

# Bridges & Biology

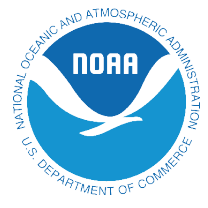
A workshop sponsored by Caltrans, CA Department of Fish & Wildlife and NOAA's, National Marine Fisheries Service

February 20-21, 2018

Natural Resources Building, First Floor Auditorium 1416 Ninth Street, Sacramento, CA



This workshop is a partnership between Caltrans Structures Engineering and Headquarters Office of Biology, the California Department of Fish & Wildlife and NOAA's, National Marine Fisheries Service. The workshop will create a shared understanding of the process and requirements of bridge planning, foundations investigation, and structures design, as well as biological and habitat resources coordination, investigations, impact analysis, permitting and implementation of avoidance, minimization, mitigation measures and post-project monitoring.



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**TUESDAY, FEBRUARY 20, 2018**

**9:00am–9:15am**

**INTRODUCTION AND WELCOME**

Rick Macedo (*Chief, Habitat Conservation Planning—CDFW*)  
Phil Stolarski (*Environmental Division Chief—Caltrans*)

**COURSE OBJECTIVES**

Considerations for design and implementation of bridges in sensitive biological habitats.  
Gudmund Setberg (*Structures Deputy—Caltrans*)

**9:15am–9:45am**

**BIOLOGICAL BASICS**

Biology For Bridges—Common biological jurisdiction, permit authority and opportunities to improve species connectivity for fish and other species.  
Melinda Molnar (*Senior Fish Biologist—Caltrans*)

**9:45am–10:10am**

**BASIC BRIDGE COMPONENTS**

Bridge Engineering—Common foundation and superstructure types and considerations for designing bridges on the California State Highway System.  
Ryan Stiltz (*Senior Bridge Engineer—Caltrans*)

**10:10am–10:40am**

**GEOTECHNICAL INVESTIGATIONS AND ENGINEERING**

Geological investigations, seismicity and foundations engineering.  
Hector Valencia (*Senior Geotechnical Engineer—Caltrans*)

**10:40am–11:00am**

**BREAK**

**11:00am–11:25am**

**IN-CHANNEL GEOLOGY**

Geologic and geomorphic considerations for road/stream crossings. The roles of engineering geology and geomorphology on foundations design, technical terms, tools for accurate delineation of stream corridor elements and importance of stream connectivity for species and ecosystems.  
John Wesling (*Senior Engineering Geologist—CDFW*)

**11:25am–11:50am**

**FLUVIAL GEOMORPHOLOGY**

Considerations for channel and habitat restoration related to full-span and improved hydraulic road/stream crossings.  
John Wooster (*Fish Passage Engineer—NOAA Fisheries*)

**11:50am–1:00pm**

**LUNCH**

**1:00pm–1:30pm**

**ABC**

Environmental advantages of Accelerated Bridge Construction.  
Dorie Mellon (*Senior Bridge Engineer—Caltrans*)

<b>1:30pm–2:20pm</b>	<p><b>HYDRAULIC AND FISH PASSAGE ENGINEERING</b>  In-channel Engineering for Fish Passage Consideration—Perspectives and goals for full span and hydraulic solutions, overview of fish passage barrier types, design criteria and benefits/limitations of differing solutions, monitoring and maintenance and case studies.  Jon Mann (Senior Fish Passage Engineer—<i>CDFW</i>)  Brett Ditzler (Hydraulics Engineer—<i>Caltrans</i>)</p>
<b>2:20pm–3:00pm</b>	<p><b>BIOLOGICAL STUDIES AND PROJECT DELIVERY</b>  Internal and external project coordination, species and habitat surveys, birds and bats, permeability for aquatic and terrestrial species. Project design, planning, permitting and milestones for project delivery, mitigation planning and contracts.  Jim Henke (Senior Wildlife Biologist—<i>Caltrans</i>)</p>
<b>3:00pm–3:15pm</b>	<b>BREAK</b>
<b>3:15pm–3:45pm</b>	<p><b>HYDROACOUSTICS ENGINEERING</b>  Evaluating and Monitoring the Effects of Impact Pile Driving on Fish—Fundamentals of underwater acoustics, pile driving impact criteria for fish, pile driving impact assessment and monitoring.  Dave Buehler (Hydroacoustic Engineer—<i>ICF</i>)</p>
<b>3:45pm–4:15pm</b>	<p><b>HYDROACOUSTICS BIOLOGY</b>  Considerations of Biological Impacts Analysis for pile driving projects—Tools for analysis, reasonable and feasible avoidance and minimization measures, construction impacts and research.  Melinda Molnar (Senior Fish Biologist—<i>Caltrans</i>)</p>
<b>4:15pm–4:55pm</b>	<p><b>THREATENED AND ENDANGERED SPECIES</b>  Endangered Species Acts and Listed Species—A brief history of CESA/ESA, listed species and bridges, take avoidance and minimization measures for listed species.  Marcia Grefsrud (Environmental Scientist—<i>CDFW</i>)</p>
<b>4:55pm–5:00pm</b>	<b>SUMMARY OF TODAY’S WORKSHOP - A LOOK AHEAD TO TOMORROW</b>
<b>5:00pm</b>	<b>ADJOURN</b>

