

10th Biennial Bay-Delta Science Conference

Our Estuary at an Intersection

#BDSC2018

September 10–12, 2018 • Sacramento Convention Center

The Biennial Bay-Delta Science Conference

is a forum for presenting technical analyses and results relevant to the Delta Science Program's mission to provide the best possible, unbiased, science-based information for water and environmental decision-making in the Bay-Delta system. The goal of the conference is to provide new information and syntheses to the broad community of scientists, engineers, resource managers, and stakeholders working on Bay-Delta issues.

The conference program features oral and poster presentations that provide scientific information and ideas relevant to the topic sessions. The conference theme this year is "Our Estuary at an Intersection." Protection of the Bay-Delta ecosystem is at a pivotal point. This system has endured devastating drought cycles and shifting priorities that seek to supply water for cities and farms and improve the aquatic ecosystem for fisheries, recreation, and tourism. Achieving these goals requires science that expands our knowledge of ecosystem responses, produces data that directly supports decisions, and builds long-term, resilient solutions.

Organizing Committee

Conference Co-Chairs:

Alex Parker, California Maritime Academy
Ted Sommer, DWR

Program Chairs:

Joe Domagalski, USGS
Josh Israel, USBR
Karen Kayfet, Delta Science Program

Conference Coordinators:

Karen McDowell, SF Estuary Partnership
Nir Oksenberg, Delta Science Program

Poster Chairs:

Judy Drexler, USGS
Sakura Evans, CDFW

Art Chairs:

Eva Bush, Delta Science Program
Bruce Herbold, Consultant

Student Mentor Chairs:

Liz Stumpner, USGS
Amanda Wasserman, 2018 Delta Science
Program Fellow

Student Judging Chairs:

Ernest Chen, USFWS
Leanna Zweig, USFWS

Raffle Chair:

Charlotte Ambrose, NOAA

Professional Societies Chair:

Eva Bush, Delta Science Program

Brown-Nichols Science Award Chair:

Michelle Shouse, USGS

Media Relations Chair:

Brittany Young, Delta Stewardship Council

Committee Members:

Marina Brand, Delta Science Program
(Retired)
Lauren Hastings, Delta Stewardship Council
Heidi Williams, 2017 Delta Science
Program Fellow

TAKE A LOOK!

Schedule at a Glance
Daily Schedule

2–3
4–11



Delta Science Program
Delta Stewardship Council



10th Biennial Bay-Delta Science Conference

Our Estuary at an Intersection

Schedule at a Glance

Monday, September 10—Plenary Rooms 308–313

9:00AM	Welcome & Introductions
9:15–10:15	Plenary Sessions
10:15–10:35	Brown-Nichols Science Award
10:35–10:55	BREAK — 3RD FLOOR LOBBY
10:55–12:10	Plenary Sessions
12:10–1:35 PM	LUNCH — EXHIBIT HALL B (1ST FLOOR)
12:25–1:25	Student/Early Career Scientist Mentor Lunch — ROOM 315

Monday, September 10—Concurrent Sessions

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308–310 Fish Biology	Rooms 311–313 Species and Communities	Room 314 Climate Change and Water Quality
1:35–3:15 PM	Why Integrated Modeling? Examples from the Field <i>Steven Culberson, IEP</i>	Conservation of Wetland Birds <i>Ron Melcer, Delta Stewardship Council</i>	Flow Alteration Studies: Lessons Learned and Preliminary Synthesis From Lower Trophic and Delta Smelt Studies in 2017 <i>Andrew Schultz, USBR</i>	Life and Death of Phytoplankton <i>Alex Parker, Cal Maritime</i>	Sea Level Rise Effects and Adaptations I <i>Bruce Herbold, Consultant</i>
	BONUS SESSION Science Communication Training — ROOM 315				
3:15–3:35	BREAK — 3RD FLOOR LOBBY				
3:35–5:15	Integrated Modeling to Support Salmon Management <i>Josh Israel, USBR</i>	Restoration and Vegetation <i>Amanda Wasserman, DSP</i>	Hardly Strictly Smelt Genetics <i>Amanda Finger, UC Davis</i>	Lower Trophic Food Webs <i>Karen Kayfet, DSP</i>	Sea Level Rise Effects and Adaptations II <i>Noah Knowles, USGS</i>
	BONUS SESSION Science Communication Training — ROOM 315				
5:15–7:15	POSTER SESSION, RECEPTION, AND ART EXHIBITION — EXHIBIT HALL B (1ST FLOOR)				

Tuesday, September 11—Concurrent Sessions

8:20–10:00 AM	Complementary Models for Structured Decision-Making in the Central Valley and the Delta <i>Mike Urkov, FlowWest</i>	Restoration at the Crossroads <i>Ian Smith, USBR</i>	Modeling Delta Smelt I <i>Matt Nobriga, USFWS</i>	New Developments in Suisun Marsh Water Quality and Some Ecological Implications <i>Stuart Siegel, SF Bay NERR</i>	Climate Change Resilience <i>Ramona Swenson, ESA</i>
10:00–10:20	BREAK — 3RD FLOOR LOBBY				
10:20–12:00	Improving Hydrologic Measurements and Predictions <i>Cathy Ruhl, USGS</i>	Defining and Quantifying Floodplain Fish Habitat <i>Lisa Hunt, American Rivers</i>	Modeling Delta Smelt II <i>Li-Ming He, USFWS</i>	On the Horizon <i>Julia Kelly, Aububon</i>	Climate Variability Effects on Salmonids <i>Rachel Johnson, NOAA</i>
12:00–1:35 PM	LUNCH — EXHIBIT HALL B (1ST FLOOR)				
12:20–1:20	Art Panel — ROOM 315				

Special Events

Student/Early Career Scientist Mentor Lunch

Monday, September 10, 12:25–1:25PM, Room 315

This event will be structured around broad career and science themes that will allow students, early career scientists, and mentors to exchange ideas and insights about career development, research interests and much more. Event organizers Amanda Wasserman and Liz Stumpner will welcome the group to kick things off. It's certain everyone will emerge from lunch energized and enriched! Pre-Registration is required for this event.

Science Communication Training

Monday, September 10, 1:35–3:15 or 3:35–5:15PM, Room 315

In recent years, the value of science communication in navigating the intersection between science and action has been increasingly recognized. This year, two identical science communication trainings led by COMPASS will be offered at the conference during the concurrent sessions. There is no sign-up and all attendees are welcome to join until the room is filled. This training introduces attendees to The COMPASS Message Box and provides practical steps scientists can take to improve their approach to communicating research.

Art Program

Art can communicate scientific concepts. Such communication enhances public and political support for science. Artists and scientists working together can add breadth and depth to both. At this year's conference, we have art springing from such collaborations. The lunchtime panel will discuss the experience of fusing art and science, especially in education.

Panel: Tuesday, September 11, 12:20–1:20PM, Room 315

Art Viewing: Monday and Tuesday, September 10 and 11, 5:15–7:15PM, Exhibit Hall B

1:35-3:15	Untangling Effects of Water Movement and Water Quality <i>Joe Domagalski, USGS</i>	Tidal Marsh Responses to Sea-Level Rise in San Pablo Bay and the Delta: Implications for Wetland Change and Management <i>Christopher Janousek, Oregon State Univ.</i>	Fish and Flood in the Central Valley I <i>Brian Mahardja, USFWS</i>	The Growing Science on Delta Aquatic Vegetation: Understanding Vegetation Effects on Habitat and Development of Areawide Management Strategies I <i>Louise Conrad, CDWR</i>	Altered Nutrient Inputs to the Bay-Delta: Anticipating the Effects of the Sacramento Regional Wastewater Treatment Plant Upgrade <i>Dylan Stern, Delta Stewardship Council</i>
BONUS SESSION What Difference Does it Make? The Practice of Art and Ecology in Collaboration — ROOM 315 <i>Carol Maxwell, AECOM</i>					
3:15-3:35	BREAK — 3RD FLOOR LOBBY				
3:35-5:15	Modelers at the Crossroads <i>Paul Hutton, Tetra Tech Inc.</i>	Managing Land for Humans and Wildlife <i>Jessica Rudnick, UC Davis</i>	Fish and Flood in the Central Valley II <i>Pascale Goertler, CDWR</i>	The Growing Science on Delta Aquatic Vegetation: Understanding Vegetation Effects on Habitat and Development of Areawide Management Strategies II <i>Patrick Moran, USDA-ARS</i>	Biogeochemical Processes and Effects <i>Alexis Fischer, UCSC</i>
BONUS SESSION From Paper to Screen: The Intersection of Emergent Science and Cultural Awareness — ROOM 315 <i>Lauren Muscatine, UC Davis</i> <i>Enid Baxter Ryce, CSU Monterey Bay</i>					
5:15-7:15	POSTER SESSION, RECEPTION, AND ART EXHIBITION — EXHIBIT HALL B (1ST FLOOR)				

Wednesday, September 12—Concurrent Sessions

8:20-10:00 AM	Longfin Smelt from the Coast to the Delta I <i>Shawn Acuña, MWD</i>	Future Restoration Changing the Delta <i>Carl Wilcox, CDFW</i>	Physics to Fish in the North Delta: How Physical and Biological Processes Influence Habitat Quality for Fish I <i>Larry Brown, USGS</i>	Science on Salmonids I <i>Cathy Marcinkevage, NOAA</i>	Mercury and Contaminants <i>Stefanie Helmrich, UC Merced</i>
10:00-10:20	BREAK — 3RD FLOOR LOBBY				
10:20-12:00	Longfin Smelt from the Coast to the Delta II <i>Fred Feyrer, USGS</i>	Human Dimensions of Restoration <i>Mateo Robbins, DSP</i>	Physics to Fish in the North Delta: How Physical and Biological Processes Influence Habitat Quality for Fish II <i>Anke Mueller-Solger, USGS</i>	Science on Salmonids II <i>Stephen Pang, Delta Stewardship Council</i>	Pesticides and Contaminants <i>Jim Orlando, USGS</i>
12:00-1:15 PM	LUNCH — EXHIBIT HALL B (1ST FLOOR)				
1:15-2:55	Crossing Bay-Delta-Watershed Intersections: Science, Management, and Policy Issues <i>John Callaway, Delta Lead Scientist</i>	Restoration Lessons Learned <i>Maggie Christman, DSP</i>	Modeling Fish Movement <i>Towns Burgess, USBR</i>	Predation Management and Predators I <i>Mark Bowen, ESA</i>	Sediment Monitoring and Modeling <i>Maureen Downing-Kunz, USGS</i>
2:55-3:15	BREAK — 3RD FLOOR LOBBY				
3:15-4:55	A Comparative Study for Consumptive Use in the Sacramento-San Joaquin Delta: Models and Field Data to Inform Water Management and Policy Decisions <i>Josue Medellin-Azuara, UC Merced</i>	Ecological Research Supporting Novel Restoration Design <i>John Durand, UC Davis</i>	As the Smelt Fares <i>Catarina Pien, DSP</i>	Predation Management and Predators II <i>Cyril Michel, NOAA/UCSC</i>	From Science to Implementation: Treating Sediment as a Critical Resource <i>Letitia Grenier, SFEI</i>

4:55 **ADJOURN —**
RAFFLE
EAST LOBBY, 3RD FLOOR

Special Events

What Difference Does it Make? The Practice of Art and Ecology in Collaboration

Carol Maxwell, AECOM

Tuesday, September 11, 1:35-3:15PM, Room 315

Through the exploration of five artists' work, this session will explore moments when art and environmental science come together to uniquely enhance awareness or spark breakthroughs in reaching new audiences for an environmental cause. The group will explore where conflicts arise between the two disciplines, experiences that have contributed to an interdisciplinary approach, and potential paths forward.

