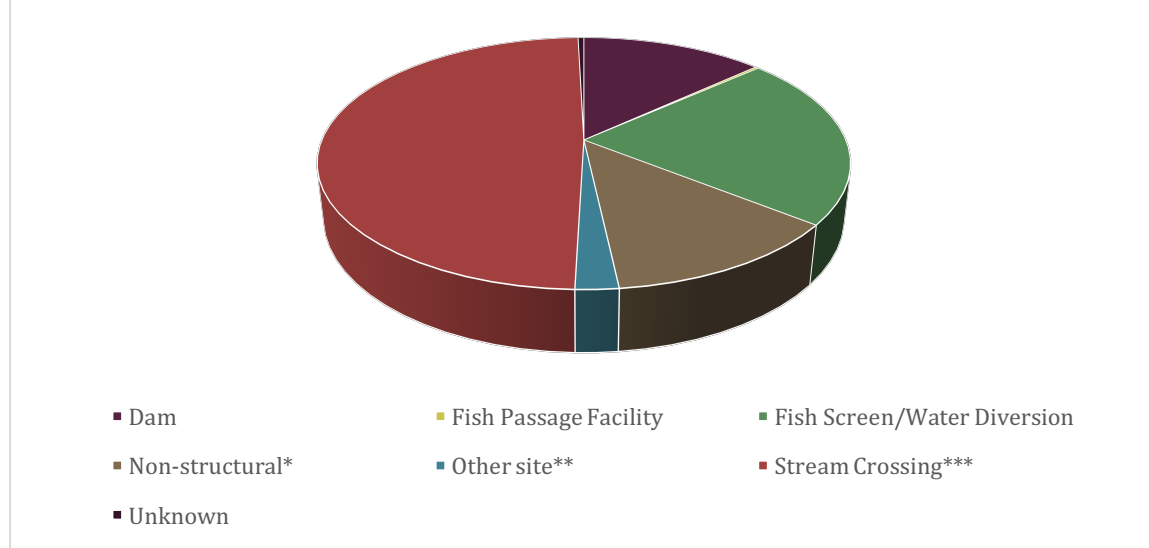
The Forum's first step in charting a course for restoring passage for California anadromous fish was to determine the quantity and severity of existing migration barriers. In collaboration with the California Coastal Conservancy and the Pacific States Marine Fisheries Commission, the Forum developed the Passage Assessment Database (PAD). The PAD is an ongoing map-based inventory of known and potential barriers to anadromous fish in California, compiled and maintained through a cooperative interagency agreement. The PAD compiles currently available fish passage information from many different sources, allows past and future barrier assessments to be standardized and stored in one place, and enables the analysis of cumulative effects of passage barriers in the context of overall watershed health.

The PAD database identifies and compiles information on more than 16,000 potential barriers to fish passage in California's coastal and Central Valley watersheds. Of the structures that are of human origin, at least 1,500 are severe or impassable.

Correlated with state and federal recovery plans for endangered coho salmon and steelhead, the PAD is a tool that helps to inform high priority fish passage barriers in critical watersheds.

The database is designed to capture basic information about each potential barrier. It is designed to be flexible; as the database grows, other modules may be added to increase data detail and complexity. The PAD also makes it possible for Forum members to track project implementation (Figures 5 and 6).

Figure 5: Fish Passage Barrier Types Dominant in California Anadromous Watersheds

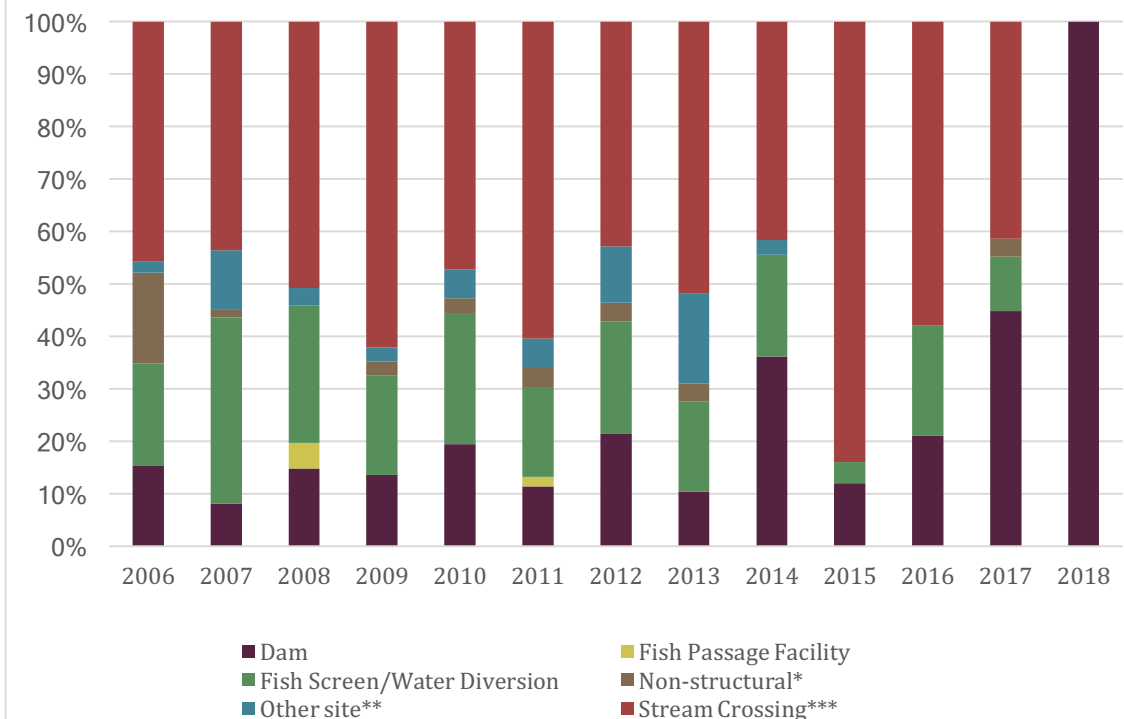


**Includes non-structural (waterfall, grade, temperature, insufficient flow, landslide, velocity, etc.) and log jams.*

***Includes flood control channels, grade control, flow measurement weir, gravel/borrow pits, tide gates, fish traps and other barrier types.*

****Includes road (culvert, bridge, low-flow, etc.) and utility crossings.*

Figure 6: Completed Fish Improvement Projects
2006-2018



The table includes barriers that were total, partial and temporal barriers prior to remediation and in some cases where projects are still a barrier (temporal or partial) but where passage has improved to the best of the PAD's knowledge.

At this point, the remediations that occurred the previous year may not be completely represented in the PAD and the number of stream miles opened may be an underestimate.

**Includes non-structural (waterfall, grade, temperature, insufficient flow, landslide, velocity, etc.) and log jams.*

***Includes flood control channels, grade control, flow measurement weir, gravel/borrow pits, tide gates, fish traps and other barrier types.*

****Includes road (culvert, bridge, low-flow, etc.) and utility crossings.*

Source: California Department of Fish and Wildlife, Passage Assessment Database, December 21, 2018 version (www.calfish.org/pad/). Created by Anne Elston, PAD Administrator.

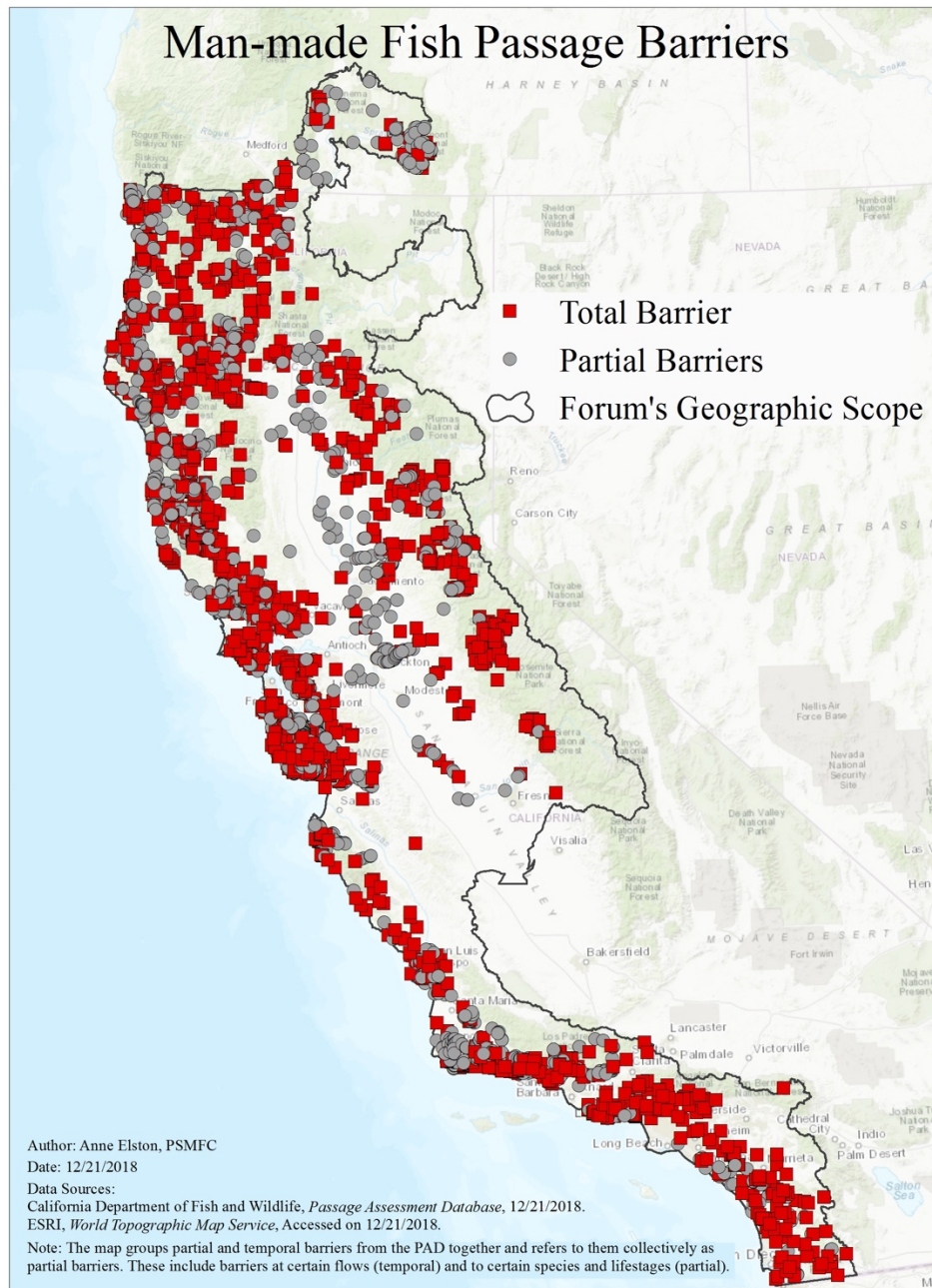


Figure 7. Man-made fish passage barriers within the Forum's geographic scope documented in the Fish Passage Assessment Database (PAD) as of December 21, 2018.

