

Food-webs Workshop

November 8-9, 2023

Exploring Scientific and Management Implications of
Upper Trophic Level Food Webs in the Delta

Presenter Profiles



**Delta
Independent
Science Board**

DELTA STEWARDSHIP COUNCIL

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Andre Buchheister | Humboldt State University | Session 2, Session 4

Andre Buchheister is an assistant professor at Humboldt State University in the Department of Fish Biology. Andre's research integrates ecological modeling, advanced statistics, fieldwork, and laboratory methods to answer both basic and applied questions in fisheries science. They specifically focus on four, interrelated research areas: 1) science in support of ecosystem-based fisheries management, 2) structure, function, and drivers of fish communities and marine ecosystems, 3) trophic dynamics and predator-prey interactions, and 4) fish population dynamics.

Brian Mahardja | US Bureau of Reclamation | Session 3

Brian Mahardja is a fish biologist at the U.S. Bureau of Reclamation. Brian has expertise in population genetics, fish biology, environmental monitoring, aquatic ecology, and aquatic biology. His most recent publications have focused on thermal stratification and water temperature change in the San Francisco Estuary and the impact on fish species due to a changing climate.

Carson Jeffres | UC Davis | Session 3

Carson Jeffres is a Senior Researcher and Field/Lab Director at the UC Davis Center for Watershed Sciences. Their expertise is on using a whole-system approach to determine the impacts of physical processes on food webs by examining environmental conditions, flow, and multiple trophic levels. This whole system approach has been useful to determine limiting factors and understanding the impacts of restoration activities for threatened salmon populations. Some of Carson's recent work has been examining the food webs of floodplains in the Central Valley.

David Beauchamp | US Geological Survey | Session 4

David Beauchamp is the Ecology Section Chief at the U.S. Geological Survey. His research in tactical food web ecology incorporates directed sampling, experimentation, and models to mechanistically address and quantify factors that limit survival and growth of salmonids in freshwater and marine environments: predation, carrying capacity, climate change, and invasive species; evaluate feasibilities of salmonid reintroductions above dams, dam removal or re-operation. He is interested in advancing a mechanistic understanding for how the behavior, bioenergetics, and sensory capabilities of individual organisms scale up to determine the structure and function of aquatic ecosystems and how food web interactions are mediated by natural and human induced changes in environmental conditions.

Doran Mason | NOAA Great Lakes Environmental Research Laboratory | Session 2

Doran Mason is a research ecologist at NOAA's Great Lakes Environmental Research Laboratory (GLERL). Doran's specialty is quantitative aquatic (marine, estuarine, freshwater) ecology. This includes community and food web ecology, invasive species and food web disruption, habitat and habitat mediated interactions, predator-prey interactions, recruitment dynamics, patch dynamics and spatial processes, hydroacoustics, and numerical modeling.

Frederick Feyrer | United States Geological Survey | Session 3

Frederick Feyrer is a Research Fish Biologist with the U.S. Geological Survey's California Water Science Center in Sacramento, California. Frederick's research program is broadly focused on applied aquatic ecology with an emphasis on fishes. In general, their work aims to fill critical data gaps needed by fisheries and water resource managers to implement effective restoration and conservation measures for imperiled species and ecosystems. Frederick's work has focused on how aquatic ecosystems function at varying spatio-temporal scales and how this influences species-habitat relationships. Recent and active study topics span the range of life history studies of threatened and endangered species to the role of climate variability and climate change on species and communities.

James Hobbs | California Department of Fish and Wildlife, UC Davis | Session 3

James Hobbs is an Environmental Program Manager for the Interagency Ecological Program's Field Operations at CDFW and a Research Associate/Lecturer at UC Davis. Their research focuses on addressing important fisheries resource management questions in estuarine and marine environments using an interdisciplinary approach, with collaborators in genetics, histopathology, and population modeling to understand how anthropogenic effects, including disease and pollution and habitat modifications affect fish populations. They have research projects in coastal salt marshes and sea grass beds, pelagic estuarine habitats and riverine habitats of the San Francisco Bay-Delta Estuary, Columbia River and Estuary and the lower Colorado River. Species of interest include, Chinook salmon, coho salmon, steelhead trout, longfin smelt, delta smelt, longjaw mudsucker, rockfish (*Sebastes* sp.), razorback sucker, green and white sturgeon. Jim has expertise in otolith and fin ray geochemistry.