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## WEDNESDAY FEBRUARY 21, 2018

<b>8:00am–8:35am</b>	<p><b>BATS AND BRIDGES</b>  Bridges that Provide Habitat for Bats—Maintaining bridges, practices to avoid and minimize impacts and opportunities to provide additional and improved habitat.  Gregg Erickson (Chair, Interagency Ecological Program, Acting Regional Manager—<i>CDFW</i>)</p>
<b>8:35am–8:55am</b>	<p><b>WATER QUALITY</b>  Storm water implementation, construction best management practices and general overview.  Tom Rutsch (Watershed Manager—<i>Caltrans</i>)</p>
<b>8:55am–9:15am</b>	<p><b>PROGRAMMATIC DESIGN AND PERMITTING EFFICIENCIES</b>  Small bridges designed for fish passage and wildlife connectivity projects—Standard designs for connectivity, avoidance and minimization practices and benefits to species and watershed ecology. Efforts that are in progress and ongoing analysis.  Melinda Molnar (Senior Fish Biologist—<i>Caltrans</i>)  Doug Menzmer (Senior Bridge Engineer—<i>Caltrans</i>)  Clarence Hostler (Senior Policy Advisor for Transportation—<i>NOAA Fisheries</i>)</p>

- 9:15am–10:05am**      **NATIONAL AND INTERNATIONAL PERSPECTIVE**  
 Design and construction considerations that influence wildlife use of crossing structures, mitigation measures that increase crossing structure effectiveness, use of a cost-benefit analyses tool to guide wildlife mitigation measure decision process.  
 Marcel Huijser, PhD (Research Ecologist—*Western Transportation Institute, Montana State Univ.*)
- 10:05am–10:20am**      **BREAK**
- 10:20am–10:35am**      **FISH PASSAGE ADVISORY COMMITTEES**  
 Overview of California Fish Passage Advisory Committees (FishPAC)  
 Lisa A. DeBruyckere (FishPAC Facilitator)
- 10:35am–11:25am**      **CONSTRUCTION**  
 Project Construction and Environmental Commitments—Biological specifications, labor training, sequencing, access, staging, examples of avoidance and minimization methods to include work area isolation, dewatering and considerations for fish relocation.  
 Frank Meraz (Office Chief, Biology—*Caltrans Central Region*)  
 Mike Kelly (Fish Biologist—*NOAA Fisheries*)
- 11:25am–11:55am**      **RESTORATION AND BIOLOGICAL MITIGATION**  
 Revegetation and restoration of temporary impact areas, on-site and off-site mitigation, long-term monitoring and maintenance.  
 Kelly Kawsuniak (Stewardship Biologist—*Caltrans*)
- 11:55am–1:00pm**      **LUNCH**
- 1:00pm–2:00pm**      **WORKING GROUP EXAMPLES**  
 Provide 3 scenarios and split into groups; physical setting, general biology, project needs/issues for consideration. Give 10–15 minutes for consideration then work as group to identify solutions.  
 Panel: Ryan Stiltz, Jon Mann, Melinda Molnar, Clarence Hostler
- 2:00pm–2:20pm**      **ADVANCE MITIGATION**  
 Program overview, advance planning and opportunities for connectivity projects.  
 Amy Bailey (Office Chief, Strategic Biological Planning, Advance Mitigation and Innovation—*Caltrans*)
- 2:20pm–3:20pm**      **SAN FRANCISCO-OAKLAND BAY BRIDGE—CASE STUDY**  
 Building a large, complex bridge in a sensitive environment. Successful construction and demolition while avoiding and minimizing impacts, engineering innovation, research, mitigation and monitoring.  
 Stefan Galvez (Environmental Office Chief—*Caltrans District 4*)  
 Brian Maroney (SFOBB Chief Engineer and Toll Bridge Program Manager—*Caltrans*)
- 3:20pm–3:30pm**      **WORKSHOP SUMMARY AND ADJOURN**



This workshop can be accessed remotely via GoToWebinar. To register for and view the webinar:  
<https://attendee.gotowebinar.com/register/1571175015809981953>