Carol Maxwell (1:35) is an ecologist and landscape designer working to facilitate communication at the interface between restoration science and practice. Lisa Shonberg (1:55), a composer and percussionist, documents habitats and soundscapes to drawing attention to endangered species and habitat loss. Kimberly Sutherland (2:15) is the founder of Creek College and a violinist/composer, moving freely between improvisation and interdisciplinary collaboration. Melody Owen (2:35) is a conceptual artist and curator working in collage, video, and virtual worlds. Elise Brewster (2:55) is a sculptor and founding instigator for the Historical Ecology Program of the SFEI.

From Paper to Screen: The Intersection of Emergent Science and Cultural Awareness

Lauren Muscatine, UC Davis and Enid Baxter Ryce, CSU Monterey Bay

Tuesday, September 11, 3:35-5:15PM, Room 315

A series of extratropical rainstorms called atmospheric rivers attracted public attention during the wet seasons of 2016/17 and 2017/18. During this period, while recognizing the need to describe the foundational work on this topic, a global team of researchers and editorial team began to write the foundational book, *Atmospheric Rivers*.

Lauren Muscatine, managing editor for the book, describes the development of this weather pattern, which is now technically defined and broadly researched and available in the open literature. Enid Baxter Ryce explores atmospheric rivers and what effects they have on humans and society in her new film, *War and the Weather*. In her portrayal and discussion, she describes how atmospheric rivers capture the human imagination, how society evaluates and gauges global weather patterns, their causes, and their impact on the environment. After a discussion of the science behind the book's development and a screening of the film there will be time for an interactive Q&A with both creators.

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Monday, September 10—Plenary Rooms 308–313

9:00–9:05 AM	Welcome <i>Randy Fiorini, Delta Stewardship Council</i>
9:05–9:15	Introductions <i>Ted Sommer, California Department of Water Resources, & Alex Parker, California Maritime Academy</i>
9:15–9:30	Bay-Delta Science: Looking Towards 2020 <i>John Callaway, Delta Lead Scientist</i>
9:30–10:00	Policy Leadership in the Glen Canyon Dam Adaptive Management Program: Stakeholders or Science? <i>Jack Schmidt, Utah State University</i>
10:00–10:15	Government Science at a Crossroad: Creating a Future of Enhanced Relevancy and Impact <i>Mark Sogge, U.S. Geological Survey</i>
10:15–10:35	Brown-Nichols Science Award
10:35–10:55	BREAK — 3RD FLOOR LOBBY
10:55–11:25	Integrating Social Science in Large Estuarine Restoration <i>Kelly Biedenweg, Oregon State University</i>
11:25–11:55	Communicating Science in a Post-Truth World <i>Amy Mathews Amos, COMPASS</i>
11:55–12:10	Art and Science
12:10–1:35 PM	LUNCH — EXHIBIT HALL B (1ST FLOOR)
12:25–1:25	Student/Early Career Scientist Mentor Lunch — ROOM 315

Bonus Session

1:35–3:15 PM, Room 315 (capacity 150)

Science Communication Training

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308–310 Fish Biology	Rooms 311–313 Species and Communities	Room 314 Climate Change and Water Quality
	Why Integrated Modeling? Examples from the Field <i>Steven Culbertson, IEP</i>	Conservation of Wetland Birds <i>Ron Melcer, Delta Stewardship Council</i>	Flow Alteration Studies: Lessons Learned and Preliminary Synthesis From Lower Trophic and Delta Smelt Studies in 2017 <i>Andrew Schultz, USBR</i>	Life and Death of Phytoplankton <i>Alex Parker, Cal Maritime</i>	Sea Level Rise Effects and Adaptations I <i>Bruce Herbold, Consultant</i>
1:35 PM	USGS Coastal Storm Modeling System: Integrating Across Models and Communities <i>Juliette Finzi Hart, USGS</i>	The Relative Importance of Agricultural and Wetland Habitats to Waterbirds in the Sacramento–San Joaquin River Delta of California <i>W David Shuford, Point Blue Conservation Science</i>	Directed Outflow Project <i>Andrew Schultz, USBR</i>	The Etiology of Phytoplankton Productivity and Bloom Formation in the Northern Delta <i>Brian Bergamaschi, USGS</i>	Vulnerabilities to Sea Level Rise in Eastern Contra Costa County: Communities and Assets at Risk of Flooding <i>Adam Fullerton, BCDC</i>

1:55	Translating Process-Based Restoration Strategies into Spatially-Explicit Restoration Opportunities in the Delta <i>Samuel Safran, SFEI</i>	The Importance of Managed Wetlands to Multiple Waterfowl Species in the Suisun Marsh <i>Michael Casazza, USGS</i>	Delta Smelt Prey Dynamics in Response to Managed Outflow <i>Jason Hassrick, ICF</i>	Nutrient Limits Phytoplankton Bloom during a Historical Spring Bloom Event in San Francisco Bay <i>Zhenlin Zhang, SFEI</i>	The State of the Mouse: Conserving SMHM in Our Modern and Changing Estuary <i>Katherine Smith, UC Davis/CDFW</i>
2:15	Anticipating and Communicating Regional Effects of Reconfiguration of Delta Geometry <i>John DeGeorge, RMA Inc.</i>	Time Series Remote Sensing of Waterfowl Food Resources and Productivity in Central Valley Managed Wetlands <i>Kristin Byrd, USGS</i>	The Influence of Summer Temperature on Delta Smelt Habitat During Wet Water Years <i>Michael MacWilliams, Anchor QEA</i>	Toxicity Evaluation of the Effects of Fluridone Formulations on Delta Phytoplankton <i>Marie Stillway*, UC Davis</i>	Preventing an Ecological Trap from Tidal Restoration with Sea-Level Rise: Incorporating Managed Wetlands in Climate Adaptation Strategies <i>John Takekawa, Suisun RCD</i>
2:35	Franks Tract Hydrology, Landscape, and Stakeholder Views <i>Eli Ateljevich, CDWR</i>	Does Diet Composition or Habitat Biogeochemistry Drive Mercury Concentration in a Threatened Wetland Bird? <i>Laurie Hall, USGS</i>	Smelt in Hot Water: Is Thermal Stress the Final Blow for Delta Smelt? <i>Jim Hobbs, UC Davis</i>	Monitoring Cyanobacteria in Mixed Algal Populations in an Effort to Predict the Onset of Cyanohabs <i>Lawrence Younan, Turner Designs, Inc.</i>	Projected Impacts of Sea-Level Rise and Geomorphic Change on Intertidal and Subtidal Foraging Habitat Availability for Migratory Birds in San Francisco Bay <i>Susan De La Cruz, USGS</i>
2:55	Understanding Impacts of Water Management on Salmon Using Integrated Physical and Biological Models <i>Eric Danner, NOAA Fisheries</i>	Diving Duck Response to Restoration of North Bay Salt Ponds: Managed vs. Breached Ponds <i>Tanya Graham, USGS</i>	Examining Phytoplankton Responses During the USFWS Delta Smelt Fall Outflow Action: How did the Base of the Food Web Respond to a Change in X2? <i>Andrew Kalmbach, ICF</i>	From Algal Toxins to Environmental DNA: Passive Samplers as a Tool to Help with Multiple Management Objectives <i>Ellen Preece, Robertson-Bryan, Inc.</i>	Modeling the Implications of Sea Level Rise for X2 Standards Compliance <i>Noah Knowles, USGS</i>
3:15	BREAK — 3RD FLOOR LOBBY				
	Integrated Modeling to Support Salmon Management <i>Josh Israel, USBR</i>	Restoration and Vegetation <i>Amanda Wasserman, DSP</i>	Hardly Strictly Smelt Genetics <i>Amanda Finger, UC Davis</i>	Lower Trophic Food Webs <i>Karen Kayfet, DSP</i>	Sea Level Rise Effects and Adaptations II <i>Noah Knowles, USGS</i>
3:35	Real-Time Modeling of the Effects of Shasta Reservoir Operations on Winter-Run Chinook Salmon Incubation Can Increase Management Flexibility and Fish Survival <i>James Anderson, University of Washington</i>	Ensuring a Resilient Tidal Marsh Ecosystem Through Healthy Upland Transition Zones: Assessment and Recommendations <i>Nadav Nur, Point Blue Conservation Science</i>	Experimental Work Informs Delta Smelt Environmental DNA (eDNA) Protocol Development <i>Ann Holmes*, UC Davis</i>	What Controls Food Availability to Pelagic Fishes during Summer-Fall in the Low-Salinity Zone of the San Francisco Estuary? <i>Wim Kimmerer, SFSU</i>	Adapting to Rising Tides (ART) Bay Area Sea Level Rise Analysis and Mapping: Communicating Current and Future Flood Risk in San Francisco Bay <i>Heather Dennis, BCDC</i>
3:55	A Decision Support Tool Linking Physical Models of Water Temperature with Biological Models of Salmon Health in the Shasta/Sacramento System <i>Miles Daniels, NOAA / UCSC</i>	Mapping <i>Arundo donax</i> across the Central Valley to Prioritize Watershed Restoration <i>Dana Morawitz, Cal IPC</i>	Assessing the Genetic Diversity of Sacramento Perch (<i>Archoplites interruptus</i>) for Development of a Captive Breeding Program <i>Amanda Coen*, UC Davis</i>	24 Hour Bugs – Testing Zooplankton Tidal and Diel Distributions <i>Rosemary Hartman, CDFW</i>	Phenotypic Plasticity of Pacific Cordgrass Under Varying Tidal Inundation Regimes <i>Erik Grijalva*, UC Davis</i>
4:15	Interactive Decision-Support Models for Assessing Effects of Alternative Water Management Actions on Juvenile Salmon Migrating through the Delta <i>Dalton Hance, USGS</i>	Screening Herbicides for Management of Waterhyacinth in the California Bay Delta <i>Guy Kyser, UC Davis</i>	Evidence of Domestication Selection in a Delta Smelt Conservation Hatchery <i>Brian Mahardja, USFWS</i>	The Contribution of Terrestrial Particulate Organic Carbon to Estuarine Copepod Diet <i>Jennifer Harfmann*, UC Davis</i>	Integrating Natural Resources into Sea Level Rise Vulnerability Assessments: San Mateo County Tidal Wetlands Case Study <i>Maya Hayden, Point Blue Conservation Science</i>
4:35	Confronting Jagger's Law: Improving Multi-Objective Ecological Flow Management with Flexible Priorities and Turn-Taking <i>Clint Alexander, ESSA Technologies Ltd.</i>	The Promise of Remotely Sensed Phenology for Wetland Restoration Monitoring <i>Iryna Dronova, UC Berkeley</i>	Delta eDNA Part 1: Investigation of eDNA Methodology to Detect Delta Smelt <i>Gregg Schumer, Genidaqs / CFS</i>	Growth Rates of a Dominant Calanoid Copepod in the Yolo Bypass of the Upper San Francisco Estuary <i>Stephanie Owens*, SFSU</i>	Effects of Sea Level Rise on Shallow Groundwater in the San Francisco Bay Area <i>Ellen Plane*, UC Berkeley</i>
4:55	A Machine Learning Model for Predicting Salmonid Take at the SWP and CVP in Real-Time <i>Mike Tillotson*, ICF</i>	Leveraging Free Remote Sensing Data for the Landscape-Scale Assessment of Vegetation Dynamics in Restored Wetlands <i>Sophie Taddeo*, UC Berkeley</i>	Delta eDNA Part 2: Applying eDNA Procedures to Detect Delta Smelt at Salvage <i>Scott Blankenship, Genidaqs / CFS</i>	Patterns of Nekton Abundance and Food Web Structure in the Sacramento Deep Water Shipping Channel <i>Veronica Larwood, USGS</i>	Emergent Groundwater and Sea Level Rise, the Silent and Largely Unknown Underground Threat <i>Abby Mohan, Silvestrum Climate Associates</i>
5:15-7:15	POSTER SESSION, RECEPTION, AND ART EXHIBITION — EXHIBIT HALL B (1ST FLOOR)				