John Durand | UC Davis Center for Watershed Sciences | Session 3

John Durand is a research scientist in Aquatic Ecology at the UC Davis Center for Watershed Sciences. His expertise is in the ecology of food webs and fish in estuarine habitats, and in ecosystem restoration. John and the Aquatic Research Collective have published numerous papers on food webs and fish foraging patterns, annual reports on fish and invertebrate abundances in the Delta, and on the impacts of restoration on native and non-native fishes.

Kim de Mutsert | University of Southern Mississippi | Session 2, Session 4

Kim de Mutsert is an Associate Professor in the Division of Coastal Sciences in School of Ocean Science and Engineering at the University of Southern Mississippi. Kim's research is focused on coastal and estuarine fish ecology. She studies the effects of environmental and anthropogenic stressors on nekton abundance, community structure, food web dynamics and fisheries. Examples of stressors included in her studies are eutrophication, oil pollution, habitat alteration, hypoxia, fisheries, and changes in freshwater discharge. She uses a combination of field monitoring, lab studies, and ecosystem modeling in her projects.

Kristine Grace Cabugao | California Sea Grant and Delta Independent Science Board | Session 1

Kristine Grace Cabugao is a postdoctoral scholar with California Sea Grant and the Delta Independent Science Board. Kristine's background is in soil biogeochemistry and plant-microbial ecology, with a focus on using these disciplines to understand climate change impacts on ecosystem processes. With the Delta ISB, Kristine helped organize last month's workshop on Managing Subsidized Lands and will provide research support for the associated review. Ongoing projects include coding scenarios to understand how scenarios are applied to address future uncertainty and providing support for the Delta ISB Food Webs review.

Lance Takata | UC Santa Cruz | Session 4

Lance Takata is an Assistant Specialist at the University of California, Santa Cruz in their Fisheries Collaboration Program. Lance has experience using predation event recorders (or PERs) as a tool for understanding food web dynamics/movement in upper trophic levels. Their previous experience involved working with NMFS on a Coho Salmon and Steelhead life-cycle monitoring program in and around the Scott Creek watershed.

Levi Lewis | UC Davis | Session 4

Levi Lewis is an experimental field ecologist specializing in trophic interactions, biodiversity, and community ecology of fishes, invertebrates and algae. He has published work in a variety of systems including salt marshes, pelagic estuaries, seagrass beds, and coral reefs. He is skilled in fish, invertebrate, and algal survey methods and taxonomy; otolith chemistry and imaging; scientific scuba diving and boating; nutrient and chlorophyll analysis; stable isotope analysis; and experimental design and statistics. Levi's current projects include (1) reconstruction of life histories of Longfin Smelt using strontium isotope chemical analysis of otoliths, (2) evaluating the impacts of climate change on the endangered Delta Smelt, and (3) community analysis of restored estuarine habitats in South San Francisco Bay.

Lillian McCormick | California Sea Grant and Delta Independent Science Board | Session 1

Lillian McCormick is a postdoctoral scholar with California Sea Grant and the Delta Independent Science Board. Lillian's background is in biological oceanography, and has focused on biological responses to climate change in the ocean from whole organism physiology to ecosystem scales. With the Delta ISB, Lillian is providing research support for the Food Webs review and the review on Decision making under deep uncertainty. Additionally, Lillian is conducting independent research examining food web species interactions in the Bay-Delta region.

Louise Conrad | California Department of Water Resources | Session 3

Louise Conrad is the Lead Scientist for the Department of Water Resources (DWR), where they provide science leadership by advancing the use of best available science in water management, prioritizing scientific initiative and direction, and by providing science-related policy guidance to DWR leadership. Louise had previously served as the Deputy Executive Office for Science at the Delta Stewardship Council. Louise started as a fisheries biologist, and has also conducted research on floodplain ecology, drought issues in the Delta ecosystem, non-native species control, and endangered Russian River coho salmon. They have also worked/collaborated with the IEP and the Pacific State Marine Fisheries Commission.