FORUM MEMBERS

The organization of the Forum is based on a Memorandum of Understanding (MOU; Appendix III), through which Forum signatories (Figure 8) commit to developing and implementing cooperative strategies aimed at restoring fish access to spawning and rearing habitat. The MOU formally recognizes the Forum's voluntary collaboration and provides mutually agreed upon guidance through its stated goals and objectives. The MOU also confirms the intent of state and federal fishery resource agencies and other interested parties to participate in and support Forum activities.

Forum members represent a diverse group of agencies and entities with a common interest in fish habitat restoration and fisheries recovery in the state of California. MOU signatory members include:

- Federal agencies
 - US Fish and Wildlife Service (USFWS)
 - NOAA National Marine Fisheries Service (NMFS)
 - US Forest Service (USFS)
- State agencies
 - California Department of Fish and Wildlife (CDFW)
 - California Department of Water Resources (DWR)
 - California Department of Transportation (Caltrans)
 - State Coastal Conservancy
- Nonprofit organizations
 - California Trout
 - Trout Unlimited
- An interstate marine fisheries commission
 - Pacific States Marine Fisheries Commission (PSMFC)

The Forum focuses on four distinct regions in California, each with its own anadromous fish population characteristics, challenges, and issues: North Coast,

Central Coast, South Coast, and Central Valley regions. These regions also contain other species of interest that are considered in Forum activities. Although the state and federal MOU signatory members have jurisdictions across these regions, Forum members and partners vary in each region based on their specific jurisdictions and levels of involvement.

Although Forum members develop unique prioritization lists and treatment prescriptions in each of the four distinct California regions, the Forum develops standardized data management systems, assessment protocols, design manuals, and outreach programs that span the full geographic extent of the Forum and address the Forum's strategic planning process.

The Forum meets at least three times annually in different locations in California. During the meetings, issues are resolved, decisions are made, and strategic topics are discussed. Members also form smaller, focused working groups and committees in which specific goals and tasks are addressed. The Forum's bylaws, which govern the membership and decision-making process, are included in [Appendix II](#).

Parties that have not signed the MOU may participate in Forum activities and attend regular Forum meetings. These members represent local communities and organizations, landowners and utility owners, land and water districts, and others. Though not signatories, these members are an important component of the partnership, and their contributions, in terms of experience and expertise, are important to achieving the Forum's objectives.



Figure 8. Logos of the signatories to the Forum's MOU.

A LOOK BACK - THE LAST 5 YEARS

The following is a compilation of Forum accomplishments during the past six years, from 2012–2018:

On-The-Ground Restoration

<i>Projects Funded</i>	2013	2014	2015	2016	2017	2018
<i>Grape Creek</i>						
<i>Conner Creek</i>						
<i>Branciforte Creek</i>	\$12,497					
<i>Wilson Creek</i>	\$27,500					
<i>Pinole Creek</i>		\$40,000				
<i>Carpinteria Creek</i>		\$11,500				
<i>Salt River Ecosystem</i>		\$18,600				
<i>Sharber-Peckham</i>		\$39,999				
<i>Dinner Creek</i>		\$40,000				
<i>Kelly Gulch</i>		\$12,899				
<i>Memorial County</i>			\$67,243			
<i>Danly Gulch</i>				\$54,765		
<i>Central California</i>				\$40,000		
<i>Traction</i>						
<i>Pacific Lamprey PAD</i>				\$10,000		
<i>Project</i>						
<i>Juvenile Fish Passage</i>				\$13,000		
<i>Criteria Assessment</i>						
<i>Benbow Dam Removal</i>					\$58,499	
<i>Pennington Creek</i>					\$40,000	
<i>Upper Green Valley</i>					\$30,089	
<i>Davy Brown & Dunch</i>						\$44,538
<i>Creek</i>						
<i>Old Klamath</i>						\$38,680
<i>Neefus Gulch</i>						\$39,513
<i>Cooper Mill</i>						\$65,782

10 Waters to Watch

<i>Projects</i>	2014	2015	2016	2017	2018
<i>Eel River Delta</i>	X				
<i>Pinole Creek</i>		X			
<i>Carmel River</i>			X		
<i>Will Creek and Deer Creek</i>			X		
<i>Benbow Dam Removal site</i>				X	
<i>Big River</i>					X

Science and Data

<i>Projects</i>	2013	2014	2015	2016	2017	2018
<i>Produced report, "Optimizing Fish Passage Barrier Removal in California While Considering Climate Change Effects"</i>		X				
<i>FISHPass</i>		X	X	X	X	X
<i>Supported the NorWest Stream Temperature Database</i>			X			
<i>Support PAD</i>	X	X	X	X	X	X
<i>Compile barrier removal effectiveness monitoring projects, and recommend tiered protocols to endorse</i>			X			
<i>Participation on the California LCC Science and Management Team</i>			X	X	X	X
<i>Engineering Working Group</i>						
<i>Design review flowchart – checklist of items needs to review fish passage design plans</i>	X					
<i>Process to summarize rationale used for exceptions that have been granted by CDFW and NDFS</i>	X					

Outreach and Education

<i>Projects</i>	2013	2014	2015	2016	2017	2018
<i>Why Fish Passage Is Important - website</i>		X				
<i>Convened coastal FHPs and produced/edited quarterly newsletter</i>		X	X	X		
<i>Added storymap to website to show project locations</i>			X	X		
<i>Created Forum and FISHPass logo</i>	X					
<i>Eel River Estuary Event</i>		X				
<i>Launched website</i>	X					
<i>Maintained website</i>	X	X	X	X		X
<i>Produced Forum posters</i>	X					
<i>Effectiveness Monitoring Case Studies</i>						
<i>GlennBrook Gulch</i>				X		
<i>Salt River Ecosystem</i>				X		
<i>Dunn Creek</i>					X	
<i>Granlees Dam</i>					X	
<i>Willow Creek</i>						X
<i>Green Gulch</i>						X
<i>Will Creek Dam</i>						X

Other

<i>Projects</i>	2013	2014	2015	2016
<i>Developed form to track NFWP and USFWS partner accomplishments</i>	X			
<i>Completed Forum project endorsement form</i>	X			
<i>Forum MOU</i>			X	
<i>Produced electronic form for project leaders to provide updates electronically</i>	X			

<i>Produced committee work plans annually</i>	X	X	X	X
<i>Updated NFHP-funded project reporting form</i>		X		
<i>Strategic framework development and updates</i>	X	X	X	X

In September of 2017, the Forum identified their strengths, challenges, and opportunities.

▪ **Strengths**

- Convening fish passage practitioners for education (e.g., Eel River Delta event);
- Connecting with other fish passage practitioners and scientists;
- Data and science collaboration (Passage Assessment Database);
- Distributing limited funds across multiple projects and leveraging funds, i.e., diversifying investments into a variety of projects;
- Identifying and promoting the importance of effectiveness monitoring and providing guidance on effective monitoring techniques;
- The diversity of Forum membership; and
- The timing and opportunity of funds disbursed in a different cycle than other California funds.

▪ **Challenges**

- Current Forum members may not have the amount of influence Forum members once had because of delegation of Forum memberships;
- The need for more engineers to be engaged and informed in fish passage efforts;
- The lack of nongovernmental diversity in Forum membership; and

▪ **Opportunities**

- Help people with prioritizing strategic investments in fish passage, using tools, such as FISHPass.
- Resources are limited, but the Forum can help guide how people invest.
- Monitoring, planning, and assessment are the most difficult tasks to fund, which represents a niche the Forum can fill.

- Affiliations, such as FishPACs could increase the Forum's level of potential grant funding and could create a higher NFHP ranking, improving eligibility for federal fund disbursements.
- Expand focus to instream flow barriers as a secondary priority.
- Track progress in removing barriers.
- Improving the PAD to inform more elements of passability and thus linking the PAD with future prioritizations.
- Consider forming an executive committee to engage decision makers at appropriate times/trigger points, such as updating the MOU.



FORUM MISSION, GOAL, & OBJECTIVES

Mission

To protect and revitalize anadromous fish populations in California by restoring connectivity of freshwater habitats throughout their historic range.

Goal

Restore the connectivity of freshwater habitats throughout the historic range of anadromous fish.

To achieve the mission and goal, the California Fish Passage Forum will:

- Improve coordination of existing agency programs, rule and guideline efforts, and private sector activities across jurisdictions to improve the timeliness and cost-effectiveness of fish passage restoration efforts.
- Facilitate collaboration, coordination, and communication among state, federal and local agencies, researchers, restoration contractors, landowners and other interested stakeholders on fish passage improvement programs and projects.
- Expedite implementation of on-the-ground projects by identifying and addressing institutional barriers.
- Educate and increase the public and agency awareness of fish passage issues to develop support for solving problems and preventing new ones.
- Seek additional funding sources for fish passage projects within the geographic scope of the Forum and administer a strategic funding program for projects once funding is secured.

Objectives

1. Remediate barriers to effective fish migration.
2. Facilitate coordination and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage projects within California.
3. Coordinate funding mechanisms to remove fish passage barriers.
4. Support state and federal permit coordination and efficiencies.
5. Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.
6. Encourage existing state/national policy and actions that support fish passage improvement in California.
7. Implement education and outreach activities, targeting both the public & fish passage practitioners.

FORUM CONSERVATION PRIORITIES

The Forum's conservation priorities and objectives are based on the goal of restoring and protecting healthy anadromous fish populations by restoring habitat connectivity. The following objectives and numeric targets are proposed for 2018–2023, and will be used by the Forum to measure the success of implementing this framework. These objectives and numeric targets may be modified by Forum members through the annual work planning process. Throughout the five-year period, the Forum will review its progress and update this framework.

Regular meetings and communication are the foundation for accomplishing the Forum's objectives, the Forum will convene up to four times annually to share project priorities, reviews, and treatment status reports, as well as determine priorities for Forum efforts.

The meetings also provide a venue for identifying additional anadromous habitat restoration opportunities throughout California and allow for agency cooperation during the project design, permitting, and implementation phases. The Forum will expedite implementation of on-the-ground projects by promoting and facilitating cost-sharing, technical assistance, and networking. Distribution of meeting minutes and other important documents will enhance participation by all Forum members.

Objective 1: Remediate barriers to effective fish migration.

- I. Obtain and increase funding sources and coordinate and support efforts to remove fish passage barriers in California.
- II. Diversify the locations, types and numbers of projects funded by the Forum.
- III. Identify, assess, and prioritize the removal of fish passage barriers.
 - a. Facilitate the use of the statewide fish passage barrier inventory—the Passage Assessment Database (PAD)—continue to populate it with new data, and take steps to update and maintain it on a regular basis.
 - i. Outline funding sources for maintenance of the PAD through 2023.
 - ii. Support and guide enhancements of the PAD including online applications of data analysis and reporting, and a document library.
 - iii. Implement an annual process to update barrier data and the status of projects to the PAD by region.
 - iv. Promote and support continued public access to the PAD data, including regular releases of the PAD.
 - v. Encourage entities in California to use the PAD and contribute regional updates to the PAD.
 - vi. Improve the functionality of the PAD by incorporating additional elements of passability.
 - vii. Link the PAD with prioritization efforts.
 - viii. Fund a series of annual assessments to update the PAD by region, and reinvest in that effort every decade to ensure the PAD is accurate.
 - ix. Every other year, survey fish passage practitioners in California to determine how they are using the PAD and to create opportunities for them to update the PAD.