Bonus Session

3:35–5:15PM, Room 315 (capacity 150)

Science Communication Training

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Our Estuary at an Intersection

Tuesday, September 11

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308–310 Fish Biology	Rooms 311–313 Species and Communities	Room 314 Climate Change and Water Quality
	Complementary Models for Structured Decision-Making in the Central Valley and the Delta <i>Mike Urkov, FlowWest</i>	Restoration at the Crossroads <i>Ian Smith, USBR</i>	Modeling Delta Smelt I <i>Matt Nobriga, USFWS</i>	New Developments in Suisun Marsh Water Quality and Some Ecological Implications <i>Stuart Siegel, SF Bay NERR</i>	Climate Change Resilience <i>Ramona Swenson, ESA</i>
8:20 AM	CVPIA SDM Modeling Process Update <i>Rodney Wittler, USBR</i>	Successes and Challenges of Salmon and Steelhead Passage Facilities <i>Joshua Murauskas, Four Peaks Environmental Science & Data Solutions</i>	Delta Smelt Life Cycle Modeling: Findings and Reflections on Synthesis Efforts <i>Leo Polansky, USFWS</i>	A New Way to Assess Dissolved Oxygen Conditions in Suisun Marsh <i>Barbara Baginska, SF Bay Water Board</i>	Impacts of an Extreme Wet Winter on Invasion Prevalence and Community Structure in Soft Sediment and Hard Substrate Habitats in San Francisco Bay <i>Andrew Chang, SERC</i>
8:40	An Integrated Population Model to Estimate Survival, Growth, and Movement Transition Probabilities for Juvenile Salmonids <i>Adam Duarte, Oregon State Univ.</i>	Floodplain Rehabilitation for Multiple Species on the Fringe of the Delta: Maximizing Ecological Function <i>Sam Diaz, cbec, inc.</i>	Analysis of Limiting Factors Across the Life Cycle of Delta Smelt (<i>Hypomesus transpacificus</i>) <i>Scott Hamilton, Hamilton Resource Economics</i>	Evaluating the Effects of Managed Wetland BMPs on Receiving Slough Water Quality in Suisun Marsh <i>Philip Bachand, Bachand & Assoc.</i>	Drought Resistance and Resilience in the Delta Fish Community over Five Decades <i>Louise Conrad, CDWR</i>
9:00	Defining a Modeling Baseline, Backcasting and Forecasting Restoration Projects <i>John Hutchings, USBR</i>	North Delta Grizzly Slough Floodplain Restoration Project: Synthesizing Science for Multi-Benefit Restoration Planning <i>Anitra Pawley, CDWR</i>	Estimation of Adult Delta Smelt Distribution for Hypothesized Swimming Behaviors Using Hydrodynamic, Suspended Sediment, and Particle-Tracking Models <i>Edward Gross, RMA Inc.</i>	Modeling the Dissolved Oxygen Response in Suisun Marsh Sloughs to Managed Wetland BMPs <i>Sujoy Roy, Tetra Tech Inc.</i>	Drought, Climate Change and Restoration Resiliency <i>John Durand, UC Davis</i>
9:20	Open Source Technology for Better Collaboration <i>Sadie Gill, FlowWest</i>	Restoration in the Cache Slough Complex: The Yolo Flyway Farms Restoration Project <i>Chris Campbell, cbec, inc.</i>	Reconciling Data Availability with Objectives for Testing Ecological and Management Hypotheses <i>Erica Fleishman, Colorado State Univ./UC Davis</i>	Assessing the Impacts of Suisun Marsh Salinity Control Gates' Summer Operation on Delta Water Quality <i>Yu Zhou, CDWR</i>	Restoration Planning for the Sacramento —San Joaquin Delta and Suisun Marsh: Considering the Implications of Climate and Land-Use Change <i>Ron Melcer, Delta Stewardship Council</i>
9:40	Structured Decision Making in the Delta: Application of SDM to Management Decisions for Delta Smelt <i>Sally Rudd, Compass Resource Management</i>	Restoring Regulation: BCD's San Francisco Bay Plan Amendment to Address Allowing Bay Fill for Habitat Projects <i>Megan Hall, BCD</i>	Revisiting Relationships between Delta Smelt Abundance and Salinity <i>Li-Ming He, USFWS</i>	Hydrodynamic Influences on Food Webs in Tidal Wetlands of Suisun Marsh <i>Denise Colombano*, UC Davis</i>	Restoring Tidal Habitats for Climate Resilience <i>Michelle Orr, ESA</i>
10:00	BREAK — 3RD FLOOR LOBBY				
	Improving Hydrologic Measurements and Predictions <i>Cathy Ruhl, USGS</i>	Defining and Quantifying Floodplain Fish Habitat <i>Lisa Hunt, American Rivers</i>	Modeling Delta Smelt II <i>Li-Ming He, USFWS</i>	On the Horizon <i>Julia Kelly, Aububon</i>	Climate Variability Effects on Salmonids <i>Rachel Johnson, NOAA</i>
10:20	Effect of Salinity Control Gate Operation on the Salinity Field in Suisun Marsh <i>Michal Koller, CDWR</i>	Developing Rearing Habitat Objectives to Support Salmon in the Central Valley <i>Julie Zimmerman, The Nature Conservancy</i>	Understanding How Abiotic and Biotic Factors and Management Actions Affect Delta Smelt: What Do We Need to Know? <i>Denise Reed, University of New Orleans</i>	Progress in Establishing a Nonnative Predator Research and Pilot Fish Removal Program on the Stanislaus River <i>Matthew Peterson, FISHBIO</i>	Harvest, Hatchery Returns and Straying of Fall Chinook Salmon from Coleman National Fish Hatchery Released at Bay and Delta Sites During California's Drought <i>Sarah Austing, USFWS</i>
10:40	What Happens During a Minor Flood Pulse: Observations of Bedload Transport in the San Joaquin River Using New Methods <i>Erin Bray, CSU Northridge</i>	Dark Carbon and a Return to Abundance: How Detrital Floodplain Food Webs Can Help Recover Endangered Fish <i>Jacob Katz, Cal Trout</i>	Is it Maybe, Just Maybe Possible that Striped Bass had Long Been a Fundamental Limit on Delta Smelt Population Growth? <i>Matt Nobriga, USFWS</i>	A New Tool for Prioritizing and Planning Gravel and Large Woody Debris Augmentation in Urban Streams <i>Eric Donaldson, Balance Hydrologics</i>	Living to Tell the 2012-2015 Drought Story as Told by the Otoliths of the Endangered Sacramento River Winter-Run Chinook Salmon <i>Pedro Morais, UC Berkeley</i>

