



CALIFORNIA FISH PASSAGE ADVISORY COMMITTEE

WINTER 2023 NEWSLETTER

PARTNERSHIPS

The Fish Passage Advisory Committee (FishPAC) includes more than 200 member partners representing all aspects of fish passage remediation, to include assessment work, prioritization, training, engineering, planning, and advocating for funding.

The FishPAC Science and Innovation Team has been working together since May 2020, to advance innovation in the collection and sharing of fish passage barrier and habitat data. The Science and Innovation Team develops innovative approaches to conducting State Highway System (SHS) assessments and data collection using the innovative software and device technologies, develops products and protocols in support of the multi-species camera project, and conveys technical information in support of Caltrans and FishPAC goals.

The Science and Innovation Team continues to lead California in fish barrier and habitat assessment data collection and improvements to the Passage Assessment Database. These efficiencies in data exchange have rapidly improved the SHS inventory of barriers and provides vital data for FishPAC prioritization of barriers.

The FishPAC Leadership Action Team currently has eight member managers from Caltrans, the California Department of Fish and Wildlife (CDFW), the National Marine Fisheries Service (NMFS), the U.S. Army Corps of Engineers, and the Resource Conservation District of the Santa Monica Mountains, who all provide guidance to the FishPACs. Selection to the Leadership Action Team is made based on demonstrated commitment to the goals of the six FishPACs as well as expertise, accountability, communication, problem-solving skills, and the ability to be a team player and motivate others.



FISH PASSAGE BARRIER ASSESSMENT PROGRESS

Improving fish passage on the SHS requires a comprehensive approach focused on science and data, engineering, training, permitting, research, funding, multi-species and habitat benefits, and partnerships, due to complex considerations associated with successful fish barrier remediation projects. The FishPACs have improved fish passage partnering throughout California. The Interagency Fish Passage Engineering Working Group and the Fish Passage Leadership Action Team continue to identify and work toward improved understanding and application of successful fish passage remediation work in California.

WHAT'S INSIDE?

Page 1: Partnerships | Fish Passage Barrier Assessment Progress

Pages 2-3: Science & Data

Pages 4: Engineering | Multi-Species & Habitat Benefits

Page 5: Multi-Species & Habitat Benefits (cont.) | 2023 Quarterly Meeting Schedule

The newsletter is intended to connect FishPAC members and others interested in fish passage remediation with a focus on sharing information and working together as a fish passage community to enhance California's resilience.

SCIENCE & DATA

Caltrans, the California Conservation Corps (3C's), and the Pacific States Marine Fisheries Commission (PSMFC), have made significant progress in statewide fish passage barrier assessment work by completing over 2,700 fish passage barrier assessments statewide. Since January 2020, new assessment science and data has been added to CDFW's Passage Assessment Database (PAD) and made available to the FishPAC and fish passage practitioners to advance the understanding of fish passage barriers throughout California.

The 3C's member teams in Los Angeles, Monterey, San Luis Obispo, Stockton, and Ukiah were developed and trained to assess

fish passage barriers using innovative software, tablet devices, and geospatial technology. This technology efficiently conveys assessment assignments and allows teams to collect high-quality data and photographs statewide. By use of this technology Caltrans has increased the rate of barrier assessments by over 300% and has efficiently submitted data directly to the PAD. Furthermore, the new technology requires a fraction of the time of conventional input methods significantly reducing time and labor for the PAD database manager to verify information and integrate data into the database. See Figure 1 below for information on assessment progress and findings.

Figure 1. Table of 2020 – 2022 Assessment Progress

District/FishPAC	Counties	Total Assessments	Assessed Non-Barriers	Detailed Assessment Needs	New Identified Barriers
District 1 (Eureka) North Coast FishPAC	Del Norte, Humboldt, Mendocino	448	223	174	2
District 2 (Redding) Klamath-Cascades FishPAC	Siskiyou, Trinity, Tehama, Modoc, Lassen, Shasta, Plumas	46	15	37	0
District 3 (Marysville) Central Valley FishPAC	Butte, El Dorado, Glenn, Nevada, Sacramento, Sutter, Yolo, Yuba	262	178	104	30
District 4 (Oakland) Bay Area FishPAC	Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano, Sonoma	269	108	163	0
District 5 (San Luis Obispo) Central Coast FishPAC	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz	572	225	342	3
District 6 (Fresno) Central Valley FishPAC	Fresno, Kings, Madera, Tulare	234	159	111	1
District 7 (Los Angeles) Southern Steelhead FishPAC	Los Angeles, Ventura	246	53	214	3
District 10 (Stockton) Central Valley FishPAC	Amador, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus, Tuolumne	382	203	191	29
District 11 (San Diego) Southern Steelhead FishPAC	San Diego	136	7	130	1
District 12 (Orange) Southern Steelhead FishPAC	Orange	119	1	115	2
Totals		2714	1172	1581	71

The Caltrans' Fish Passage Program, PSMFC, and the 3C's have leveraged the latest in geospatial software and field data collection hardware to streamline the assessment of potential fish passage barriers on the SHS. These technologies include comprehensive workforce management software (ArcGIS Workforce), digital data recording (ArcGIS Survey123), and sophisticated data management (ArcGIS Online), all customized

to meet Caltrans' program needs. The combination of software and hardware has provided an estimated 80% reduction in person-hours over previous analog workflows. This process allows for real-time verification of all data recorded and management from several simultaneous data pipelines collected by partners at the 3C's, PSMFC, and Caltrans District Fish Passage Coordinators.