- x. Of the unknown barriers in the PAD, highlight those that exist within the range of anadromy in California, and initiate a focused effort to assess those barriers.
 - xi. Track the chronology of each project in the PAD.
 - xii. Expand opportunities to add lamprey data to the PAD.
- b. Develop and communicate consistent protocols for prioritizing fish passage restoration at barriers.
 - i. Launch *FISHPass*, and work with entities throughout anadromy in California to use the tool to prioritize barrier remediation.
 - ii. Publish an annual report of statewide barrier priorities and accomplishments.
- c. Identify gaps in watershed and barrier information using the PAD and other resources and develop a plan to fill those gaps. The Forum will continue to work with its members to coordinate funding and staff for inventories. Convene an Assessment Working Group to help standardize methods and coordinate funding.
 - i. Annually publish a report identifying remaining data gaps in the PAD and priorities for barrier inventories and fish passage assessment.
 - ii. In watersheds where insufficient barrier data exist, identify and contact entities involved in field data collection and solicit barrier inventories and passage assessments.
 - iii. Work with willing private landowners to identify and inventory potential barrier sites.
 - iv. Distribute data collection protocols and methodologies to ensure standardized approaches to data collection.
 - v. Ensure PAD data is up to date and contains the best available information.
- d. Develop an online interface for *FISHPass*, and share that interface and the *FISHPass* product with fish passage practitioners. Maintain and improve the datasets and inputs associated with *FISHPass*.

- e. When appropriate, provide guidance for fish passage practitioners associated with fish passage investments, monitoring and planning.

Objective 2: Facilitate coordination and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage projects within California.

- I. Ensure that emerging national, interstate, and state fish passage-related design standards and guidelines are brought to the attention of Forum members in a timely manner.
- II. Expand Forum membership to include two additional active participating signatories that are non-governmental and can help move the Forums goals and objectives forward.

Objective 3: Coordinate funding mechanisms to remove fish passage barriers.

- I. Work with project managers, grant recipients, agencies, and others to develop a database of cost information for repair and replacement activities.
 - a. Design a Passage Project Cost Database, including a minimum set of data fields, and ensure data compatibility and easy data transfer with existing related databases.
 - b. Identify sources of relevant information for fish passage project cost including details for all phases of fish passage project (design, permitting, construction) typical for California.
 - c. Continue data compilation into the Cost Database.

- II. Seek additional funding sources for fish passage projects within the geographic scope of the Forum and administer a strategic funding program for projects once funding is secured.
 - a. Depending on funding levels, address 5–15 barriers per year.
 - b. The Forum will use the PAD, the expertise of Forum members, potential funding from other sources, and the passage criteria to strategically fund high priority projects.

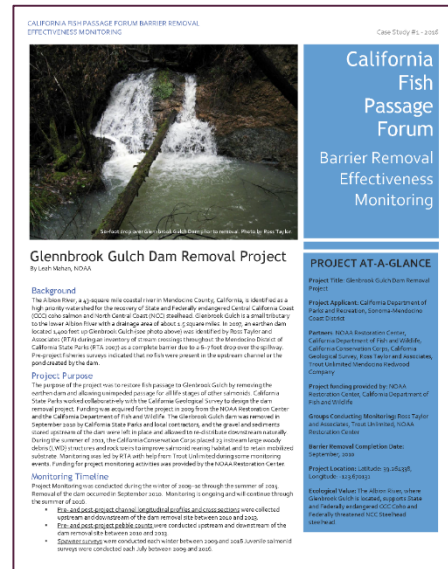
Objective 4: Support state and federal project permit coordination and streamlining.

- I. Identify and support opportunities for improved interagency cooperation and permit streamlining.
- II. When appropriate, support programmatic and regional permitting for fish passage projects.

Objective 5: Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.

- I. Establish mechanisms to monitor and ensure that projects are appropriately designed and implemented.
- II. Establish mechanisms or programs to evaluate changes in habitat use that result from fish passage improvement projects.

- III. Establish ways to estimate or quantify population increases that result from fish passage projects and to predict increases from proposed projects. The Forum will work with the state and federal agencies and others to gather reporting information and data that document population and habitat changes. A working group will help to coordinate this effort and report back to the larger group.
- IV. Develop three annual case studies focused on effectiveness monitoring and share via the Forum website and listserv.



Objective 6: Encourage state and national policy that supports fish passage improvement in California.

- I. Coordinate with other Western States to share ideas and promote fish passage policy and efforts. The Forum will work to facilitate joint meetings with other Pacific States.
 - a. Propose an interstate Fish Passage Workshop for California, Oregon, and Washington to discuss fish passage issues with national relevance such as fish passage jump height requirements for salmonids.
- II. Work with the National Fish Habitat Action Plan program to develop national policies that support fish passage through federal programs (FEMA, Transportation Enhancement Act).

Objective 7: Implement education and outreach activities, targeting both the public and fish passage practitioners.

- I. Support development and implementation of effective education and outreach programs to engage and inform the public and private landowners about aquatic habitat fragmentation and fish passage improvement opportunities.
- II. Create and distribute fish passage outreach material that succinctly demonstrates fish passage issues in California and the Forum's history and purpose.
- III. Communicate fish restoration activities to other agencies, landowners, watershed groups and others within each basin.
- IV. Implement workshops to train local agency field crews or other interested groups to properly conduct fish passage evaluations.
- V. Promote FISHPass, an online tool to optimize the selection of fish passage barriers to remediate, by presenting the tool at conferences and conducting workshops with fish passage practitioners.
- VI. Host at least one annual outreach event that promotes the need and benefits to anadromous fish passage barrier remediation efforts in California.
- VII. Annually compile fish passage barrier remediation progress among Forum member agencies and organizations and share with policy makers and others to garner continued support and funding for these efforts.

- VIII. Engage with the Pacific lamprey FHP, Pacific Marine and Estuarine FHP (PMEP), Western Native Trout Initiative (WNTI), and coastal FHPs to promote and support projects of mutual interest.
- IX. Conduct outreach to federal agencies that may develop passage criteria, regulations, or guidelines to include the Forum in scoping, comments, and other public/agency coordination. Agencies contacted should include, but not be limited to all Forum federal agencies as well as the Federal Highway Administration (FHWA), US Department of Agriculture-Natural Resources Conservation Service (NRCS), and Federal Emergency Management Agency (FEMA).
- X. Conduct outreach to state agencies that may develop passage criteria, regulations, or guidelines to include the Forum in scoping, comments, and other public/agency coordination. Agencies contacted should include all Forum state agencies as well as State Parks, CalFire and Office of Emergency Services.
- XI. Take steps to engage and inform fish passage engineers in all aspect of fish passage barrier remediation.

RECOMMENDATIONS AND GUIDANCE FOR REGIONAL-SCALE PROJECTS

On a regional scale, the Forum will continue to implement and further develop the following tasks:

- Facilitate coordination and communication among Forum members.
- Improve the State's ability to implement fish passage restoration projects by coordinating agency and private sector efforts.
- Coordinate and secure adequate funding for fish passage restoration.
- Expedite implementation of on-the-ground projects by coordinating, and, where possible, streamlining agency permitting processes while ensuring that restoration programs comply with the State and/or Federal Endangered Species Act requirements for protecting listed species and any other applicable state or federal laws.
- Facilitate regional plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.
- Work to promote state and national policy that supports fish passage.
- Implement education and outreach, targeting both the public and fish passage practitioners to develop support for solving problems and preventing new ones.

RECOMMENDATIONS AND GUIDANCE FOR LOCAL-SCALE PROJECTS

At the local scale, the Forum will provide guidance and assistance to partners as they identify and implement restoration projects and activities to maintain, restore, or enhance habitat for anadromous fish species.

- Improve and Maintain Habitat Quality and Quantity
 - Establish comprehensive strategies to prevent the loss or reduced quality of habitat for anadromous fish by removing passage barriers.
 - Promote additional habitat improvements that complement restored connectivity, including, but not limited to restoration of natural flow and temperature regimes, natural sediment supply, physical channel and structural habitat restoration such as reconstructing natural meander patterns, addition of large woody debris, and non-native species control.
- Enhance and/or Restore Connectivity beyond the Removal of Manmade Passage Barriers
 - Identify and implement strategies to minimize and mitigate the negative effects of water development projects and stream diversions to connectivity.
 - Identify existing in-stream modifications (past mining activity) that may inhibit movements and develop strategies and projects to mitigate or remove elements that contribute to habitat fragmentation.

CLIMATE CHANGE AND THE FORUM

The impacts of climate change vary among species and populations, and depend on multiple and diverse factors (Dalton et al. 2013); however, climate change pace currently exceeds the rates at which species can colonize new suitable habitat (Comte and Grenouillet 2013). The following are some documented effects of climate change:

- Introduces new stressors and compounds existing stressors on fish as well as increases the frequency and magnitude of extreme floods (Jospe 2013).
- Decreases carrying capacity (Walters et al. 2013) and affects disease resistance, development rates, spawning and migration timing and other biological events, and ocean survival of anadromous fish (Crozier et al. 2011).
- Affects productivity, species distributions, recruitment, and community structure (Osgood 2008), and causes altitudinal shifts, population collapse, local extinctions, failure to migrate, and changes in food availability and food web structure (Portner and Farrell 2008).
- Affects water temperature and the magnitude and timing of stream flows, which affect all aspects of salmon development, rearing, and migration (NOAA-NWFSC 2008).
- Affects nutrient cycling and reciprocal terrestrial-stream subsidy balances (Wenger et al. 2011).
- Affects sea level, air temperature, ocean temperature and circulation patterns, precipitation patterns, air and ocean chemistry (acidification), tropical storm intensities and frequencies, and species abundance and distribution (NOAA 2010).

- Exacerbates non-climate stressors, such as pollution or overharvesting, thus affecting adaptive capacity (Seney et al. 2013).
- Causes habitat loss or alteration, distribution changes, geographic isolation or extirpation of populations unable to adapt or migrate, new interspecific interactions, shifts in phenology, disrupted predator-prey interactions, reduced food supply, increased stress, disease susceptibility, and predation (Seney et al. 2013).
- Increases stream temperatures in rivers. The threat to salmon recovery is great in locations where temperatures are near lethal or sub-lethal thresholds for salmon, but not as significant in rivers where current temperatures are well below those thresholds (Beechie et al. 2012). Altered stream flows and warmer temperatures affect survival and passage through tributaries for anadromous fish that require river systems and coastal regions for all or a portion of their life cycle (Osgood 2008).
- Warms waters, reducing habitat for cold-water species, promotes the introduction and establishment of non-native species typically found in warmer areas, and exacerbates existing stressors, such as habitat loss, pollution, invasive species and disease (NOAA 2010).
- Changes salinity levels for prolonged periods of time, resulting in habitat loss for some species (Burkett and Davidson 2012). Changes in salinity may also facilitate invasion by nonnative species better adapted to salinity variations (Hoy et al. 2012).
- Changes water temperatures, flow regimes and salinity concentrations and may result in reduced target species use of restored habitats (e.g., diadromous fish) (NOAA 2010).
- Raises sea level, warms ocean temperatures, and changes freshwater flows, contributing to significant changes in estuarine habitats (Bottom et al. 2005).