* Denotes participating for student award

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11:00	AQPI: Improved Monitoring and Forecasts of Precipitation, Streamflow, and Coastal Flooding in the San Francisco Bay Area <i>Rob Cifelli, NOAA</i>	The Opportunity of Floodplain Habitat Quantification <i>Rene Henery, Trout Unlimited</i>	Updates to Delta Smelt Life Cycle Model 3: A State-Space Model Separating Entrainment and Natural Mortality <i>William Smith, USFWS</i>	Durability of Environment-Recruitment Relationships in Aquatic Ecosystems: Insights from Long-Term Monitoring in a Highly Modified Estuary and Implications for Management <i>Natascia Tamburello, ESSA Technologies Ltd.</i>	Snowpack and Air Temperature Influences Residence and Emigration Timing and Size of Juvenile Anadromous Fish across a Large, Hot, Dammed Watershed <i>Stuart Munsch, NOAA Fisheries</i>
11:20	Ensemble Flow Forecasts for Risk Based Reservoir Operations of Lake Mendocino: An Adaptive Approach to Reservoir Management <i>Chris Delaney, Sonoma County Water Agency</i>	Quantifying Spatiotemporal Habitat Benefits of Floodplain Restoration <i>Alison Whipple*, UC Davis</i>	Impacts of Salinity on Mechanisms of Development and Life History Transitions in Embryos of the Delta Smelt (<i>Hypomesus transpacificus</i>) <i>Amie Romney, UC Davis</i>	Illegally Moored Vessels Lead to Loss of Native Eelgrass (<i>Zostera marina</i>), an Essential Fish Habitat and Food Source for Birds in San Francisco Bay <i>Julia Kelly, Audubon</i>	Opening the Black Box: Delta Rearing by Juvenile Fall Run Chinook Salmon in Droughts and Floods <i>Anna Sturrock, UC Davis</i>
11:40	High Resolution Water Velocity Measurements Using Infrared Quantitative Imaging Velocimetry <i>Seth Avram Schweitzer, Cornell University</i>	The CVHE Chinook Salmon Habitat Quantification Tool <i>Lisa Hunt, American Rivers</i>	Combined Effects of Warming and Pollutants on Temperature-Dependent Sex Determination, Survival, and Development across Generations <i>Bethany DeCourten*, UNC Wilmington/Oregon State Univ.</i>	Discovery of Invasive Nutria in California's Sacramento-San Joaquin Delta Watershed <i>Valerie Cook Fletcher, CDFW</i>	Impacts of El Niño on Adult Chinook Salmon (<i>Oncorhynchus tshawytscha</i>) Weight in the Gulf of the Farallones <i>Peter Adams, Adams Fisheries Consulting</i>
12:00–1:35 PM LUNCH — EXHIBIT HALL B (1ST FLOOR)					
12:20–1:20	Art Panel — ROOM 315				
	Untangling Effects of Water Movement and Water Quality <i>Joe Domagalski, USGS</i>	Tidal Marsh Responses to Sea-Level Rise in San Pablo Bay and the Delta: Implications for Wetland Change and Management <i>Christopher Janousek, Oregon State Univ.</i>	Fish and Flood in the Central Valley I <i>Brian Mahardja, USFWS</i>	The Growing Science on Delta Aquatic Vegetation: Understanding Vegetation Effects on Habitat and Development of Areawide Management Strategies I <i>Louise Conrad, CDWR</i>	Altered Nutrient Inputs to the Bay-Delta: Anticipating the Effects of the Sacramento Regional Wastewater Treatment Plant Upgrade <i>Dylan Stern, Delta Stewardship Council</i>
1:35	Checking Assertions with Data: Untangling Factors that Constrain Water Exports from the San Francisco Bay Estuary <i>Gregory Reis, The Bay Institute</i>	Modeling Approaches to Evaluating Marsh Resiliency to Sea-Level Rise in the San Francisco Bay Estuary <i>Lisa Schile-Beers, Silvestrum Climate Associates</i>	Unplanned Inundation at the McCormack-Williamson Tract Provides Informative Pre-Restoration Zooplankton Community Data <i>Nicholas Corline, UC Davis</i>	Operational Aquatic Invasive Plant Management in the Delta <i>Jeffrey Caudill, California State Parks</i>	The EchoWater Project: Upgrades to the Sacramento Regional Wastewater Treatment Plant <i>Lisa Thompson, Regional San</i>
1:55	How Sweet is It: Early 20th Century Delta Salinity Regime as Recorded by C&H Sugar Barge Travel Data <i>Paul Hutton, Tetra Tech Inc.</i>	Using Surface Elevation Tables (SETs) to Monitor Marsh Elevations along a Tidal and Salinity Gradient <i>Chase Freeman, USGS</i>	Banding, Bugs, and Phytoplankton: Spatial and Temporal Patterns Across the Yolo Bypass Floodplain During 2017 <i>Lynn Takata, CDWR</i>	Growth of Water Hyacinth, Brazilian Waterweed, and Curlyleaf Pondweed in the Delta <i>John Madsen, USDA-ARS</i>	Changing Nitrogen Loads to the Northern San Francisco Estuary: Framework for Identifying Science Opportunities and Constraints <i>David Senn, SFEI</i>
2:15	Effects of Extreme Freshwater Disturbance During the 2016-17 Wet Winter on San Francisco Bay Mudflat Infaunal Macroinvertebrates <i>Daniel Cox*, SFSU</i>	Spatial Differences in Mineral and Organic Matter Deposition across a Salinity Gradient in San Francisco Bay-Delta Tidal Marshes <i>Karen Thorne, USGS</i>	Floodplain Habitat Enhancement Increases Juvenile Salmonid Rearing Duration and Growth on the Merced River <i>Kirsten Sellheim, Cramer Fish Sciences</i>	Using Remote Sensing to Assess of Growth and Distribution for Floating Invasive Plants and Growth Response Times to Altered Environments <i>David Bubenheim, NASA Ames Research Center</i>	Tracing the Fate and Effects of Effluent-Derived Nutrients to the Bay-Delta using Stable Isotopes: Establishment of Pre-Upgrade Baseline Conditions to Facilitate our Understanding of Post-Upgrade Food-Web Changes <i>Carol Kendall, USGS (Emeritus)</i>
2:35	Stable Isotope Characterization of C, N, P, and S Compounds in Treated Wastewater Effluent Discharging to the Sacramento-San Joaquin Delta Region <i>Joseph Fackrell, UCSC</i>	Developing Functional Relationships between Marsh Processes and Abiotic Gradients in the San Francisco Bay-Delta Estuary to Update an Ecosystem Model <i>Christopher Janousek, Oregon State Univ.</i>	The Flood Pulse Concept in a Managed Bypass-Floodplain <i>Pascale Goertler, CDWR</i>	Implementation and Assessment of New Biological Control Tools for Water Hyacinth and Arundo in the Delta <i>Patrick Moran, USDA-ARS</i>	Measuring Biogeochemical Rates Affecting Nitrogen Concentrations in a Hydrodynamically Complex Delta <i>Tamara Kraus, USGS</i>
2:55 PM	Contribution of Utility Vault Water to Pollutant Loadings into San Francisco Bay <i>Allison Luengen, USF</i>	Monitoring and Managing Sea-Level Rise Impacts on Tidal Marshes in the San Francisco Estuary <i>Michael Vasey, SF Bay NERR</i>	Isotope Tools to Track Floodplain Rearing of Native Fish <i>Miranda Tilcock*, UC Davis</i>	Modeling Nitrogen Export from Sacramento and San Joaquin River Basins to Bay Delta Estuary: Current Status, Ecological Implications, and Possible Mitigation Strategies <i>Ruoyu Wang, UC Davis</i>	Continuous Simultaneous Measurement of Phytoplankton Taxonomy and Nutrient Concentrations in the San Francisco Estuary to Evaluate the Effects of Wastewater-Derived Nutrients on Phytoplankton Community Structure <i>Bryan Downing, USGS</i>

Bonus Session Room 315

What Difference Does it Make? The Practice of Art and Ecology in Collaboration *Carol Maxwell, AECOM*

1:35 PM Historical Perspectives and Present Collaborations of the Art and Ecology Partnership *Carol Maxwell, AECOM*

1:55 PM Documenting Ecosystems: Soundscapes and Percussion *Lisa Schonberg, Artist*

2:15 PM Creek College—A Project Bridging the Arts and Ecological Restoration *Kimberly Sutherland, Creek College*

2:35 PM Translating the Animal *Melody Owen, Artist*

2:55 PM Ecological Imagination as a Tool for the Future *Elise Brewster, Brewster Arts*

* Denotes participating for student award

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308–310 Fish Biology	Rooms 311–313 Species and Communities	Room 314 Climate Change and Water Quality
	Modelers at the Crossroads <i>Paul Hutton, Tetra Tech Inc.</i>	Managing Land for Humans and Wildlife <i>Jessica Rudnick, UC Davis</i>	Fish and Flood in the Central Valley II <i>Pascale Goertler, CDWR</i>	The Growing Science on Delta Aquatic Vegetation: Understanding Vegetation Effects on Habitat and Development of Areawide Management Strategies II <i>Patrick Moran, USDA-ARS</i>	Biogeochemical Processes and Effects <i>Alexis Fischer, UCSC</i>
3:35	Spatially Distributed Bayesian Uncertainty Analysis to Improve Trash Reduction Tracking <i>Gary Conley, 2NDNATURE</i>	Exploring the Human Dimension of Suisun Marsh: Implications for Waterfowl and Wetland Habitat Management <i>Natalie Smith, AECOM</i>	Movement and Migratory Behavior of Acoustically-Tagged Adult Chinook Salmon in the Yolo Bypass in Wet and Dry Years, 2013-2017 <i>Myfanwy Johnston, Cramer Fish Sciences</i>	Treating Submerged Aquatic Vegetation with Herbicides to Improve Delta Smelt Habitat <i>Nick Rasmussen, CDWR</i>	North Delta Restoration on the Horizon: Balancing Ecosystem & Municipal Water Quality <i>Steven SanJulian, CDWR</i>
3:55	Modeling Economics in the Sacramento-San Joaquin Delta <i>Josue Medellin-Azuara, UC Merced</i>	Incorporating Nature-Based Adaptation Strategies into Shoreline Planning in Marin County <i>Chris Choo, County of Marin</i>	Evaluating Floodplain Benefits to Juvenile Salmonids Using Long-Term Monitoring Data on the Lower Mokelumne River <i>Michelle Workman, EBMUD</i>	Testing the Waters: Fluridone Fate and Toxic Effects After Application to Submerged Aquatic Vegetation <i>Krista Hoffmann, CDWR</i>	Nitrogen Cycling in Bay-Delta Tidal Wetlands <i>Matthew Bogard, University of Washington</i>
4:15	Recommendations for a Modeling Framework to Answer Nutrient Management Questions in the Sacramento-San Joaquin Delta: Modeling Science Workgroup White Paper <i>Michael Deas, Watercourse Engineering, Inc.</i>	Agriculture, Subsidence and Carbon in the Sacramento-San Joaquin Delta <i>Sabina Dore, HydroFocus</i>	Nursery, Migration Corridor, and Refugia: Twenty Years of Rotary Screw Trap Sampling in the Yolo Bypass <i>Naoaki Ikemiyagi, CDWR</i>	Growth Patterns of Submerged Aquatic Vegetation at Wetland Restoration Sites within the San Francisco-San Joaquin Delta <i>Daniel Ellis, CDFW</i>	Biophysical Controls on CO ₂ and CH ₄ Atmospheric Fluxes from Suisun Marsh, San Francisco Bay Estuary <i>Frank Anderson, USGS</i>
4:35	Development of Stage-Frequency Curves in the Sacramento-San Joaquin Delta for Climate Change and Sea Level Rise <i>Romain Maendly, CDWR</i>	Land Evaluation and Site Assessment (LESA) in the Cache Slough Complex Region of the Sacramento-San Joaquin Delta, California <i>Wendy Rash, USDA-NRCS</i>	Juvenile Salmon Growth, Movement and Survival from Butte Creek to the San Francisco Bay - A Look at Past and Present Tagging Studies in the Sutter Bypass <i>Jeremy Notch, NOAA Fisheries/UCSC</i>	Water Quality Impacts of Water Hyacinth at a Hydrologic Crossroads <i>Vanessa Tobias, CDFW</i>	Detection of Free and Covalently Bound Microcystins in Sediment and Clam Samples from the Sacramento-San Joaquin Delta <i>Melissa Bolotaolo*, UC Davis</i>
4:55	The Importance of Engaging Cross-Disciplines in Modeling and the Role of CWEMF <i>Tariq Kadir, CDWR</i>	Q&A	Data Gaps and Uncertainties in Modeling Yolo Bypass Benefits to Juvenile Salmonids <i>Travis Hinkelman, Cramer Fish Sciences</i>	Sediment Trapping by Submerged Aquatic Vegetation in the Delta <i>Judith Drexler, USGS</i>	You're Gonna Dig This <i>Nate Kauffman*, UC Berkeley</i>