Matthew Nobriga | US Fish and Wildlife Service | Session 3

Matthew Nobriga is a fish biologist for the US Fish and Wildlife Service (USFWS). Matt has expertise in the utilization of the Delta by estuarine fishes, community ecology in the Delta, and predation and mortality of salmon and smelt in the Delta. Matthew has worked in the Delta since the CalFed days and serves as a USFWS representative on the Water Operations Management Team (WOMT), so also has expertise on flow requirements for native fish species in the Delta.

Matt Young | US Geological Survey | Session 3, Session 4

Matt Young is a research fish biologist with the US Geological Survey and has been working with the California Water Science Center since 2016. Matt's work focuses on the interactions of native and non-native fishes with their environment, including hydrology and submersed aquatic vegetation. They have completed many studies focusing on trophic interactions across habitat gradients, between native and non-native species, and the role of restoration in food web dynamics.

Melinda Baerwald | CA Department of Water Resources | Session 4

Melinda Baerwald is an affiliated researcher for the CA Department of Water Resources in the Genomic Variation Laboratory. Melinda uses tools from population genetics to aid in the conservation of threatened species. Specific current research interests include understanding the genetic basis of traits influenced by selection (e.g., Rainbow Trout disease resistance and migration), linking predation patterns with environmental factors, and evaluating population trends and monitoring protocols for threatened species.

Mike Chotkowski | US Geological Service | Session 1

Mike Chotkowski is the Science Coordinator for the Bay-Delta, Pacific Region at the US Geological Survey, where they advise regional leadership to develop and maintain an effective, efficient, and integrated scientific portfolio in the San Francisco Bay-Delta. Mike started their federal career at the Bureau of Reclamation as a fish biologist and joined the USGS in 2015. They work with USGS Science Centers and partners on collaborative efforts to understand water management in California. Mike has conducted research on native fishes in the Delta, the pelagic organism decline, and has been involved with Delta activities such as the Delta Science Enterprise workshop.

Peter Goodwin | University of Maryland | Session 4

Peter Goodwin is the past president and professor of the University of Maryland Center for Environmental Science. He is an internationally recognized expert in ecosystem restoration, ecohydraulics, and enhancement of river, wetland and estuarine systems, and he has spent 30 years in higher education. He has participated in the river restoration, coastal wetland sustainability, flood control, and sediment management projects around the world, including Chile and Guatemala, and estuarine and tidal wetland restoration projects on the East, Gulf, and West Coasts of the United States, from Delaware Bay to California. Peter was the Delta Lead Scientist from 2022-2015. Peter also serves as president of the International Association for Hydro-Environment Engineering and Research, one of the oldest international research organizations focusing on water and the environment.

Rachel Wigginton | Delta Conservancy | Session 3

Rachel Wigginton is a senior environmental scientist and wetland researcher at the Delta Conservancy. Her research interests include wetland ecology, restoration, and conservation science. Her most recent publications have focused on the impact of drought on tidal salt marsh plant invasion, nutrient mitigation of the impacts of drought on plant invasions, and the impacts of restoration, eutrophication, and extreme climate events on tidal marsh plant invasion.

Rosemary Hartman | CA Department of Water Resources | Session 4

Rosemary Hartman is an Environmental Program Manager at DWR, where they are also the lead for the IEP Synthesis Program. Previously, Rosemary worked at CDFW on the Fish Restoration Program Monitoring team. They have expertise developing monitoring and adaptive management plans for tidal restoration and examining the effects of drought and rising temperatures on the Delta ecosystem. Rosemary is active in making data and code accessible for the community and is a member of the Bay-Delta Data Science Project Work team.

Ryan Bellmore | US Forest Service | Session 4

Ryan Bellmore is a research fish biologist with the U.S. Forest Service at the Pacific Northwest Research Station. Much of his research is aimed at evaluating: (1) the effects of human degradation and environmental change on freshwater ecosystems, and (2) the potential consequences of different management strategies designed to mitigate or reverse the undesirable effects associated with system change. The overall objective of his research is to gain a better understanding of complex mechanisms that support the resilience and productivity of these important ecosystems, and in so doing, contributing to better-informed restoration, conservation, and stewardship of freshwater resources. He is particularly interested in food webs, which describe the flows of energy and material that support organisms, populations, communities, and ultimately, the natural resources and ecosystem services that freshwater provides.