- Increases flooding and flash flooding from more intense rainfall events that may cause degradation of the habitat through increased channel erosion, siltation, and destruction of pools and riffles (NOAA 2010).

Increasing connectivity by removing barriers may be one of the most effective ways to mitigate the effects of climate change on aquatic systems, but it is important to remove the most limiting barriers (Jospe 2013), which requires an understanding of connectivity within stream networks (McClurg et al. 2007; Palmer et al. 2008) (Figure 8).

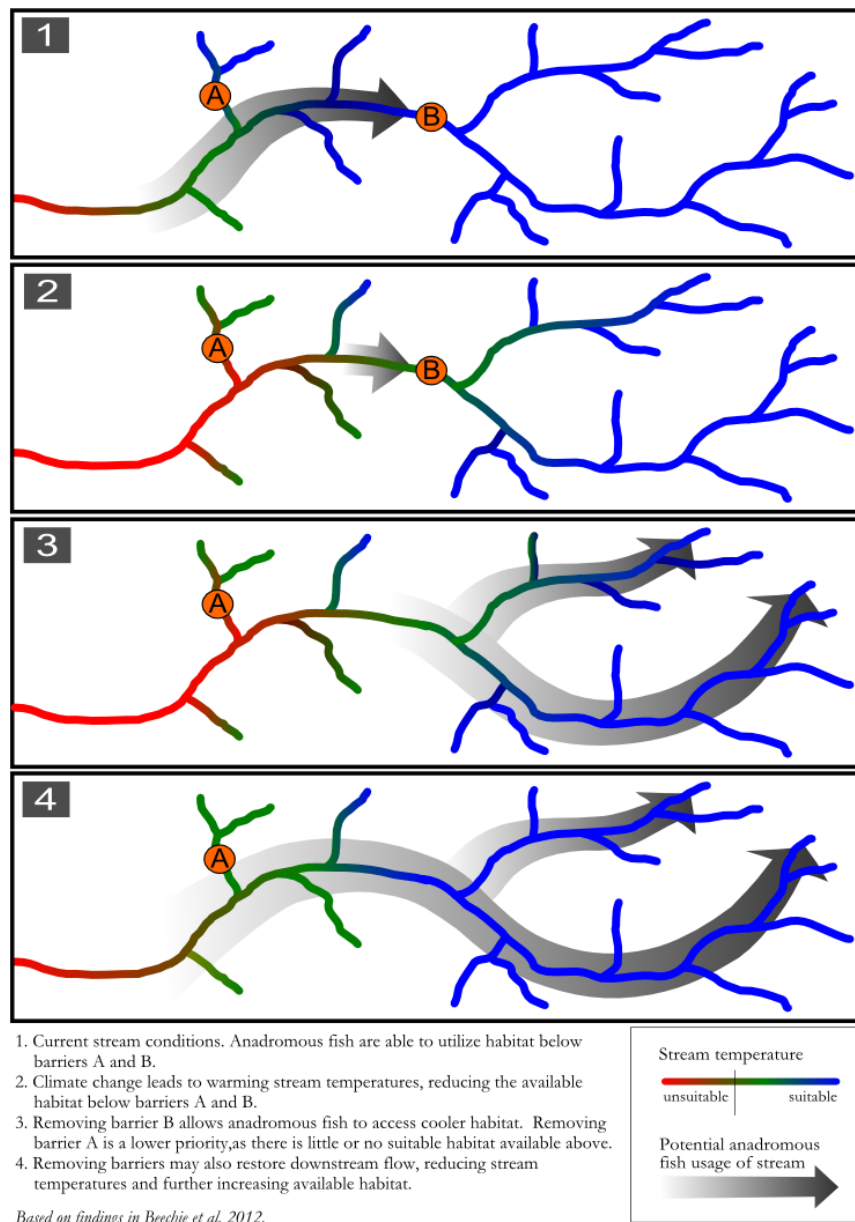


Figure 8. Removing fish barriers may restore downstream flow, reduce stream temperatures, and increase available habitat.

The following management recommendations are based on the life history needs of anadromous fish in California and the anticipated effects of climate change on fish:

- **Conduct a coordinated and comprehensive fish passage improvement program** to restore unimpeded passage for aquatic organisms in anadromous systems (California Fish Passage Forum 2013). Improving connectivity within aquatic ecosystems requires a strategic approach to identifying and prioritizing barrier removal.
- **Prioritize geographic regions and restoration project types** to express a larger suite of life-history strategies, important for species persistence and recovery. Improvements in habitats that support the spectrum of life-history strategies would further support recovery (Jorgensen et al. 2013). Understanding which types of restoration actions are robust to climate change is critical for effective recovery of federally listed populations (NOAA-NWFSC 2008). Because restoration actions focused on in-stream stabilization are unlikely to ameliorate climate change effects, it is important to understand current recovery needs; whether climate change effects will likely alter those needs; whether restoration actions can ameliorate climate change effects; and whether restoration actions can increase ecosystem resilience (Beechie et al. 2013) and ultimately improve overall connectivity within systems.
- **Enhance connectivity by restoring and protecting key ecosystem processes and features** to moderate effects of changes in climate and advance the recovery of endangered species (Boughton and Pike 2013).
- Offset predicted increases in stream temperatures by maintaining stream flows and protecting and restoring riparian habitats (Wenger et al. 2011).
- Where inventory in watersheds is lacking, carefully review projects predicted to support spawning and rearing habitats (Rieman and Isaak 2007).

- **Focus regional priorities** on the potential for short-term loss of ecological and evolutionary significance in marginal populations and the potential for long-term persistence in core habitats (Rieman and Isaak 2007).
- **Protect intact freshwater ecosystems by protecting large geographic areas** that serve as buffers and help to promote resilience (Dudgeon et al. 2006). Protection of large areas helps to ensure connectivity among and within stream systems.

BIBLIOGRAPHY

- Beechie, T., H. Imaki, J. Greene, A. Wade, H. Wu, G. Pess, P. Roni, J. Kimball, J. Stanford, P. Kiffney, and N. Mantua. 2012. Restoring salmon habitat for a changing climate. *River Research and Applications*. DOI: 10.1002/rra.2590.
- Bottom, D. L., C. A. Simenstad, J. Burke, A. M. Baptista, D. A. Jay, K. K. Jones, E. Casillas, and M. H. Schiewe. 2005. Salmon at river's end: The role of the estuary in the decline and recovery of Columbia River salmon. US Department of Commerce, NOAA Technical Memo NMFS-NWFSC-68.
- Boughton, D. A., and A. S. Pike. 2013. Floodplain rehabilitation as a hedge against hydroclimatic uncertainty in a migration corridor of threatened steelhead. *Conservation Biology* **27**(6):1158–1168.
- Bunn, D., A. Mummert, M. Hoshovsky, K. Gilardi, and S. Shanks. 2007. California Wildlife: Conservation Challenges, California's Wildlife Action Plan. Prepared by the Wildlife Health Center, School of Veterinary Medicine, Univ. Calif. Davis for the California Department of Fish and Game, <http://www.dfg.ca.gov/wildlife/WAP/report.html>.
- Burkett, V. R., and M. A. Davidson, eds. 2012. "Coastal Impacts, Adaptation and Vulnerability: A Technical Input to the 2013 National Climate Assessment." Cooperative Report to the 2013 National Climate Assessment, 150 pp. <http://www.coastalstates.org/wp-content/uploads/2011/03/Coastal-Impacts-Adaptation-Vulnerabilities-Oct-2012.pdf>.
- CDFW. 1996. Steelhead Restoration and Management Plan for California. 1996. California Department of Fish and Game.
- CDFW. 2004. Recovery Strategy for California Coho Salmon. California Department of Fish and Game, Species Recovery Strategy 2004-1.
- California Fish Passage Forum. 2013. California Fish Passage Forum Strategic Framework 2013–2018. 44pp.

- Comte, L. and G. Grenouillet. 2013. Do stream fish track climate change? Assessing distribution shifts in recent decades. *Ecography* **36**:001–011.
- Crozier, L. G., M. D. Scheuerell, and R. W. Zabel. 2011. Using time series analysis to characterize evolutionary and plastic responses to environmental change: A case study of a shift toward earlier migration date in sockeye salmon. *American Naturalist* **178**:755–773.
- Dalton, M. M., P. W. Mote, and A. K. Snover [Eds.]. 2013. Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities. Washington, DC: Island Press. 230pp.
- Dudgeon, D., A. H. Arthington, M. Gessner, Z. Kawabata, D. Knowler, C. Levesque, R. Naiman, A. Prieur-Richard, D. Soto, M. L. J. Stiassny, and C. A. Sullivan. Freshwater biodiversity: importance, threats, status and conservation challenges. *Biological Reviews* **81**(2):163-182.
- Hoobyar, P. 2003 Restoration priorities for the Hood and Lower Columbia Basins.
- Hoy, M., B. L. Boese, L. Taylor, D. Reusser, and R. Rodriguez. 2012. Salinity adaptation of the invasive New Zealand mud snail (*Potamopyrgus antipodarum*) in the Columbia River estuary (Pacific Northwest, USA): Physiological and molecular studies. *Aquatic Ecology* **46**:249–260.
- Jorgensen, J. C., M. M. McClure, M. B. Sheer, and N. L. Munn. 2013. Combined effects of climate change and bank stabilization on shallow water habitats of Chinook salmon. *Conservation Biology* **27**(6): 1201–1211.
- Jospe, A. 2013. Aquatic barrier prioritization in New England under climate change scenarios using fish habitat quantity, thermal habitat quality, aquatic organism passage, and infrastructure sustainability. M. Sc. Thesis, University of Massachusetts—Amherst. 85pp.
- McClurg, S. E., J. T. Petty, P. M. Mazik, and J. L. Clayton. 2007. Stream ecosystem response to limestone treatment in acid impacted watersheds of the Allegheny Plateau, West Virginia. *Ecol. Appl.* **17**:1087–1104.

- Moyle, P.B., R.A. Lusardi, P.J. Samuel, and J.V.E. Katz. 2017. State of the Salmonids: Status of California's Emblematic Fishes 2017. A report commissioned by California Trout.
- National Oceanic and Atmospheric Administration (NOAA)-Northwest Fisheries Science Center. 2008. NWFSC research related to climate change. NWR Briefing. 15pp.
- National Oceanic and Atmospheric Administration. 2010. Programmatic framework for considering climate change impacts in coastal habitat restoration, land acquisition, and facility development investments. 55pp.
- Oregon Watershed Enhancement Board Prioritization Framework.
- Osgood, K. E. (editor). 2008. Climate impacts on U.S. living marine resources: National Marine Fisheries Service concerns, activities and needs. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-89, 118 pp.
- Palmer, M. A., R. F. Ambrose, and N. L. Poff. 2008. Ecological theory and community restoration ecology. *Rest. Ecol.* **5**:291–300.
- Portner, H. O., and A. P. Farrell. 2008. Physiology and climate change. *Ecology* **322**:690–692.
- Rieman, B. E., and D. Isaak. 2007. Anticipated climate warming effects on bull trout habitats and populations across the interior Columbia River Basin. *Transactions of the American Fisheries Society* **136**:1552–1565.
- Roni, P., T. J. Beechie, R. E. Bilby, F. E. Leonetti, M. M. Pollock, and G. R. Pess. 2002. A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds. *North American Journal of Fisheries Management* **22**(1): 1-20.
- Seney, E. E., M. J. Rowland, R. A. Lowery, R. B. Griffis, and M. M. McClure. 2013. Climate change, marine environments, and the U.S. Endangered Species Act. *Conservation Biology* **27**(6):1138–1146.