Bonus Session Room 315

From Paper to Screen: The Intersection of Emergent Science and Cultural Awareness

Lauren Muscatine, UC Davis and Enid Baxter Ryce, CSU Monterey Bay

Tuesday, September 11, 3:35–5:15PM

A series of extratropical rainstorms called atmospheric rivers attracted public attention during the wet seasons of 2016/17 and 2017/18. During this period, while recognizing the need to describe the foundational work on this topic, a global team of researchers and editorial team began to write the foundational book, *Atmospheric Rivers*. Lauren Muscatine, managing editor for the book, describes the development of this weather pattern, which is now technically defined and broadly researched and available in the open literature. Enid Baxter Ryce explores atmospheric rivers and what effects they have on humans and society in her new film, *War and the Weather*. In her portrayal and discussion, she describes how atmospheric rivers capture the human imagination, how society evaluates and gauges global weather patterns, their causes, and their impact on the environment. After a discussion of the science behind the book's development and a screening of the film there will be time for an interactive Q&A with both creators.

10th Biennial Bay-Delta Science Conference

Our Estuary at an Intersection

Wednesday, September 12

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308-310 Fish Biology	Rooms 311-313 Species and Communities	Room 314 Climate Change and Water Quality
	Longfin Smelt from the Coast to the Delta I <i>Shawn Acuña, MWD</i>	Future Restoration Changing the Delta <i>Carl Wilcox, CDFW</i>	Physics to Fish in the North Delta: How Physical and Biological Processes Influence Habitat Quality for Fish I <i>Larry Brown, USGS</i>	Science on Salmonids I <i>Cathy Marcinkevage, NOAA</i>	Mercury and Contaminants <i>Stefanie Helmrich, UC Merced</i>
8:20 AM	Long-Term Food Availability for Juvenile Longfin Smelt Within Regions and Seasons of the Delta Based on Chlorophyll Concentration and Zooplankton Abundance <i>Peggy Lehman, CDFW</i>	Franks Tract Feasibility Study Applying the Guidance of a Delta Renewed <i>Carl Wilcox, CDFW</i>	Hope We Can Believe In: Why Understanding the North Delta Is So Important <i>Anke Mueller-Solger, USGS</i>	Challenging Juvenile Chinook Growth Models with Empirical Data - Implications for Fish and Water Management <i>Steve Blumenshine, CSU Fresno</i>	Simulation of Biogeochemical Processes Driving Methylmercury Production in Different Sediment Habitats of the Delta and Its Tributaries <i>Stefanie Helmrich*, UC Merced</i>
8:40	Examining Spatial and Temporal Variability in Diets and Prey Selection of Larval Longfin Smelt Collected From Shallow and Deep Areas of the Northern San Francisco Estuary <i>Jillian Burns*, SFSU</i>	3-D Hydrodynamic Modeling to Support Restoration Planning <i>Kijin Nam, CDWR</i>	North Delta Hydrodynamics with Emphasis on Habitat Connectivity <i>Jon Burau, USGS</i>	Listening to the Signal in the Noise: Insights into Hidden Diversity in Spring-Run Chinook Salmon at the Southern Species Range Using Genetic and Isotope Tools <i>Rachel Johnson, NOAA Fisheries/UC Davis</i>	Headwater Mercury Source Reduction Strategy: 2018 Update <i>Carrie Monohan, The Sierra Fund/CSU Chico</i>
9:00	Spatial Variation in the DNA-Based Diets of Young Longfin Smelt <i>Michelle Jungbluth, SFSU</i>	Redesigning Franks Tract: Community, Stakeholder and Public Outreach <i>Alejo Kraus-Polk*, UC Davis</i>	Sacramento-San Joaquin Delta Sediment Characteristics Following the Extremely Wet Conditions During 2017 <i>Tara Morgan-King, USGS</i>	Ancestry and Adaptation in Rainbow Trout Above Barriers to Anadromy: Implications for Recovery of Central Valley Steelhead <i>Devon Pearse, NOAA Fisheries</i>	Sediment Scour and Legacy Mercury Remobilization in Alviso Slough, South San Francisco Bay <i>Amy Foxgrover, USGS</i>
9:20	Novel Investigations into the Distribution, Growth, and Origins of Longfin Smelt throughout the SFE <i>Levi Lewis, UC Davis</i>	The Delta Conservation Framework: Realizing a Vision for a Sustainable Delta by 2050 <i>Christina Sloop, CDFW</i>	Influence of Flood and Drought on Bed Erodibility and Turbidity in Two Flooded Agricultural Tracts in the North Delta <i>Jessica Lacy, USGS</i>	What Makes a Successful Hatchery Fish? Using Microhaplotypes to Understand Correlates of Broodstock Reproductive Success in Winter-Run Chinook Salmon <i>Neil Thompson, NOAA Fisheries/UCSC</i>	The Effect of 2015 Wildfires on Particulate Total Mercury Concentrations in Cache Creek <i>Charles Alpers, USGS</i>
9:40	Examining Variability in Hatching and Rearing Habitat for Key Forage Fish in the Upper San Francisco Estuary During Wet and Dry Periods from an Unmined IEP Dataset <i>Lenny Grimaldo, ICF</i>	Developing a Delta Habitat Restoration Adaptive Management Program <i>Lauren Hastings, Delta Stewardship Council</i>	The Effects of Transport Processes on Phytoplankton and Nutrient Dynamics in the Cache Slough Complex: Observations over Spatial and Temporal Scales <i>Elizabeth Stumpner, USGS</i>	Differences in Thermal Performance between Populations of Chinook Salmon, <i>Oncorhynchus tshawytscha</i> <i>Kenneth Zillig*, UC Davis</i>	Source and Dispersal of Sediment and Contaminant Runoff from the Atlas and Nuns Fires in Northern San Francisco Bay <i>Renee Takesue, USGS</i>
10:00	BREAK — 3RD FLOOR LOBBY				
	Longfin Smelt from the Coast to the Delta II <i>Fred Feyrer, USGS</i>	Human Dimensions of Restoration <i>Mateo Robbins, DSP</i>	Physics to Fish in the North Delta: How Physical and Biological Processes Influence Habitat Quality for Fish II <i>Anke Mueller-Solger, USGS</i>	Science on Salmonids II <i>Stephen Pang, Delta Stewardship Council</i>	Pesticides and Contaminants <i>Jim Orlando, USGS</i>
10:20	Comparison of Acoustic and Trawl-Based Estimates of Small Fish Distribution and Abundance in San Pablo Bay <i>Benjamin Saenz, RMA Inc.</i>	Working With Nature across the Land-Use Spectrum: A Holistic Approach to Ecological Resilience <i>Letitia Grenier, SFEI</i>	Success and Potential Impacts of Corbicula in Varying Habitat Types and Restoration Sites in the North Delta <i>Francis Parchaso, USGS</i>	Survival and Movement of Hatchery Winter-Run Chinook Salmon Juveniles <i>Arnold Ammann, NOAA Fisheries</i>	A Review of Water Quality Science in the Delta: Part 1, Chemical Contaminants and Nutrients <i>Tracy Collier, Delta Independent Science Board</i>
10:40	The Demographic Importance of the San Francisco Estuary Population of Longfin Smelt <i>Amanda Finger, UC Davis</i>	Science-Based Regulatory Permitting for Resilient Tidal Habitat Restorations <i>Gerrit Platenkamp, ESA</i>	Nitrogen and Light Limitation of Primary Production in the Northern Sacramento-San Joaquin Delta <i>Luke Loken, UC Davis</i>	Movement and Survival of Reintroduced Juvenile Spring-Run Chinook Salmon in the San Joaquin River and South Delta <i>Colby Hause, UC Davis</i>	Data Driven Evaluation of Pesticide Concentrations Observed in the Aquatic Environment <i>Dan Wang, CDPH</i>