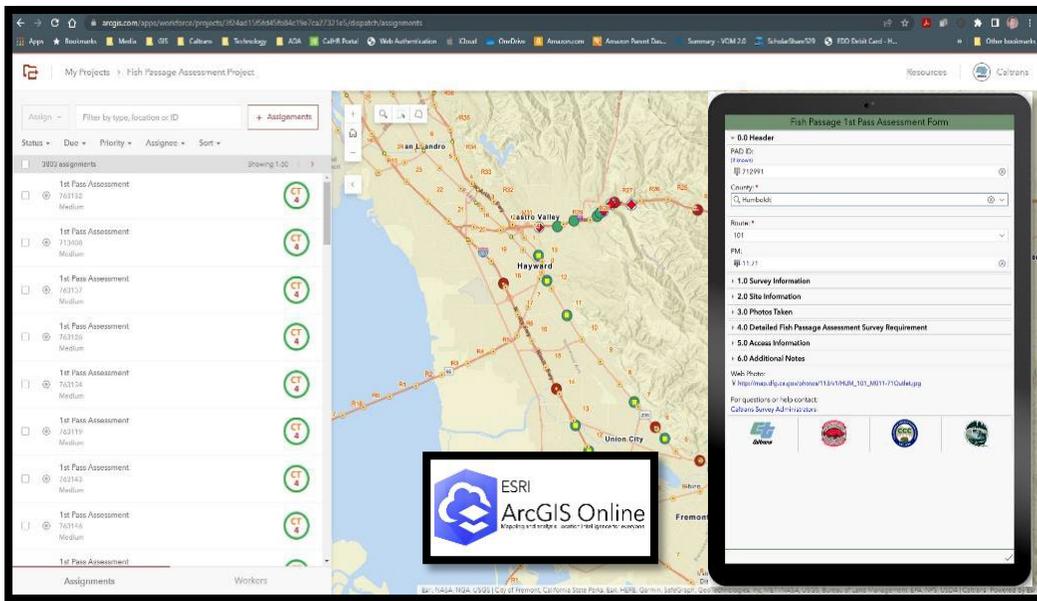


Figure 1. Example Screenshot - Fish Passage ArcGIS Workforce and Survey123

This technology allows for quick on-the-fly visualization of data and progress (ArcGIS Dashboards; Figure 3). This technological innovation is essential to the significant increase in assessment progress for Caltrans' Fish Passage Program and the goal of a fully vetted, statewide fish passage barrier inventory.

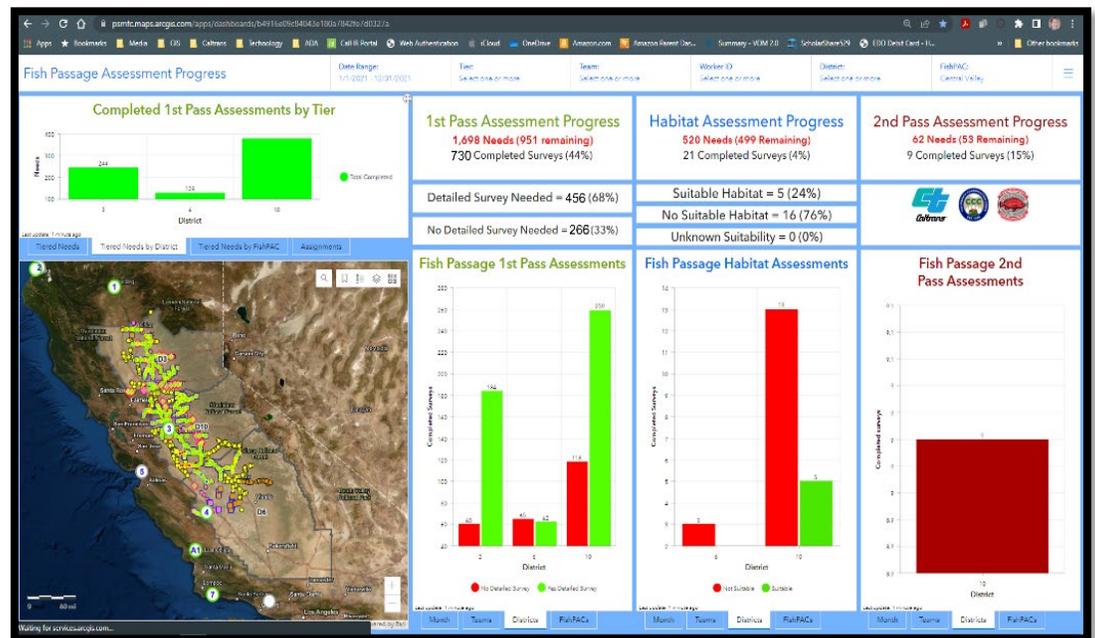


Figure 3. Example Screenshot - Fish Passage Assessment ArcGIS Dashboard

**Little Mill Creek (PAD #707142 SR197 PM 6.15)
Chinook Salmon Carcass Upstream from Bridge**



ENGINEERING

The Interagency Engineering Work Group (Work Group) includes members from Caltrans, CDFW, and NMFS. The Work Group convenes monthly to collaborate on training, guidance, research, project-specific design considerations, and information sharing. Member expertise includes fish passage engineering, hydraulic engineering, structures design, foundations engineering, watershed modeling, design guidance, and maintenance inspection, for both fish passage remediation and long-term channel restoration.