- Walters, A., K. K. Bartz, and M. M. McClure. 2013. Interactive effects of water diversion and climate change for juvenile Chinook salmon in the Lemhi River Basin (U.S.A). *Conservation Biology* **27**(6):1179–1189.
- Wenger, S. J., D. J. Isaak, C. H. Luce, H. M. Neville, K. D. Fausch, J. B. Dunham, D. C. Dauwalter, M. K. Young, M. M. Elsner, B. E. Rieman, A. F. Hamlet, and J. E. Williams. 2011. Flow regime, temperature, and biotic interactions drive differential declines of trout species under climate change. *Proceedings of the National Academy of Sciences*, 10.1073/pans.1103097108. 6pp.

APPENDICES

Appendix I. Links to California State Wildlife Action Plan and Steelhead Restoration and Management Plan for California.

Appendix II. California Fish Passage Forum Bylaws.

Appendix III. California Fish Passage Forum Memorandum of Understanding.

APPENDIX I – LINKS TO CALIFORNIA STATE WILDLIFE ACTION PLAN AND STEELHEAD RESTORATION AND MANAGEMENT PLAN FOR CALIFORNIA

The Forum addresses problems and issues associated with fish passage throughout the state, however, four areas receive most of the Forum’s focus and are primary regions listed in the California State Wildlife Action Plan (SWAP). These are the North Coast-Klamath, the Central Coast, the South Coast, and the Central Valley-Bay Delta Region.

Most of California’s river segments with state or federal Wild and Scenic River designations are in the North Coast–Klamath Region, including portions of the Klamath, Trinity, Smith, Scott, Salmon, Van Duzen, and Eel. Anadromous fish species include coho and Chinook salmon, steelhead, coast cutthroat trout, green sturgeon, and Pacific lamprey. The region has experienced significant declines in its fish populations, with an 80 percent decline in salmon and steelhead between the 1950s and 1990s (California State Lands Commission 1993).

On page 261 and 262 of SWAP are “Conservation Actions to Restore and Preserve Wildlife.” Action “b” states,

“Federal, state, and local agencies and private landowners should work to restore fish passage in aquatic systems important for anadromous and wide-ranging fish populations. Efforts to restore fish passage will require cooperative efforts by private owners of dams and water supply companies and partnerships among a wide range of agencies, including such state and local agencies as the State Water Resources Control Board, Caltrans, local water districts, city and county public works departments, and Fish and Game; federal agencies, such as NOAA (National Oceanic and Atmospheric Administration) Fisheries and the Federal Energy Regulatory Commission; other stakeholders, such as Native American tribes; and nongovernmental organizations, land trusts, and watershed councils.

Agencies and partners should continue to update and maintain the Coastal Conservancy's database (PAD) of barriers to fish passage and use the database to seek and prioritize opportunities to implement fish passage improvement projects. (A link to the database is available at <http://www.calfish.org>, under the sidebar heading, Fish Passage Assessment.)

Where feasible, fish barriers should be removed or modified. Fish ladders or other means of passage around dams, small-scale diversions, and other impediments should be installed (CDFW 2004g)."

In the Central Coast, the SWAP describes fish passage as a stressor to anadromous fish (Pages 216 and 217).

"Dams and smaller structures such as road crossings can fragment watersheds. As shown above, more than 70 dams and roads create complete barriers to fish passage." "Other artificial structures, such as culverts, low-water road crossings, pipeline crossings, and bridges, also block migration, stream flows, and sediment transport."

Page 228 of SWAP lists "Conservation Actions to Restore and Preserve Wildlife." Action "f" provides guidance for the Central Coast:

"Federal, state, and local agencies should work to restore fish passage in aquatic systems important for anadromous and wide-ranging fish populations. Efforts to restore fish passage may require multi-agency partnerships involving such state and local agencies as the State Water Resources Control Board, Caltrans, local water districts, city and county public works departments, and Fish and Game; federal agencies, such as NOAA (National Oceanic and Atmospheric Administration) Fisheries, the National Marine Fisheries Service, and the Federal Energy Regulatory Commission; and nongovernmental organizations, such as Trout Unlimited, land trusts, and watershed councils. The cooperation of private owners of dams and water supply companies will also be needed."

Actions recommended in the SWAP include:

- Continue to inventory and assess barriers to fish passage, update and maintain the Coastal Conservancy's database of barriers, and use the database to prioritize and seek opportunities to implement fish passage improvement projects (CDFW 2004g). The Coastal Conservancy's database is available at <http://www.calfish.org>, under the Fish Passage Assessment link.
- Where possible, remove or modify structures and barriers to allow passage. Install fish ladders or other means of passage around dams, diversions, and other impediments, including road crossings, pipelines, and culverts. Monitor fish-passage improvement projects to assess benefits to fish populations and to document lessons learned."

In the South Coast Region, the SWAP also references the decline of anadromous fish and the need for improving connectivity of their habitat. On page 175:

"Steelhead illustrate the severity of the situation, having declined from historical populations in the tens of thousands to current numbers of between 200 and 300 fish (CCC 2001, Larson 2005 pers. comm.). Historically, greater connectivity between watersheds allowed species to recolonize after sedimentation events. Today, however, roads and water diversions have fragmented and isolated stream systems, making it difficult for species to recolonize areas where they have been locally extirpated."

The "Conservation Actions to Restore and Preserve Wildlife," (page 188 of the SWAP), Action "f" notes:

"Because of the high level of urbanization in the South Coast Region, even the most intact systems will typically need some restoration work. Important restoration actions include enhancing riparian habitat and vegetation; relocating or removing confining levees to allow river-channel meandering and reconnection of rivers with their floodplains; removing dams, diversions, or other obstacles to sediment transport and fish passage..."

The "Steelhead Restoration and Management Plan for California" (SRMP) (DFG 1996), notes, "The major factor causing the decline in California is

freshwater habitat loss and degradation. This has resulted mainly from three factors: inadequate stream flows, blocked access to historic spawning and rearing areas..." (Executive Summary, page 1).

Recommendations for restoration under "Instream Habitat" on page 74 of the SRMP says that "Habitat restoration projects that attempt to 1) correct problems created by watershed damage or 2) restore access to historic habitats through barrier modification or removal should receive the highest priority for funding."

In 2003, California Fish and Wildlife completed the Recovery Strategy for California Coho Salmon. The recovery strategy's recommendations include planning and regulating water supply development and water rights to ensure adequate stream-flow levels and timing; elimination of barriers to fish passage where possible; and restoration and land management practices that improve habitat conditions. The recovery strategy also provides specific recommendations for individual watersheds and rivers, prioritizes watersheds according to restoration and management potential, and prioritizes the tasks needed to achieve the plan's goals. Restoring fish passage is a high priority in most watershed recommendations.

APPENDIX II –FORUM BYLAWS

ARTICLE I. NAME, PURPOSE and GEOGRAPHIC AREA

Section 1 – Name: The name of the organization shall be the California Fish Passage Forum (Forum).

Section 2 – Purpose: The mission of the Fish Passage Forum is to protect and restore listed anadromous salmonid species, and other aquatic organisms, in California by promoting the collaboration among public and private sectors for fish passage improvement projects and programs. These purposes are exclusively scientific and educational and consist of the following objectives:

- a. Through voluntary collaboration, education, communication, and advocacy, the Forum is committed to ecological restoration and ecologically sensitive management of ecosystems in the territory defined in Section 3 of this Article. The Forum is committed to applying science based adaptive management practices. The Forum's main goal is to protect, restore and enhance processes within watersheds (and ecosystems therein) required to preserve, enhance and restore connectivity, structure, functionality, and diversity. The Forum will only take actions that provide a net benefit to native species. Ecological restoration is the process of intentionally altering a site to establish a defined, indigenous, historic ecosystem. The goal of this process is to emulate the structure, function, diversity, and dynamics of the specified ecosystem.
- b. The Forum is committed to restoring hydrological and ecological connectivity within anadromous fish habitat wherever possible.
- c. To do any lawful activities which may be necessary, useful, or desirable for the furtherance, accomplishment, fostering, or attainment of the foregoing purposes, either directly or indirectly and either alone or in conjunction or cooperation with others, whether such others be persons or organizations or any kind or nature, such as corporations, firms,

associations, trusts, institutions, foundations, or governmental bureaus, departments, or agencies.

d. The organization shall act in a manner consistent with, but not limited by, the By-laws, objectives, policies, and positions as adopted by the Forum. In general, it will also follow the guidance of the Program Goals and Objectives of the National Fish Habitat Action Partnerships (NFHAP) and the CalFish MOU (2006). CalFish (<http://www.calfish.org>) is the leading source for California anadromous fish and stream habitat data, as well as the standards and tools needed to collect, understand, manage, analyze, and share those data.

Section 3 – Geographic Area and Keystone Species: The geographic area encompassed by the Forum shall include the historical and present anadromous habitat of Chinook Salmon (*Oncorhynchus tshawytscha*), Steelhead Trout (*Oncorhynchus mykiss irideus*) and Coho Salmon (*Oncorhynchus kisutch*) in the State of California, as defined at <http://swr.nmfs.noaa.gov/recovery/domains.htm>.

ARTICLE II. MEMBERS

Section 1 - Eligibility for Voting Membership: Voting membership shall be open to any agency, business, or other organization that supports the purpose statement in Article 1, Section 2. Voting membership is granted after signing the Fish Passage Forum MOU.

Section 2 - Resignation and Termination of Voting Membership: Any member may resign by providing 30 days notice to the signatories of the MOU and submitting a written resignation with the Chair.

Section 3 - Non-voting Membership: The general non-voting membership is open to any agency, business, or other organization that supports the purpose statement in Article I, Section 2.

ARTICLE III. VOTING MEMBERSHIP AND FORUM'S GOVERNANCE

Section 1 – Voting Membership role: The voting membership shall be responsible for overall policy and direction of the Forum, as well as for the establishment and direction of committees as described below.

Section 2 –The Voting Membership: The voting membership shall consist of an official representative of each of the signatories to the Forum's MOU. An official letter naming a representative and alternative representative from each of the Forum's MOU signatories will be required
(<http://www.calfish.org/Programs/AdditionalPrograms/FishPassageForum/Overview/tabid/114/Default.aspx>)

The voting membership shall always have a Chair. As consistent with the MOU, the Department of Fish and Game representative will serve as the Chair.