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Wednesday, September 12

	Room 306 Modeling and Decision Support	Room 307 Restoration	Rooms 308-310 Fish Biology	Rooms 311-313 Species and Communities	Room 314 Climate Change and Water Quality
11:00 AM	Historic and Contemporary Distribution of Longfin Smelt (<i>Spirinchus thaleichthys</i>) along the California Coast <i>Rebecca Garwood, CDFW</i>	The Lower Walnut Creek Restoration Project: Sustainable Flood Management and Ecosystem Restoration in Southern Suisun Bay <i>Eddie Divita, ESA</i>	Yolo Bypass Adaptive Management: Managing Summer and Fall Outflows to Improve the Downstream Pelagic Food Web <i>Jared Frantzich, CDWR</i>	Effects of Static and Dynamic Environmental Factors on Reach-Specific Movement and Survival Rates of Outmigrating Hatchery-Origin Sacramento River Winter-Run Chinook Salmon <i>Jason Hassrick, ICF</i>	Understanding Inputs of Current-Use Pesticides to Cache Slough, Liberty Island, and the Yolo Bypass <i>James Orlando, USGS</i>
11:20	Go West (and South) Young Smelt: Mapping the Habitats Associated with Juvenile Longfin Smelt and their Prey <i>Corey Phillis, MWD</i>	How Community Science Collected Data Benefits Research and Increases Public Awareness—Stevens Creek and Permanente Creek Water Quality Monitoring Project <i>Jeremy Merckling, Grassroots Ecology</i>	Fish Communities of the Cache Slough Complex: Marshes, Macrophytes, and Liberty Island <i>Matthew Young, USGS</i>	A Hybrid Study Design Combining Acoustic Telemetry and Coded Wire Tagging to Estimate Trawl Gear Efficiency and Run-Specific Abundance of Juvenile Salmon Entering and Exiting the Delta <i>Russell Perry, USGS</i>	Identifying Unknown Chemical Toxicants Using Nontarget Analysis and Suspect Screening <i>Thomas Young, UC Davis</i>
11:40	Multistate Occupancy Estimation for Longfin Smelt <i>James Peterson, USGS/Oregon State Univ.</i>	The Science, Practice, and Benefits of Regional Long-Term Monitoring <i>Michael Vasey, SF Bay NERR</i>	Integrating Multiple Data Types to Improve Understanding of the North Delta <i>Larry Brown, USGS</i>	Movement and Survival of Acoustic-Tagged Juvenile Chinook Salmon Released Upriver of Shasta Dam, 2017 <i>John Plumb, USGS</i>	Trihalomethane Precursors in the Delta and Beyond: Comparison of Major Regional Sources and Transport in Central Valley Rivers and the State Water Project <i>Robert Eckard, UC Davis</i>
12:00-1:15 PM	LUNCH — EXHIBIT HALL B (1 ST FLOOR)				
	Crossing Bay-Delta-Watershed Intersections: Science, Management, and Policy Issues <i>John Callaway, Delta Lead Scientist</i>	Restoration Lessons Learned <i>Maggie Christman, DSP</i>	Modeling Fish Movement <i>Towns Burgess, USBR</i>	Predation Management and Predators I <i>Mark Bowen, ESA</i>	Sediment Monitoring and Modeling <i>Maureen Downing-Kunz, USGS</i>
1:15	Discussion Panel Despite the direct connection of the San Francisco Bay and the Sacramento-San Joaquin Delta within a single estuarine system, as well as the clear ecosystem linkage to the watershed, scientific research, management, and policy across the regions are not well coordinated. This panel, including scientists, managers, and policy makers, will discuss challenges to improved integration across the Bay-Delta estuary from their different perspectives.	Restoration on Putah Creek Provides Home for Chinook Salmon <i>Eric Chapman, ICF/UC Davis</i>	Juvenile Salmon 2-D Trajectory and Passage Patterns at the Georgiana Slough and Sacramento River Junction Emerge From Swim Orientations Based on Their Recent Past Flow Field Experience <i>R. Andrew Goodwin, UCACE</i>	Habitat, Hatcheries, and Predators Affect Salmon Migration and Survival <i>Megan Sabal*, UCSC</i>	Quantifying the Effect of Accumulating Sand on Salmonid Egg Survival <i>Matthew Meyers, CDWR</i>
1:35		Process-Based Restoration to Benefit Juvenile Salmonids on the Lower Yuba River: The Hallwood Side Channel and Floodplain Restoration Project <i>April Sawyer, cbec, inc.</i>	Numerical Modeling as a Fish Passage Prediction Tool at the Yolo Bypass: Flow Hydrodynamics <i>Yong Lai, USBR</i>	Spatial Patterns and Environmental Associations of Piscivorous Predation throughout the South Sacramento-San Joaquin River Delta in 2017 <i>Cyril Michel, NOAA/UCSC</i>	Impacts of Sediment-Induced Stratification in Shallow-Water Estuarine Environments <i>Oliver Fringer, Stanford University</i>
1:55		Patterns of Fish Community Composition and Abundance Across an Open Water-Tidal Wetland Interface in the Upper San Francisco Estuary Provide a Recipe for Habitat Restoration <i>Fred Feyrer, USGS</i>	Calibration of an Individual-Based Model Simulating Juvenile Chinook Salmon Migration and Survival through the Sacramento River Delta to Inform Water Resources Management Actions <i>Adam Pope, USGS</i>	Experimental Quantification of Piscivore Density and Habitat Effects on Juvenile Chinook Salmon Survival <i>Steven Zeug, Cramer Fish Science</i>	Remote Sensing of Turbidity in San Francisco Bay Using UAVs <i>Joe Adelson*, Stanford University</i>
2:15		Physical, Chemical, and Biological Differences Across Two Habitat Types in the Cache Slough Complex <i>Justin Clause, USGS</i>	Numerical Modeling as a Fish Passage Prediction Tool at the Yolo Bypass: Fish Movement Tracking <i>David Smith, USACE</i>	Estimating Delta Predatory Fish Abundance with DIDSON Acoustic Cameras <i>Christopher Loomis*, Humboldt State University</i>	Opportunistic Biophysical Monitoring of McCormack Williamson Tract Elucidates Potential Pathways for Ecosystem Recovery under Flooded Conditions <i>Anna Rallings, UC Merced</i>
2:35		Reconstructing an Estuarine Beach at Aramburu Island - Shoreline Design Performance Five Years Post-Construction <i>Daniel Gillenwater, Gillenwater Consulting</i>	Individual-Based Juvenile Salmon Migration Model to Prioritize Water Resources Management Actions <i>Xiaochun Wang, CDWR</i>	Every Fish That Dies Gets Eaten <i>J.D. Wikert, USFWS</i>	An Effective Suspended Sediment Transport Model for the Sacramento-San Joaquin Delta <i>En-Ching Hsu, CDWR</i>
2:55	BREAK — 3 RD FLOOR LOBBY				

	A Comparative Study for Consumptive Use in the Sacramento-San Joaquin Delta: Models and Field Data to Inform Water Management and Policy Decisions <i>Josue Medellin-Azuara, UC Merced</i>	Ecological Research Supporting Novel Restoration Design <i>John Durand, UC Davis</i>	As the Smelt Fares <i>Catarina Pien, DSP</i>	Predation Management and Predators II <i>Cyril Michel, NOAA/UCSC</i>	From Science to Implementation: Treating Sediment as a Critical Resource <i>Letitia Grenier, SFEI</i>
3:15	Water Management and Policy Insights from the Sacramento-San Joaquin Delta Consumptive Study <i>Jesse Jankowski*, UC Davis</i>	Managed Wetland Rearing Benefits Juvenile Chinook Salmon Growth in Suisun Marsh <i>Nicole Aha*, UC Davis</i>	Indicators of Reproductive Health of Delta Smelt <i>Shawn Acuña, MWD</i>	Machine Learning Techniques for Identifying Predation Events from Salmon—Predator Acoustic Tracking Data in the Sacramento-San Joaquin River Delta <i>Natnael Hamda, NOAA Fisheries</i>	Status and Trends of Sediment Supply to San Francisco Bay, Water Years 1995 through 2016 <i>Lester McKee, SFEI</i>
3:35	Evapotranspiration from Three Crop Types and Fallow Lands in the Sacramento-San Joaquin River Delta <i>Kyaw Tha Paw U, UC Davis</i>	Primary Production across a Managed Wetland-Slough Complex <i>Alice Tung*, UC Davis</i>	Hot and Bothered: Warming Effects on Delta Smelt Behavior Lead to Increased Predation <i>Brittany Davis, UC Davis</i>	Identifying Predation of Outmigrating Juvenile Salmonids Using Characteristics of Two-Dimensional Telemetry Tracks <i>Russell Perry, USGS</i>	Sediment for Survival: Understanding the Need of San Francisco Bay Tidal Marshes and Mudflats <i>Scott Dusterhoff, SFEI</i>
3:55	Satellite Remote Sensing of Evapotranspiration over Agricultural Land: An Improved Priestley-Taylor Approach <i>Yufang Jin, UC Davis</i>	McCormack-Williamson Tract's 2017 Failure as a Chance to Improve Hydrodynamic Modeling Linkages to Restoration Targets <i>Lily Tomkovic*, UC Davis</i>	After Nine Years of Survey Data, What Can We Learn About Larval Longfin Smelt? <i>Michael Eakin, CDFW</i>	Clifton Court Forebay Predator Removal Electrofishing Study, Final Reporting <i>Michael Cane, CDWR</i>	Developing a Resilient Landscape Vision for the Pond A8, Calabazas Creek, and San Tomas Aquino Creek Interface <i>Katie McKnight, SFEI</i>
4:15	Using DETAW and CALSIMETAW as Comparative Models for Estimating Actual Evapotranspiration in the Sacramento-San Joaquin Delta <i>Lan Liang, CDWR</i>	Modeling Water Age in the Upper San Francisco Estuary <i>Stephen Andrews, RMA Inc.</i>	Estimating Effective Population Size of Delta Smelt using RAD-seq <i>Shannon Joslin*, UC Davis</i>	Predation Management in the Sacramento-San Joaquin Watershed <i>Mark Bowen, ESA</i>	Public Sediment: Unlocking Alameda Creek <i>Brett Milligan, UC Davis</i>
4:35	2015-2016 Delta Consumptive Use Analysis – Remote Sensing Approaches <i>Daniel Howes Cal Poly Univ., San Luis Obispo</i>	Novel Rearing Habitat for Native Delta Fish Species <i>Teejay O'Rear, UC Davis</i>	Experiments to Fill Critical Knowledge Gaps About Cultured Delta Smelt (<i>Hypomesus transpacificus</i>) <i>Andrea Schreier, UC Davis</i>	NMFS Salmon Recovery Planning Perspective on Predation <i>Brian Ellrott, NMFS</i>	Interpreting Spatial and Temporal Turbidity Patterns in Suisun Bay Using a 3-D Model, Continuous Monitoring, Remote Sensing, and Monthly Sampling Data <i>Aaron Bever, Anchor QEA</i>
4:55	ADJOURN — RAFFLE EAST LOBBY, 3RD FLOOR				

2018 Bay-Delta Science Conference Poster List *Listed by Presenting Author*

POSTER CLUSTERS

AQPI: Improved Monitoring and Forecasts of Precipitation, Streamflow, and Coastal Flooding in the San Francisco Bay Area

AQPI: Radar-Derived Quantitative Precipitation Estimation in Complex Terrain over the San Francisco Bay Area
Haonan Chen, NOAA

AQPI: Improved Monitoring and Forecasts of Precipitation, Streamflow, and Coastal Flooding in the San Francisco Bay Area
Rob Cifelli, NOAA

AQPI: Integrated Flood Forecast Modeling: A Case Study in South Bay of Fluvial and Coastal Flooding
Liv Herdman, USGS

AQPI: Benefits of an Advanced Quantitative Precipitation Information System
Lynn Johnson, NOAA

AQPI: Systems Requirements Development Process and Possible Outcomes
Greg Pratt, NOAA

AQPI: Precipitation Forecasts over the San Francisco Bay Area from the High-Resolution Rapid Refresh Model During an Atmospheric River Event on 21-23 Mar 2018
Jason English, NOAA

AQPI: California Observing Networks in Support of AQPI and EFREP
Allen White, NOAA

AQPI: Distributed Hydrologic Modeling for Flood Mitigation
Lynn Johnson, NOAA

AQPI: Integrated Water Management Modeling - Case Studies Using Local Models in the San Francisco Bay Area
Jungho Kim, NOAA

Emerging Ideas Supporting Novel Restoration at the Margins of the Delta

Food for Thought: Microcosm Feeding Trials Highlight Food Resource Utilization Differences Between *Daphnia pulex* and *magna*.
Nicholas Corline, UC Davis