Shawn Acuña | Metropolitan Water District of Southern California | Session 3

Shawn Acuña is a Senior Resource Specialist at Metropolitan Water District of Southern California, where they develop, manage, and conduct research on various aspects of aquatic sciences in the Bay-Delta region. They have conducted studies on the genetics and status of listed species and evaluating the impacts of predation, entrainment, habitat quality, contaminants (including sublethal effects), and HABs on listed species in the Bay-Delta. Previously, Shawn worked/studied at UC Davis and was a larval systems manager.

Shruti Khanna | California Department of Fish and Wildlife | Session 4

Senior Environmental Scientist Dr. Shruti Khanna works for CDFW in the Interagency Ecological Program (IEP), a consortium of state and federal agencies that monitors the health of the Sacramento–San Joaquin River Delta. Shruti works in the IEP's Program Support and Synthesis Group. Her focus is researching nonnative invasive aquatic vegetation in the Delta. By analyzing data on nonnative invasive aquatic vegetation, Shruti helps conservation managers decide the best approaches to take in conserving the Delta's ecosystem.

Stan Gregory | Oregon State University | Session 2

Stan Gregory is an emeritus professor at Oregon State University in the College of Agricultural Sciences. His research focuses on stream ecosystems including channel dynamics, woody debris, water chemistry, benthic algae, invertebrates, fish, salamanders, and riparian vegetation. He has expertise in landscape perspectives for stream ecosystems and the influence of human activities on ecosystem structure and function. He also has done work on historical reconstruction of rivers and riparian forests, as well as development of restoration perspectives and practices that are consistent with natural stream processes.

Steve Brandt | Delta Independent Science Board | Session 2

Steve Brandt specializes in fish ecology and management of marine and freshwater ecosystems. He has produced over 150 scientific publications, given 300 scientific presentations, and led over 80 research cruises studying food webs, fish bioenergetics, underwater acoustics, coastal hypoxia, and physical/biological interactions in a wide variety of ecosystems including the Great Lakes, Chesapeake Bay, the Northern Gulf of Mexico, the Adriatic Sea, and the open oceans. Previously, he has held tenured faculty positions in Maryland at the Chesapeake Biological Laboratory and in New York (Buffalo, Syracuse) and spent 5 years in Australia working on deep-sea biology.

Steve Lindley | NOAA Southwest Fisheries Science Center | Session 3

Steve Lindley is the Fisheries Ecology Division Director for the NOAA Southwest Fisheries Science Center. Steve has expertise with fisheries management of salmon and sturgeon both within the Delta and on the West Coast. A lot of their research considers food web applications to management, including the effects of predation on survival, the diet of salmon/steelhead throughout ontogeny, linking terrestrial prey resources to steelhead survival, and drivers of survival (climate, water management) throughout fish life cycles.

Ted Sommer | Public Policy Institute Water Policy Center | Session 1

Ted Sommer is a 2023–24 PPIC CalTrout Ecosystem Fellow at the PPIC Water Policy Center. Sommer retired in 2021 as lead scientist for California Department of Water Resources, an organization with more than 3,000 employees statewide. During his 30-plus-year career, his research focused on the development of management solutions to California's natural resources problems. His projects included work in the state's waterways, particularly the San Francisco Estuary and its watershed. Since 2000, he has published more than 70 scientific papers, several of which have been used as the basis for improved management of native aquatic species in California.

Vamsi Krishna Sridharan | Tetra Tech | Session 4

Vamsi Sridharan is a Water Resources Manager at Tetra Tech, where they provide monitoring, computer modeling and policy support on projects facilitating access to clean and safe water, supporting sustainable socio-economic growth, fostering energy security, and combating climate change and sea level rise. Previously, Vamsi was an Assistant Project Scientist at the Institute of Marine Science, University of California, Santa Cruz, and an affiliate of the Southwest Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration. Vamsi uses cutting edge computer modeling and data analysis techniques to solve real-world fluid mechanics problems with a strong human element.

Zachary Emerson | United Auburn Indian Community | Session 3, Session 4

Zachary Emerson is the Ecological Heritage Specialist with the United Auburn Indian Community. The United Auburn Indian Community is comprised of both Miwok and Maidu Indians. The historic Auburn Rancheria is located in the Sierra Nevada foothills in Auburn, California.



Lookout Slough. Photo Credit: DWR