There is hereby established a voting membership to manage the affairs of and provide overall policy guidance for the Forum. The voting membership is charged with the following functions:

1. Establish the overall direction and policies for the Forum consistent with the purpose and objectives above and as defined in the Forum's MOU.
2. Select and establish direction for the work of committees or task forces.
3. Approve and ensure implementation and updates of a Strategic Plan.
4. Approve and ensure implementation of an Annual Work Plan, budget (if any), and any revisions thereto.
5. Procure, administer and distribute any funding secured to fulfill the responsibilities of the Forum. The mechanism for administering any funds will be established prior to procuring any funds, and will be documented in future versions of the By-laws.

Section 3 – Quorum: A simple majority (i.e. more than half) of the voting membership (either the official representative or the alternate representative for each of the Forum's signatories), present at a meeting, constitutes a quorum. Proxy

voting is not allowed. To be a valid act of the Forum, a simple majority of the Quorum is needed. If a simple majority of the Quorum votes in favor of postponing voting on an item until members have had time to consult with their agencies or organization, voting on that item shall be postponed until the time the voting membership determines.

Section 4 – Meeting frequency: The voting membership shall meet at least quarterly, at an agreed time and place. Non-voting members of the Forum are welcome to attend. Order of business and parliamentary procedures at meetings shall follow Robert's Rules of Order, the latest version.

Section 5 – Meeting purpose: Quarterly meetings of the membership shall be held four times each year for the purpose of sharing information pertinent to the group's purpose, receiving reports from the committees, receiving a financial report (if any), and discussing other items of business on the agenda. All members shall be given an opportunity to suggest items to be included in the meeting agenda. The Chair will distribute a meeting agenda with established timeframes for topics and discussion. If time permits, meeting attendees can bring items for discussion not listed in the agenda.

Section 6 – Notice of meetings: The next meeting date will be set at the current meeting when possible. Otherwise, an official voting membership meeting requires that each MOU signatory official and alternate representative have notice via mail or email at least six weeks in advance. A reminder notice of the upcoming meeting will be given to each member, by mail or email, not less than two weeks prior to the meeting. Meeting notices will also be posted on the www.calfish.org website not less than two weeks prior to the meeting.

Section 7 – Special meetings: Special meetings of the voting membership shall be called upon the request of the Chair, or one-third of the voting membership. Notices of special meetings shall be sent out by the Chair to each voting member at least two weeks in advance. The voting membership may take or authorize action without a meeting, if more than half of the voting membership consent in writing to such action. Such action by written consent by email or other means shall have

the same force and effect as an equivalent vote of the voting membership and shall be filed with the minutes of the next Forum meeting.

ARTICLE IV. COMMITTEES

Section 1 - Committee formation: The voting membership shall create standing committees as deemed necessary. Committee membership is voluntary, and is opened to member Representatives or Alternates. Unless otherwise specified in these Bylaws, the Chair shall appoint from the membership, subject to the approval of the voting membership by simple majority, a Chairperson of each committee. All Committees will be comprised of Forum member organizations. No member organization shall have their Representative and Alternate serve on the same Committee. New Committees shall be created by a vote of minimally sixty-five percent [super-majority] of member organizations.

The following committees shall be established by virtue of the establishment of these bylaws:

1. Governance Committee:

The Governance Committee is responsible for coordinating the Forum's collective work plans and budget and coordinating and generally communicating with NFHAP regarding, but not limited to administrative requests, reporting, project solicitations and "10 Waters to Watch" efforts. The Governance Committee is also responsible for the Forum's business documents such as press releases, the Strategic Framework, bylaws, the Forum's MOU, letters of support, grant applications, application forms and score sheets. The Governance Committee will also help coordinate the Forum's efforts and ensure signatory member participation in Forum meetings, working groups and committees.

2. Permitting and Policy Committee:

The Permitting and Policy Committee is responsible for addressing issues deemed significant by the Forum and associated with project

permitting and policy pertaining to fish passage and fish connectivity in the State of California.

3. Education and Outreach Committee:

The Education and Outreach Committee was formed to address high priority outreach actions associated with Forum initiatives. Working with Forum committees and working groups, the Education and Outreach Committee develops short- and long-term strategic actions to advance understanding, awareness, and appreciation of the role of the Forum in making strategic investments in fish passage barrier removal in the State of California.

4. Science and Data Committee:

The Science and Data committee was convened in 2013 to align with the organizational structure of other NFH partnerships and coordinate efforts with the NFHAP Science and Data Committee. With input from Forum organizational entities and/or members, the Science and Data Committee will create working groups and coordinate working group efforts to address data and science needs important to achieving Forum's Goals and Objectives. The Science and Data Committee collaborates with the NFHAP Science and Data Committee to the extent possible, and participates in the California LCC Science-Management Team to address shared goals and objectives.

Section 2 – Working Groups: Each standing committee shall appoint various working groups for the purpose of implementing and administering defined projects or furthering specific objectives of the Forum. *Working groups* shall be discharged when their work has been completed. Working Group membership is voluntary, and is open to 1) all meeting attendees in the Forum and 2) other experts accepting the invitation to participate, if in the view of the responsible Committee, they can further the effort of the Working Group and the Forum. Working groups shall have at least one Forum Representative or Alternate as a member, and unless decided otherwise by the responsible Committee, shall be

organized and led by a Forum representative. Committees shall be responsible for the formation, efforts, products, reporting, and discharge of their working groups. The following working groups are currently established as of 5/6/2013:

1. Barrier Prioritization and Optimization Working Group

The Barrier Prioritization and Optimization Working Group was formed to develop and implement a highly strategic and efficient means to prioritize fish passage barriers in the anadromous waters of California. Working with existing fish passage barrier data from the California Passage Assessment Database, the working group is using an optimization-based approach to develop a tool that will allow potential barrier projects and sites to be prioritized for funding or targeted for project development. This multi-function tool will serve many purposes for the Forum, each of our signatory entities and fish passage and habitat restoration practitioners and managers within California. The working group also envisions this methodology becoming a powerful potential resource for prioritization of natural resource protection and restoration nationwide.

2. Engineering Working Group

The Engineering Working Group was formed to provide a forum for discussion and collaboration regarding information needs and engineering-related data management, fish passage design criteria, design alternatives, and construction methods. The Engineering Working Group is also responsible for consideration of means of information sharing and identification of research needs and collaborative research opportunities. In addition, the Engineering Working Group may consider potential for training collaborations and collaborate with other Forum committees and working groups on evaluations and analysis of policies.

Section 3 – Committee and Working Group Current Membership: An up to date list and rosters for current committees and working groups can be found at <http://www.cafishpassageforum.org>.

ARTICLE VI. AMENDMENTS TO THE FORUM BY-LAWS

These bylaws may be amended when necessary by two-thirds majority of the voting membership. Proposed amendments must be submitted to the Forum Chair to be sent out with regular voting membership announcements.

APPENDIX III – FORUM

MEMORANDUM OF UNDERSTANDING



A COLLABORATIVE APPROACH TO RESTORING FISH PASSAGE BY THE CALIFORNIA FISH PASSAGE FORUM

Entered into between:

Federal agencies

Fish and Wildlife Service (USFWS)
NOAA National Marine Fisheries Service (NMFS)
Forest Service (USFS)

State agencies

Department of Fish and Wildlife (CDFW)
Department of Water Resources (DWR)
Department of Transportation (Caltrans)
State Coastal Conservancy

Nonprofit organizations

American Rivers
California Trout

An interstate marine fisheries commission

Pacific States Marine Fisheries Commission (PSMFC)

Hereafter referred to as the Forum

I. Problem Statement

Anadromous fish habitats in California have been detrimentally impacted by human-caused and natural disturbances. Man-made barriers to anadromous fish migration include road-stream crossings, irrigation diversions, dams, and many other in-stream structures. Passage impediments affect adult and juvenile fish by delaying or preventing upstream and downstream migration, preventing the use of available habitat, and possibly inflicting injury or death.

Addressing connectivity has been consistently identified as a high priority, cost-effective approach to protecting and restoring anadromous fish populations. Restoring unimpeded passage for aquatic organisms in anadromous systems is imperative for the success of all other habitat restoration activities. Both state and federal action and recovery plans identify fish passage and connectivity as major limiting factors for listed salmonids in California.

A coordinated and comprehensive fish passage improvement program is fundamental to addressing fish passage barriers. The Forum, a consortium of federal, state, nonprofit and private sector organizations, was established in response to significant declines in coho salmon, Chinook salmon, and steelhead. At least one population of all of these species are federally listed as either threatened or endangered within California, and efforts are underway to recover their populations. In addition to the salmonid species listed above, the Forum recognizes the significant impacts of passage barriers to Pacific lamprey, green sturgeon, Klamath Basin Lost River Sucker, and Shortnose sucker.

II. Background

California's historically bountiful anadromous fishery depends on the ecological integrity of dozens of streams and rivers that flow into the Pacific Ocean along the state's 1,100-mile coastline. These streams provide the habitat that salmonids and other anadromous fish require during the spawning and juvenile phases of their life.

During the 19th and 20th centuries, as roads, bridges, and dams were built on public and private lands along waterways, and as water was diverted by various

means, thousands of barriers were erected, blocking the passage of anadromous fish. These barriers impact both adult and juvenile fish by preventing full use of available habitat or altering habitat and hydraulic conditions. Consequently, many salmon, steelhead, cutthroat trout, lamprey, and sturgeon populations have experienced significant declines, and the sport and commercial fisheries that depended on some of these populations have, in many cases, vanished.

Man-made barriers to fish passage include road/stream intersections, pipeline or other infrastructure crossings, erosion control/flood control structures (rip-rap, concrete channels, e.g.), and dams that block or delay migration. In some cases, previously installed fish passage structures, such as fish ladders, act as barriers because of poor design or construction as well as lack of maintenance.

In October 1999, the Resources Agency established the eight-point California Coastal Salmon and Watersheds Program, which called for the coordination of State, federal, and local partners working toward the goal of restoring salmon and steelhead populations to naturally sustainable levels. At the time, fish passage barriers were recognized as a major threat to anadromous fish species in California and their removal or modification could potentially yield the greatest cost-efficiency for short-term restoration activities. Based on this recognition, the program included an objective to coordinate fish passage activities in California.

To accomplish this objective, the Natural Resources Agency (CNRA) convened a group of interested state, local and federal agencies, fisheries conservation groups, researchers, restoration contractors and others to discuss ways to improve fish passage at man-made barriers. The success of this coordination led to the establishment of the Forum, of which many agencies and organizations are members.

The Forum identified the need for improved efforts to identify barriers, evaluate and prioritize restoration opportunities, and implement projects in a timely fashion. It also targeted administrative, financial and technical impediments to addressing these issues, including information gaps, lack of watershed-level assessment and planning, and poorly coordinated project review and permitting processes. Forum participants worked together to develop short-term solutions

for these types of problems for several known high priority fish passage projects. They also established subcommittees for coordinating activities related to fish passage inventory and assessment protocols, data format and access protocols, information and literature collection, research, policy, design criteria permitting, training, and public education and outreach.