Complete March Project: Examining How Hydrodynamics and Geomorphology Affect Water Quality and Nutrients in Suisun Marsh
Daniel Feinberg, UC Davis*

Fish Trends During Drought and Flood from Electrofishing Surveys in the Cache-Lindsey Slough Complex
Lindsay Floyd, UC Davis*

Spatial and Temporal Variability in Water Quality Across Tidal Cycles in a Manipulated Slough Complex of the California Delta
Caroline Newell, UC Davis*

Understanding Fish Outmigration on a Restored Floodplain
Mollie Ogaz, UC Davis

Growth Rates of *Daphnia magna* in Managed Wetlands and Adjacent Tidal Sloughs in Suisun Marsh
Kyle Phillips, UC Davis*

Habitat Use by Juvenile Life Stages of Benthic and Pelagic Fishes in Suisun Marsh
Jacquelyn Shaff, UC Davis

Phytoplankton Productivity and Blooms in the Northern San Francisco Estuary/Delta

Investigating Phytoplankton, Nutrients and Primary Productivity During Fall 2017 in Cache Slough to Suisun Bay
Sarah Blaser, SFSU

Understanding the Drivers of Phytoplankton Bloom Formation in San Francisco Bay/ Delta: A Modeling and Historical Data Approach to Bloom Prediction
Richard Dugdale, SFSU

Phytoplankton Productivity and Blooms in the Northern San Francisco Estuary/Delta: Overview
Frances Wilkerson, SFSU

Yolo Bypass Adaptive Management: Primary Productivity and Nutrient Uptake Rates during Summer 2017
Frances Wilkerson, SFSU

Light Limited or Shade Adapted? Phytoplankton Productivity and Nutrient Uptake in the Northern San Francisco Estuary
Jamie Yin, SFSU*

San Jose-Santa Clara Regional Wastewater Facility: A World-Class Utility Service Sustaining Water Quality & Aquatic Life of Lower South San Francisco Bay

Benthic Invertebrate Community Response to Seasonal Dissolved Oxygen Variations and Freshwater Flux in Lower South San Francisco Bay
Jessica Donald, City of San Jose

San Jose-Santa Clara Regional Wastewater Facility: A World-Class Utility Service Sustaining Water Quality & Aquatic Life of Lower South San Francisco Bay
Eric Dunlavy, City of San Jose

Phytoplankton and Chlorophyll-a Along a Nutrient Gradient in Lower Coyote Creek, a Tributary to Lower South San Francisco Bay
Ryan Mayfield, City of San Jose

Pharmaceutical Fate in Wastewater at the San Jose-Santa Clara Regional Wastewater Facility
Simret Yigzaw, City of San Jose

USACE Sacramento Synthesis of the Long-term Datasets Collected by the Sacramento River Bank Protection Program in the Sacramento River Watershed and Delta

Standardized Assessment Methodology
Patricia Goodman, US Army Corps of Engineers

Lessons Learned in Vegetation Management on Levee Repair Sites: A Ten Year Retrospective on the Sacramento River Watershed
Lorena Guerrero, US Army Corps of Engineers

USACE Sacramento Synthesis of the Long-Term Datasets Collected by the Sacramento River Bank Protection Program in the Sacramento River Watershed
Patricia K. Goodman, US Army Corps of Engineers

Benthic Sampling of the Lower Sacramento River to Characterize Benthic Communities and Potential Available Food Sources for Green Sturgeon (*Acipenser medirostris*)
Darin Rummel, US Army Corps of Engineers

GENERAL SESSIONS

Aquatic/Riparian Invasives

Assessing Aquatic Plant Invasiveness to Facilitate Management in the Sacramento-San Joaquin Delta
Elizabeth Brusati, CDFW

Arundo Mapping, Control, and Habitat Restoration in the Delta
Aaron Haiman, Sacramento-San Joaquin Delta Conservancy

In the Weeds: Fish Predator Communities and Comparative Predation Risk in two North Delta Flooded Islands Treated and Untreated for Invasive Aquatic Vegetation
Jeff Jenkins, DWR

The Boom of Science: Collecting High Resolution Water Quality Profiles to Understand How Aquatic Vegetation Effects Water Quality and Flow
Tamara Kraus, USGS

Bay-Delta Science Programs

California's Fourth Climate Change Assessment: At the Intersection of Science and Climate-Resilient Policy
Jamie Anderson, DWR

Swiss Army Performance Measures: How the Delta Plan uses a Suite of Performance Measures to track the California Delta
Scott Navarro, DSC

The 2018 Delta Science Plan Update
Yumiko Henneberry, DSP, DSC

Delta Regional Monitoring Program
Matthew Heberger, SFEI

SFEWS Celebrates Its 15th Year!
Lauren Muscatine, SFEWS

Regional Conservation Investment Strategy Program
Ami Olson, CDFW

Bay-Delta Watershed

From the Sierra to the Sea: The Ecological History of the San Francisco Bay-Delta Watershed
Peter Vorster, The Bay Institute

Water Budgets for the Delta Watershed
Gabrielle Boisrime, DSP, DSC

High School Student Researchers Investigate E.coli in Lake Merritt
Katharine M. Noonan, Lake Merritt Institute

Perceptions of Flood Risk and Management of the Delta Levee System
Pam Rittelmeyer, UC Santa Cruz*

Data

Accelerating Knowledge Discovery through Emerging Technology
George Isaac, DSC

Development of a Web-Based Remote Sensing Water Quality Application
Amye Osti, 34 North

Bay Delta Live Constituent Tracker
Dave Osti, 34 North

Quality Assurance for Environmental Programs
John Franco Saraceno, DWR

Fish— Other Fishes

Modeling the Effects of Varying Disturbance Frequency and Magnitude on Population Persistence in Predator-Prey Systems
Christian Commander, University of North Carolina

Abundance and Rearing Distribution of Age-0 Pacific Herring During Wet and Dry Years: Are We Missing Inland Spawning Activity?
Donna Maniscalco, ICF

Free Room and Board: Parasite Abundance on Crangon shrimp in the San Francisco Estuary.
Nicole Montoya, CDFW

Identifying the Presence of Estrogenic Compounds in the Yolo Bypass Wildlife Area Using a Fluorescent Bioassay
Paige Mundy, UC Davis*

Ecology of Bluegill *Lepomis macrochirus*, Redear Sunfish *Lepomis microlophus*, and Tule Perch *Hysterocarpus traskii* in the Cache Slough Complex
Dennis Steinke, USGS

Fish— Salmon

Monitoring the Impacts of Pathogens at Increasing Water Temperatures in Chinook Salmon in the Sacramento-San Joaquin Delta
Bryan Barney, UC Davis

SacPAS: Real-time Decision Support Tool for Central Valley Salmonids
Elissa Buttermore, USBR

Inducible Stress Tolerance in Juvenile Chinook Salmon: Coping with Repeated Stressors in the San Francisco Bay Delta
Annelise Del Rio, UC Davis*

Routing Management for DWR's Salmon Protection Technology Study
Andres Guillen, DWR

Evaluating a Terminal Harvest Program in the San Francisco Bay to Stabilize Harvest and Minimize Straying of Hatchery Fall-Run Chinook
JoAnna Lessard, Cramer Fish Sciences

Effect of Acute Temperature Change on Specific Dynamic Action in Fall-Run Chinook Salmon Juveniles (*Oncorhynchus tshawytscha*)
Vanessa Lo, UC Davis*

Salmon Protection Technology Study
Bill McLaughlin, DWR

Using Aerial Photography to Monitor Salmonid Redds on the Lower American River
Katherine Perkins, Sacramento Water Forum*

Evaluation of Predation Management Strategies for Central Valley Salmonids using Simulations
Tyler Pilger, FISHBIO

Movements of Adult Fall-Run Chinook Salmon in the Toe Drain of the Yolo Bypass
Gabriel Singer, UC Davis*

SacPAS Fish Model: A Series of Web-Based, Linked Models of Salmonid Spawning and Migration to Characterize the Movement of Water and Juvenile Fish through the Sacramento River System to the Head of the San Francisco Bay Delta
Chris Van Holmes, University of Washington

Fish— Salmon— DJFMP

How Does Temperature Effect CPUE of Beach Seines Used for Long Term Monitoring of Littoral Habitats as Part of the Delta Juvenile Fish Monitoring Program?
David Bridgman, USFWS

Assessing the use of Alternate Beach Seine Sites for the Delta Juvenile Fish Monitoring Program
Mike Marshall, USFWS

Fish— Smelts

Performance of a Mass Marking Technique, SE-Mark™ (Calcein), on Post-Larval Longfin Smelt (*Spirinchus thaleichthys*)
Virginia Afentoulis, DWR

Wakasagi Status and Intersections with Delta Smelt
Brittany Davis, DWR

Otoliths and Isoscapes: Reconstructing Thermal Life History of California's Endangered Delta Smelt
Malte Willmes, UC Davis

Higher Yolk Sac Absorption in Delta Smelt Larvae Reared in Saline Water Than in Freshwater
Yuzo Yanagitsuru, UC Davis*

Fish—Striped Bass

Synthesis of Long-Term Monitoring Information on Striped Bass (Morone saxatilis) in the Central Valley to Describe Range-Wide Distribution and Identify Monitoring Gaps
Shaara Ainsley, FISHBIO

Are Smaller Striped Bass a Bigger Risk for Juvenile Chinook in an Altered System?
Taylor Spaulding, Environmental Science Associates

Fish—Sturgeon

Analyzing Spatial Distribution of White Sturgeon Across an Environmental Gradient in the Upper San Francisco Estuary, California, USA
Ethan Clark, USGS

Juvenile Green Sturgeon Interactions with a Model Fish Protection Louver
Anna Steel, UC Davis

Aerobic Metabolism of Green Sturgeon, Acipenser medirostris, Reared at Different Temperatures and Feed Rates
Kenneth Zillig, UC Davis*

Fish Infrastructure

The Cost of Doing Business: The Monetary Value of Fish Salvaged from the Central Valley Project's Tracy Fish Collection Facility
Christopher Hart, USBR

Renovation Progress at the UC Davis Fish Conservation and Culture Laboratory
Tien-Chieh Hung, UC Davis

Fish Passage: Intersection of Fish and the Natural and Built Environment
Kevin Kumagai, HTI-Vemco USA, Inc.