The Work Group supports early scoping and planning for priority and funded fish passage remediation projects, and the research panel has contributed to the Fish Passage Engineering Efficacy research conducted by Cal Poly Humboldt. The engineering efficacy of full and partial fish passage remediation solutions identifies what has worked well and lessons learned from previous remediation projects. Research panelists include hydraulic engineers, fish passage engineers, fluvial geomorphologists, geologists, and structures engineers from Caltrans, CDFW, and NMFS. The final research report was completed in July 2022 and is available to all interested partners here: [Fish Passage Solutions | cafishpac](#).

MULTI-SPECIES & HABITAT BENEFITS

FishPAC continues to identify priority salmon and steelhead barrier locations that also provide connectivity benefits to other aquatic and terrestrial species. Watersheds and riparian areas are used by aquatic and terrestrial species to meet some, or all, of their life history needs, including migration to find food, reproduce, or move into more suitable habitat. Rising temperatures, changing precipitation patterns, wildfires, and shifts in vegetative communities affect suitability of habitat and range for salmon, steelhead, and other threatened and endangered species as well as common species (e.g., deer, black bear, bobcats, coyotes, etc.).

Full-span fish passage solutions span the historically active channel, minimizing interference between the bridge or culvert and natural channel processes, providing both terrestrial and aquatic species passage as well as full ecosystem function. Full-span solutions represent the most strategic investment in fish passage barrier remediation and require minimal maintenance over time. Caltrans continues to deploy wildlife cameras to pre- and post-project fish and stream corridor remediation projects. In 2021, 32 wildlife cameras were loaned to four districts and deployed on/near Caltrans facilities associated with priority, active, or completed fish passage remediation locations. See *Figure 4. Example Wildlife Camera Trap Photos*, for photos captured from fish passage remediation locations that provide data in support of the multi-species benefits of full span fish passage remediation projects.



Green Sturgeon (photo taken on the Smith River)



Figure 2. Example Wildlife Camera Trap Photos.

Pre-designed Accelerated Bridge Construction (ABC) fish passage bridges can be implemented for in-channel (wet/bridge), or over-land (dry/viaduct), fish and wildlife connectivity projects that require a 20-foot to 116.5-foot span, or for any bridge replacement that fits the scope of the small bridge pre-designed work. Wet channel solutions require more expensive deep-water foundations (drilled or driven piles) to avoid and minimize scour risk and ensure the long-term success of the in-water fish passage solution. However, dry span locations where scour risk is low, less expensive slab foundations can be used without jeopardizing the long-term success of the dry span connectivity project.

2023 QUARTERLY MEETING SCHEDULE

FIRST QUARTER (1.5 HOUR MEETING)

North Coast: Jan. 18 | 9–10:30 a.m.
 Klamath Cascades: Jan. 19 | 9–10:30 a.m.
 Bay Area: Jan. 25 | 10–11:30 a.m.
 Central Coast: Jan. 25 | 1–2:30 p.m.
 Central Valley: Feb. 1 | 9–10:30 a.m.
 Southern Steelhead: Feb. 1 | 1–2:30 p.m.

SECOND QUARTER (1.5 HOUR MEETING)

North Coast: April 5 | 9–10:30 a.m.
 Klamath Cascades: April 5 | 1–2:30 p.m.
 Bay Area: May 3 | 9–10:30 a.m.
 Central Coast: May 3 | 1–2:30 p.m.
 Central Valley: May 10 | 9–10:30 a.m.
 Southern Steelhead: May 10 | 1–2:30 p.m.

THIRD QUARTER (1 HOUR MEETING)

North Coast: Sept. 6 | 9–10 a.m.
 Klamath Cascades: Sept. 6 | 11 a.m. – Noon
 Bay Area: Sept. 6 | 2–3 p.m.
 Central Coast: Sept. 20 | 9–10 a.m.
 Central Valley: Sept. 20 | 11 a.m. – Noon
 Southern Steelhead: Sept. 20 | 2–3 p.m.

FOURTH QUARTER (1.5 HOUR MEETING)

North Coast: Nov. 8 | 9–10:30 a.m.
 Klamath Cascades: Nov. 8 | 1–2:30 p.m.
 Bay Area: Nov. 15 | 9–10:30 a.m.
 Central Coast: Nov. 15 | 1–2:30 p.m.
 Central Valley: Dec. 13 | 9–10:30 a.m.
 Southern Steelhead: Dec. 13 | 1–2:30 p.m.