The Forum's highest initial priority for restoring passage for California anadromous fish was to determine the quantity, location and severity of existing migration barriers. Through a FY'01/'02 legislative appropriation from Proposition 12 sponsored by Assemblyman Byron Sher, the Coastal Conservancy was directed to conduct an "inventory of fish passage barriers located on coastal streams that impede access to freshwater spawning habitats for anadromous fish species." Subsequently, the Conservancy retained the Pacific States Marine Fisheries Commission to develop the Passage Assessment Database (PAD), a map-based inventory of known and potential barriers to anadromous fish in California, now maintained through a cooperative interagency agreement.

The Forum seeks to understand watershed fragmentation throughout California. Current focal areas, each with their own anadromous fish population characteristics, challenges, and issues, include: the North Coast, Central Coast, South Coast, and Central Valley regions. These regions also contain other species of interest that are considered in Forum activities. Although the state and federal MOU signatory members have jurisdictions across all of these regions, the additional Forum members and partners vary in each region based on their specific jurisdictions and levels of involvement.

Although Forum members develop unique prioritization lists and treatment prescriptions throughout California regions, the Forum attempts to develop standardized data management systems, assessment protocols, design manuals and outreach programs that cover the full geographic extent of the Forum and address the Forum's strategic planning process.

The Forum meets quarterly in different locations in California. During the meetings, issues are resolved, decisions made and strategic topics discussed. Members also form smaller, focused working groups and committees in which

specific goals and tasks are addressed. The Forum developed bylaws, which govern the membership and decision-making processes.

In 2012, the Forum became one of 19 nationally recognized Fish Habitat Partnerships (FHPs). The FHPs “protect, restore and enhance the nation’s fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people.” Recognition as an FHP creates opportunities to expand partnerships and funding sources to advance Forum objectives. The mission, vision, goals, and objectives of the Forum are detailed in the Forum’s strategic framework and in other documents posted on its website, www.cafishpassageforum.org.

III. Purpose

This MOU is intended to contribute to the protection and recovery of aquatic life, with a particular focus on anadromous fish species in California, by promoting collaboration among public and private sectors on fish passage restoration programs and activities.

IV. Mission, Goals, and Objectives of the Forum

Mission

The mission of the Forum is to protect and revitalize anadromous fish populations in California by restoring connectivity of freshwater habitats throughout their historic range.

Goal

Restore the connectivity of freshwater habitats throughout the state.

To achieve the mission and goal, the Forum will:

- Improve coordination of existing agency programs, rule and guideline efforts, and private sector activities across jurisdictions to improve the timeliness and cost-effectiveness of fish passage restoration efforts.
- Facilitate collaboration, coordination, and communication among state, federal and local agencies, researchers, restoration contractors, landowners

and other interested stakeholders on fish passage improvement programs and projects.

- Expedite implementation of on-the-ground projects by identifying and addressing institutional barriers.
- Educate and increase the public and agency awareness of fish passage issues to develop support for solving problems and preventing new ones.
- As permitted by law, seek additional funding sources for fish passage projects within the geographic scope of the Forum and administer a strategic funding program to further the Forum's mission once funding is secured.

Objectives

1. Remediate barriers to effective fish migration.
2. Facilitate coordination and communication among agencies, agency staff, and other entities that may propose, review, or promulgate fish passage projects within California.
3. Identify, assess and prioritize the removal of fish passage barriers.
4. Disseminate guidelines and design criteria for replacement of barriers.
5. Coordinate funding mechanisms to remove fish passage barriers.
6. Support state and federal permit coordination and efficiencies.
7. Facilitate plans to monitor and evaluate fish passage restoration effectiveness to ensure accountability.
8. Encourage existing state and national policy and actions that support fish passage improvement in California.
9. Implement education and outreach activities, targeting both the general public and fish passage practitioners.

V. Management

The Forum adopted bylaws (Appendix A) that define its name, purpose, geographic scope, voting membership, governance, committees and working groups, documentation of decisions and work products, and the process to amend the bylaws.

VI. Support of Principal Signatory Agencies

For the purposes of this MOU, principal signatory agencies are defined as those participating state or federal agencies which have direct responsibilities for the protection or management of anadromous fisheries or fish habitat, or who have established fish passage restoration program elements. Other organizations, including nonprofit entities as well as county and local governments, are also recognized signatories to the MOU. All signatory agencies will participate in the Forum to implement the actions described above and will undertake projects consistent with the above objectives. They will participate in the Forum to prepare and implement annual work plans. As part of the ongoing cooperative effort to coordinate fish passage restoration that began before the development of this MOU, the signatory agencies and entities will undertake the following activities that are consistent with MOU goals and objectives and are within their statutory mandates and authorities, budgets, funding, and staffing constraints.

Any federal funding or personnel needed to carry out any federal agency responsibilities under this MOU shall be subject to the availability of appropriated funds, pursuant to the Anti-Deficiency Act (31 U.S.C. Section 1341).

The following are key responsibilities of the signatory agencies:

California Department of Fish and Wildlife (CDFW)

1. Participate in Steering Committee.

2. Participate as a member of standing committees and working groups as needed and resources permit.
3. Work with Forum partners to improve permit processes to better facilitate fish passage improvement projects.
4. Utilize the PAD in the prioritization and development of their projects, and to report their activities back to the Forum.
5. Fund the design and implementation of fish passage improvement projects and other resource enhancement efforts in high priority coastal watersheds consistent with its Strategic Framework and as funding allows.
6. Periodically update Forum members on CDFW activities and resource enhancement priorities.
7. Meet and coordinate fish passage activities with other MOU signatories and agencies.
8. Provide regional perspectives from CDFW's Regional offices regarding fish passage and related aquatic habitat science, data, information, and policy.
9. Participate in data collection, management, and analysis related to fish passage and aquatic habitats.
10. Promote science-based activities that support fish passage improvement programs.

California Department of Water Resources (DWR)

DWR activities will be carried out by the Fish Passage Improvement Program staff within the FloodSAFE Environmental Stewardship and Statewide Resources Office (FESSRO):

1. DWR will meet and coordinate fish passage activities with other MOU signatories and agencies.
2. DWR will carry out fish passage projects as specific funding and authorization become available.
3. DWR will work toward obtaining funding for assessments, evaluations, and specific projects.
4. In cooperation with DFW, DWR will help to provide engineering and environmental documentation technical advice and support as appropriate and coordinate participation with other DWR resources.
5. DWR will coordinate hydrologic and other data acquisition from DWR sources for specific projects and regional or watershed assessments.
6. DWR will support a total resource management approach to Environmental Stewardship in guiding planning and implementation decisions related to its participation in the California Fish Passage Forum. This includes, but is not limited to, the following principles: sustainability objectives, early and integrated environmental planning, multiple ecological benefits, multiple geographic scales and time frames, inclusive cost-benefit analyses, science-based solutions, ecological monitoring, and adaptive management.
7. DWR acknowledges that climate change is having a profound impact on California water resources and how it will affect other resources, such as anadromous fish.
8. DWR will inform the California Fish Passage Forum of its own large-scale fish passage project work related to biological opinions and planning, when possible.
9. DWR will participate as a member of the Science and Data Committee and Engineering Working Group.

California Department of Transportation (Caltrans)

1. Ensure state highway stream crossing designs provide fish passage in compliance with state and federal natural resource statutes, highway design standards and best engineering practice.
2. Identify assessment and remediation needs for state and federal transportation projects early in the delivery process and incorporate funding needs in allocation requests.
3. Seek grant funding or partnerships to conduct additional identification, assessment and remediation of blockages at state highway crossings where transportation work is not planned.
4. Use “Fish Passage Design for Road Crossings-An Engineering Document Providing Fish Passage Design Guidance for Caltrans Projects, 2007 or latest edition” to guide crossing designs in conformance with California Department of Fish and Game and NOAA Fisheries Service Southwest Region criteria.
5. Facilitate encroachment permits to allow other signatories and agencies to locate, assess or remediate barriers within the state highway right-of-way provided that any actions meet applicable environmental laws and/or design standards.
6. Train its staff or retain expert services for proper identification and assessment of fish passage barriers and effective design of road crossings that provide fish passage.
7. Make secondary observations (e.g., slope of the invert, height of perched outlets, identification of existing fish passage facilities, and existence of trash racks) of culverts during engineering inspections that may be useful for subsequent fish passage assessments.
8. Work with State and Federal natural resource agencies to streamline the consultation and permit process thereby facilitating an accelerated replacement/rehabilitation schedule for fish passage improvement projects.

California State Coastal Conservancy

1. Continue to encourage its grantees to utilize the PAD in the prioritization and development of their projects, and to report their activities back to the Forum.
2. Continue to fund the design and implementation of fish passage improvement projects and other resource enhancement efforts in high priority coastal watersheds consistent with its Strategic Plan and as funding allows.
3. Continue to meet with the Forum and periodically update Forum members on Conservancy activities and resource enhancement priorities.

United States Army Corps of Engineers (USACE)

The San Francisco, Sacramento and Los Angeles Districts of the U.S. Army Corps of Engineers will:

1. Participate in the Forum Steering Committee.
2. Assist in prioritizing and selecting projects for funding.
3. Meet and coordinate fish passage activities with other MOU signatories and agencies.
4. Carry out specific fish passage projects in cooperation with a cost-sharing partner as specific funding and authorization become available.

Pacific States Marine Fisheries Commission

1. Provide regional perspectives from the five Pacific States (California, Oregon, Washington, Idaho, and Alaska) regarding fish passage and related aquatic habitat science, data, information, and policy.
2. Coordinate and facilitate access to and collection, management, and analysis of data related to fish passage and aquatic habitats.

3. Maintain data standards and facilitate data sharing with other local, regional and national entities.
4. Promote and coordinate science-based research activities that support fish passage improvement programs.

National Marine Fisheries Service (NMFS)

1. Participate in the Forum Steering Committee.
2. Provide guidelines for the design and installation of fish passage facilities at stream crossings.
3. Provide technical assistance on hydraulic engineering issues to the extent that staff resources are available on a case-by-case basis.
4. Provide annual updates to the Passage Assessment Database for fish passage restoration projects funded by NMFS.
5. Assist in prioritizing and selecting fish passage improvement projects that are consistent with the Forum's Strategic Framework.
6. Participate as a member of standing committees and working groups as needed and resources permit.
7. Continue to provide information to members of the Forum regarding fish passage recommendations outlined in Federal Recovery Plans.

US Department of Agriculture – Forest Service

The Pacific Southwest Region of the USDA Forest Service (Region 5) will:

1. Conduct an inventory of all road/stream crossings within the anadromous watersheds of the Klamath, Six Rivers, Shasta-Trinity, Mendocino, Lassen, Los Padres and Cleveland National Forests to determine if fish passage at any life stage is blocked or impeded. The inventory results will be entered into a standardized agency database. The road/stream crossings will be prioritized based on impacts and extent of impacts on salmonid species.
2. Coordinate with local, State and Federal agencies, as well as private organizations, to identify critical watersheds in which to collectively focus activities to reduce fish blockage.