Fishery Agency Strategy Team
Heather Swinney, USFWS

An Exploratory Analysis of Entrainment Aboard the Essayons Hopper Dredge in the San Francisco Bay
Ashley Wood, USACE - ERDC

Food Webs

Phytoplankton Blooms in the North Delta in Water Year 2017
Brian Bergamaschi, USGS

Macroinvertebrate Prey Availability for Fish in Periodically Dredged Areas of Central San Francisco Bay
Susan E. W. De La Cruz, USGS

Egg Production in the Calanoid Copepod *Pseudodiaptomus forbesi*
Austin Gearty, SFSU*

Just Add Water: Effect of Flow on Zooplankton Community Composition in the Cache Slough Complex
Jessica Kathan, USGS

Ingestion of the Diatom Aulacoseira sp. by *Pseudodiaptomus forbesi* During a Bloom Event
Cheryl Patel, SFSU

Does Higher Zooplankton Abundance in a Managed Wetland Translate to Enhanced Food Supply for Fish in the Open Waters of San Francisco Estuary?
Anne Slaughter, SFSU

New Molecular Isotopic Tools to Understand the Modern and Past Food Webs of the San Francisco Bay and Delta
Brett J. Tipple, UC Santa Cruz

Influences of Water Quality and Environmental Conditions on the 2016 Microcystis Bloom in the San Francisco Estuary
Mary Xiong, DWR

Macrophyte Isotopic Composition in Relation to Particulate Organic Matter in a Restored Tidal Wetland
Matthew Young, USGS

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Development of a Non-Invasive Sampling Technique to Improve Insect Monitoring
Alisha Goodbla, UC Davis

Marine Invasive Species

Marine Invasive Species in San Francisco Bay Poster Presentation
Karen Bigham, CDFW

Measuring Effects of Transit and Salinity Conditions on Biofouling Communities Attached to an Atypically-Operating Ship
Chrissy Edmiston, SFSU*

Pesticides/Herbicides

Pesticide Monitoring in Surface Waters of the Sacramento Valley
Scott Wagner, CDPR

Comparison of Water Quality, Cyanotoxin Concentrations, and Biodiversity of Primary Producers Between Wet and Dry Years
Tomo Kurobe, UC Davis

Herbicide Toxicity Testing of Laboratory Phytoplankton and San Francisco Estuary Isolates in Standard Flasks and High Throughput 96-Well Plate Assays
Chelsea Lam, UC Davis

Pesticide Patterns During Summer and Fall North Delta Flow Pulses
Hailey Wright, DWR

Remote Sensing

Rapid Drone Deployment for Remote Sensing of Abrupt Environmental Change
Andreas Anderson, UC Merced

Using UAS Gathered Hyperspectral Imagery to Map and Predict Traits of Invasive Species in the Sacramento-San Joaquin River Delta
Erik Bolch, UC Merced*

Improvements in Water Quality Mapping using Hyperspectral Remote Sensing
Christiana Ade, UC Merced*

Novel Approaches to Vegetation Mapping in Muddy Places: Take to the Air!
Megan Keever, Stillwater Sciences

Calculating a Performance Measure for Floodplain Inundation in the Yolo and Sutter Bypasses
Shruti Khanna, CDFW

Restoration—Tidal Wetlands

Mineralogical Controls on Soil Carbon in the Sacramento-San Joaquin Delta
Tyler Anthony, UC Berkeley*

Advancing Performance Measure Reporting for New and Continuing Landscape Restoration Projects
Shakoora Azimi-Gaylon, Sacramento-San Joaquin Delta Conservancy

Choose Your Own Delta Restoration: An Interactive Look at Future Delta Landscapes for Restoration Scenario Planning
Cory Copeland, DSC

Patterns of Vegetation Growth Supporting Key Ecosystem Services in Freshwater Wetlands
Julia P. Evered, UC Berkeley*

TidalTrend – A Tool to Distill Large Tidal Datasets for Analysis and Visualization
Dave Ayers, USGS

Dutch Slough Tidal Marsh Restoration Project: Large-scale Habitat Restoration in the West Delta
Patricia Finfrock, DWR

Mapping Habitat Restoration Opportunity Areas for the Delta Plan Ecosystem Amendment
Daniel Gillenwater, Gillenwater Consulting

From Tesla's to Tules: Using Imaging Sonar and Machine Learning to Passively Monitor Tidal Wetland Fishes
Tyson Hatton, USGS

A Regional Monitoring Program for Tidal Wetlands in San Francisco Bay
Ian Kelmartin, SFEP

Comparing Fish Communities across Habitats in Suisun & Grizzly Bays
Oliver Patton, USGS

Habitat Restoration Inventory Dataset
Marcia Scavone-Tansey, DWR

Early-Stage Outcomes at the Innovative Sears Point Tidal Marsh Restoration Project
Stuart Siegel, SF Bay National Estuarine Research Reserve

Multi-Benefit Restoration of the Grizzly Slough Floodplain (Cosumnes River Preserve)
Ramona Swenson, Environmental Science Associates

Managing the Methane Problem in Restored Wetlands
Amy Valach, UC Berkeley

Hydrospatial Analysis of Floodplain Restoration and Hydroclimate Change
Alison Whipple, UC Davis*

Restoration—Vegetation

From Containers to Tractors: Looking to Farming for an Unconventional Method to Scale Up Plant Propagation for Vegetating Large Ecotone/Transition Zone Restoration Projects
Jessie Olson, Save the Bay

Life History of *Cirsium hydrophilum* var. *hydrophilum* (Asteraceae), a Federally Endangered Tidal Wetland Species
Morgan Stickrod, USGS*

Restoration Programs

California EcoRestore
Charlotte Biggs, DWR

An Investigation of the Partnerships and Intersections Involved in Delta Conservancy Proposition 1 Projects
Aaron Haiman, Sacramento-San Joaquin Delta Conservancy

Accelerating Recovery of Listed Species: Expedited Permitting for Habitat Restoration in the Bay-Delta
Katie Haldeman, Sustainable Conservation

Delta Conservancy Proposition 1 Ecosystem Restoration and Water Quality Grant Program Overview
Laura Jensen, Sacramento-San Joaquin Delta Conservancy

The Delta Plan Ecosystem Amendment – Incorporating Science into Restoration Planning for the Delta
Ron Melcer, Jr., DSC

Sediment Dynamics

Deposition Rates of Floodplain Sediment in the Cache Creek Settling Basin based on Vertical Profiles of Cesium-137 and Mercury
Charles N. Alpers, USGS

Historical Sacramento-San Joaquin River Delta Bathymetric Change Analysis: A Pilot Study
Theresa Fregoso, USGS

Sediment Transport in San Pablo Bay: Uniting Field Observations and Models
Rachel Allen, USGS

Intertidal Mudflat Size Response to Changes in Sediment Supply
Bruce Jaffe, USGS

Muddy Waters: Turbidity Variability in the Yolo Bypass Floodplain
Michelle Nelson, DWR

Water Quality—Ag Drainage

Dissolved N Species Concentrations in Agricultural Drainage in the Sacramento-San Joaquin Delta
Carolyn Brady, UC Santa Cruz*

Variability in Dissolved Inorganic and Organic C Concentrations in Agricultural Drainage in the Sacramento-San Joaquin Delta
Kaylee Glenney, UC Santa Cruz*

Characterization of Redox Sensitive Elements in Agricultural Drainage in the Sacramento-San Joaquin Delta
Christina Richardson, UC Santa Cruz*

Water Quality – Biofiltration

Fate of Heavy Metals in Urban Stormwater Biofiltration Systems
Bryn Copson, CSU Chico*

Do Stormwater Biofilters Treat Urban Runoff?
Eric Dearden, CSU Chico*

Effects of Additives and Saturation Depth on Nutrient Retention in Urban Stormwater Biofilters
Sandrine Matiassek, CSU Chico

Water Quality – Contaminants

Evaluating Water Quality Improvements Efficacy in Suisun Marsh Sloughs of Managed Wetland BMPs
Philip Bachand, Bachand & Assoc.

War on Drugs in a South Bay POTW
Samantha Engelage, City of Palo Alto

Spatial and Temporal Trends in Cu, Pb, and Zn in North San Francisco Bay Sediments: 1993-2017
Rachel Keating, USGS

Toxic Underground: Emergent Pathways of Groundwater Contamination in the San Francisco Bay
Kate Lenahan, UC Berkeley

Water Quality – Nitrogen

Annual and Interannual Variation in Nitrate Concentrations in the North Delta and Lower Sacramento River
Bryan Downing, USGS

Improving Benthic Nutrient Flux Rate Determinations Using Real-Time, Field-Based High Frequency Measurements
Chuck Hansen, USGS

Mapping Nitrogen Concentrations in the Delta: Results From a Newly Developed Continuous Flow-Through Ammonium Analyzer
Angela Hansen, USGS

Operating a Continuous Monitoring Network for Water Quality in the Sacramento-San Joaquin Delta to Understand Drivers of Habitat Quality
Thomas A. Johnston, USGS*

Deployment of In Situ, High Frequency Ammonium Analyzers in the Northern San Francisco Bay Delta, CA
Katy O'Donnell, USGS

Nitrate Concentration-Discharge Relationships in the Sacramento River and Northern Delta: Insights from High Frequency Data
Katy O'Donnell, USGS

Nitrogen and Phosphorus Nutrients at Hood
Marcia Scavone-Tansey, DWR

Operation Baseline: Leveraging a planned large-scale step change in nutrients
Dylan Stern, DSP, DSC

Water Quality – Salinity

Effects of California's Drought on San Francisco Estuary Specific Conductance and Temperature
Maureen Downing-Kunz, USGS

Variability in San Francisco Bay and Delta Salinity and Its Relations with Delta Inflows and Coastal Water Level
Minxue He, DWR

Water Quality – Turbidity

Compound Specific Isotope Analysis of Particulate Organic Matter and Heterotrophs Surrounding McCormack-Williamson Tract
Bobby Nakamoto, UC Riverside*

High-Resolution Water-Quality Mapping in the Sacramento-San Joaquin Delta and San Francisco Estuary
Elizabeth Stumpner, USGS

Delta Turbidity Transects: Summary of Water Year 2017
Andrew Tran, DWR

Waterfowl

Diving Duck Body Condition in the San Francisco Bay Estuary
Mason Hill, USGS

Duck, Duck, Goose!—The Suisun Marsh Waterfowl and Managed Wetland Research Program
Cliff Feldheim, DWR

Environmental Drivers of Macroinvertebrate Biomass and Waterbird Abundance in Managed Ponds of South San Francisco Bay
Laurie Hall, USGS

Seasonal Distribution and Densities of Dabbling and Diving Ducks in the Napa-Sonoma Marshes Wildlife Area
Aliya McCarthy, USGS

Canvasback Movement Patterns and Space Use in Suisun and San Pablo Bays: 2016-2018
Stacy M. Moskal, USGS