3. Pursue funds to remediate blockage and impediment of fish passage at road/stream crossings.
4. Coordinate internally with other Forest Service Regions and participate with local, State, and Federal agencies as well as private organizations to develop consistent criteria for analyzing sites, collecting data, and storing information that is accessible to the participating organizations and to the public.
5. Design stream crossings on new roads to provide adequate passage for all life stages of fish.
6. Use the most recent research in training its staff in the proper identification, assessment, and design criteria for fish passage.

U.S. Fish and Wildlife Service, Pacific Southwest Region (Service)

1. Coordinate the National Fish Passage Program, other Service Programs and Service Field Office activities involving fish passage within the State of California and with the Forum.
2. Continue to support cooperative fish passage activities through the National Fish Passage Program and other Service programs as resources permit.
3. Disseminate Forum goals, objectives, and activities to other federal, tribal, state, and local agencies; watershed workgroups and other non-profit organizations; landowners; and the public.
4. Integrate Forum barrier data into GeoFIN (the Service's National fish barrier database).
5. Meet and coordinate fish passage activities with other MOU signatories and agencies.
6. Participate as a member of standing committees as needed and resources permit.
7. Manage and coordinate grants and cooperative agreements on behalf of the Forum for all Service National Fish Habitat Action Plan funding provided to the Forum.
8. Work with the Forum Coordinator and chair to provide coordination with Regional and National Service Fish and Aquatic Conservation Staff and the National Fish Habitat Board.

American Rivers

1. Participate as a voting member of the Forum Steering Committee.
2. Work collaboratively with Forum members to support stream barrier removal policies and projects that protect California's anadromous fish populations.
3. Support efforts to prioritize and fund barrier removal projects throughout the state and support compliance with guidelines and best practices for fish passage projects.
4. As appropriate, advocate for national and state policies that advance river restoration, barrier removal, and anadromous fish protection.

5. Participate as a member of standing committees as needed and as resources permit.

CalTrout

1. Participate in the Forum Steering Committee.
2. Coordinate with Forum members to restore steelhead and salmon, save imperiled native trout, and protect California's blue ribbon waters.
3. Participate as a member of standing committees as needed and resources permit.
4. Advocate for fish and water policy that advances protection, restoration and enhancement of steelhead, salmon, and trout habitat.
5. Support projects that restore anadromous fish habitat using science, partners, and a collaborative approach.

VIII. Contributing and Supporting Signatories

Contributing signatories are members of the Forum Steering Committee and will participate in and contribute, as resources permit, to the implementation of goals, objectives, and work plans. Supporting signatories support the concept, goals, and objectives of this MOU.

IX. Other Provisions and Agreements

This agreement is intended to be in furtherance of mutual goals for protecting watershed resources. This MOU is intended to embody general principles, and does not create contractual relationships, rights, obligations, duties or remedies between or among signatories.

Agency actions are subject to statutory authority and regulatory requirements. Nothing in this MOU is intended to expand or limit the legal authority or responsibilities of any signatory agency, entity or organization.

Nothing in this MOU shall limit the participating agencies in carrying out their

individual statutory responsibilities.

This MOU does not modify or supersede other existing agreements, programs, MOUs, plans, regulations or executive orders.

Nothing herein alters the existing authorities or responsibilities of any party nor shall be considered as obligating any party in the expenditure of funds or the future payment of money or providing services. The expressions of support by state and federal agencies under this MOU are subject to the requirements of the federal Anti-Deficiency Act and to the availability of appropriated funds. The parties acknowledge that this MOU does not require any agency to expend its appropriated funds unless and until an authorized officer of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

Consistent with federal law, nothing in this document constrains the discretion of the President or his or her successor from making whatever budgetary or legislative proposals he or his successors deem appropriate or desirable.

This MOU is not intended to, and does not, create any other right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, the State of California, any agencies thereof, any officers or employees thereof, or any other person.

X. Principal Signatory Agencies

Any party may withdraw from this MOU upon 30-days notice to the other parties. This MOU may be amended only upon the written prior approval of each signatory. Other entities may execute this MOU and thereby become a Party.

This agreement is executed as of the date of the last signature and is effective through December 31st, 2020, at which time it will expire unless extended.

This agreement will be reviewed annually by the Steering Committee.



MALCOLM DOUGHERTY
Director, State Coastal Conservancy

10/2/2015
Date



CHARLTON H. BONHAM
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

5/6/2015

DATE



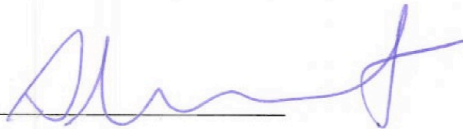
Ren Lohofener, Regional Director
U.S. Fish and Wildlife Service, Pacific Southwest Region

3.19.15

Date

California Department of Transportation

BY:



Samuel Schuchat
Executive Officer

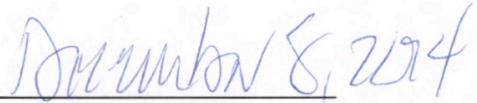


Curtis Knight
Executive Director
California Trout

February 4, 2015



William W. Stelle, Jr.
West Coast Regional Administrator
National Marine Fisheries Service

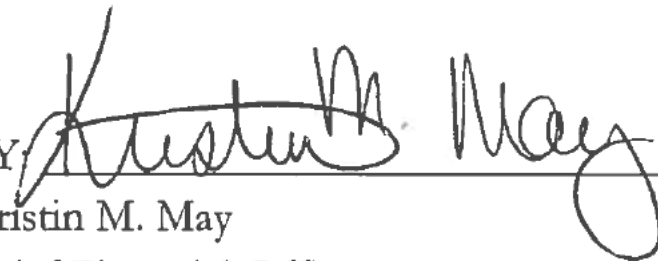


Date

 Sept 26 2014

Randy Fisher, Director
Pacific States Marine Fisheries Commission

American Rivers, Inc.

BY: 

Kristin M. May
Chief Financial Officer

MEMORANDUM OF UNDERSTANDING A Collaborative Approach to Restoring Fish Passage by the California Fish Passage Forum Supplemental Provisions

21. NOTICES

Any communications affecting the operations covered by this agreement given by the U.S. Forest Service or California Fish Passage Forum is/are sufficient only if in writing and delivered in person, mailed, or transmitted electronically by e-mail or fax, as follows:

To the U.S. Forest Service Program Manager, at the address specified in the grant/agreement.

To California Fish Passage Forum, at the Cooperator address shown in Section 22. Principal Contacts or such other address designated within the grant/agreement.

Notices are effective when delivered in accordance with this provision, or on the effective date of the notice

22. PRINCIPAL CONTACTS

Individuals listed below are authorized to act in their respective areas for matters related to this agreement.

Principal Cooperator Contacts:

Cooperator Program Contact	Cooperator Administrative Contact
Name: Michael Bowen, Chair California Fish Passage Forum Address: State Coastal Conservancy 1330 Broadway, Suite 1300 City, State, Zip: Oakland, CA 94612 Telephone: (510) 286-0720 FAX: (510) 286-0470 Email: mbowen@scc.ca.gov	Name: Lisa A. DeBruyckere, Coordinator California Fish Passage Forum Address: 6159 Rosemeadow Lane NE City, State, Zip: Salem, OR 97317-3375 Telephone: (503) 371-5939 FAX: (503) 704-2884 Email: lisad@createstrat.com

Principal U.S. Forest Service Contacts:

U.S. Forest Service Program Manager Contact	U.S. Forest Service Administrative Contact
Name: Joseph Furnish, Regional Aquatic Ecologist Address: 1323 Club Drive City, State, Zip: Vallejo, CA 94592 Telephone: 707-562-8952 Email: jfurnish01@fs.fed.us	Name: Constance Zipperer, Grants Management Specialist Address: 1323 Club Drive City, State, Zip: Vallejo, CA 94592 Telephone: 707-562-9120 Email: czipperer@fs.fed.us

23. PARTICIPATION IN SIMILAR ACTIVITIES

This agreement in no way restricts the Forest Service or the Cooperators from participating in similar activities with other public or private agencies, organizations, and individuals.

24. TEXT MESSAGING WHILE DRIVING

In accordance with Executive Order (EO) 13513, "Federal Leadership on Reducing Text Messaging While Driving," any and all text messaging by Federal employees is banned: a) while driving a Government owned vehicle (GOV) or driving a privately owned vehicle (POV) while on official Government business; or b) using any electronic equipment supplied by the Government when driving any vehicle at any time. All Cooperatives, their Employees, Volunteers, and Contractors are encouraged to adopt and enforce policies that ban text messaging when driving company owned, leased or rented vehicles, POVs or GOVs when driving while on official Government business or when performing any work for or on behalf of the Government, whichever is later.

25. MEMBERS OF CONGRESS

Pursuant to 41 U.S.C. 22, no member of, or delegate to, Congress shall be admitted to any share or part of this agreement, or benefits that may arise therefrom, either directly or indirectly.

26. TERMINATION BY MUTUAL AGREEMENT

Any of the parties, in writing, may terminate this instrument in whole, or in part, at any time before the date of expiration.

27. INFORMATION SECURITY

By accepting this agreement, the servicing agency agrees to comply with all Federal information laws, regulations and requirements; and shall be responsible for properly protecting all information used, gathered, or developed as a result of work under this agreement.

If information is stored, developed, or transmitted electronically, the servicing agency shall, upon request, provide to the U.S. Forest Service Information Security staff for review and examination documentation which supports the servicing agency's assertion that adequate information technology (IT) security controls are in place to protect U.S. Forest Service information and data which it holds. Documentation may include, but is not limited to, certification and accreditation documentation, security testing results, audit and assessment results, and risk documentation.

The servicing agency shall notify the U.S. Forest Service Computer Incident Response Team (CIRT), by e-mail, at CIRT@fs.fed.us, within 1 business day of any security incidents which affected or may affect the confidentiality, integrity, or availability of the U.S. Forest Service information and data which it holds, and include an analysis of the extend of the incident and summary of preliminary corrective actions.

28. PUBLIC NOTICES


It is U.S. Forest Service's policy to inform the public as fully as possible of its programs and activities. Cooperators are encouraged to give public notice of the receipt of this agreement and, from time to time, to announce progress and accomplishments. Press releases or other public notices should include a statement substantially as follows:

The Cooperators may call on U.S. Forest Service's Office of Communication for advice regarding public notices. The Cooperators are requested to provide copies of notices or announcements to the U.S. Forest Service Program Manager and to U.S. Forest Service's Office Communications as far in advance of release as possible.

29. U.S. FOREST SERVICE ACKNOWLEDGED IN PUBLICATIONS, AUDIOVISUALS, AND ELECTRONIC MEDIA

The Cooperators shall acknowledge U.S. Forest Service support in any publications, audiovisuals, and electronic media developed as a result of this agreement.

These terms and conditions are incorporated and made a part of the referenced agreement.



~~DEBORAH~~ WHITMAN, Director
Ecosystem Management
U.S. Forest Service, Pacific Southwest Region

1/9/15

Date

The authority and format of this agreement have been reviewed and approved for signature.



CONSTANCE ZIPPERER
U.S. Forest Service Grants Management Specialist

9 January 2015

Date