Future Solutions for the Bay—Introduction

Moderator: Letitia Grenier, Baylands Ecosystem Habitat Goals, letitiag@gmail.com

The first part of this double session will introduce the approach of using the historical context of local landforms and processes to develop solutions for the evolving Bay shoreline that provide for human needs while also conserving ecological functions. We will then focus in on ecological functions, by presenting key findings and recommendations from the Baylands Goals Update, which addresses how to restore and maintain Baylands plant and wildlife communities over the next century of change.

Keywords: Baylands Goals, Integrated Shoreline Solutions

Session Title: Future Solutions for the Bay (I)

Moderator Biography: Letitia Grenier is the Science Coordinator for the 2014 Update to the Baylands Ecosystem Habitat Goals. She was born and raised in coastal California and maintains a lifelong interest in conservation of our native ecosystems. She has been working in estuarine ecology for the past 15 years. She received her Ph.D. from the Environmental Science, Policy and Management Department at UC Berkeley, focusing on conservation biology and specializing in tidal marsh animal ecology. Her previous research has included tidal marsh food webs, the relationship of animal fitness and behavior to tidal marsh habitat structure, and bioaccumulation of contaminants in estuarine food webs. Currently, Dr. Grenier is working to enhance the impact of science on the conservation of California's estuaries by focusing on landscape-scale, collaborative, science syntheses for the San Francisco Bay and the Sacramento-San Joaquin Delta.

Integrating Nature and Engineering to Design a Resilient Bay

Robin Grossinger, San Francisco Estuary Institute, robin@sfei.org
Jeremy Lowe, ESA PWA, jlowe@esassoc.com

After a century dominated by engineering during which its size was reduced by nearly a third, the Bay has entered a more dynamic era. The seemingly permanent shoreline, whose position has changed little for generations, will need to be substantially redesigned in coming decades in response to accelerated climatic changes. With relatively large intertidal areas and a well-developed restoration ethic, however, we have an opportunity in the Bay Area to proactively create a new shoreline with greater integration between natural and engineered features.

Recent and ongoing research on the Holocene and historical evolution of the Bay suggests how Bay features responded to periods of rapid sea level rise in the past and provides the geomorphic setting and ecological palette for establishing new, more resilient shorelines. These approaches use an understanding of natural Bay processes and the opportunities provided by undervalued resources such as sediment and wastewater to create cost-effective flood protection systems and water quality benefits that also provide specific and sustainable ecological functions.

To sustain native ecological communities, these new green infrastructure approaches will need to be designed to explicitly maintain and enhance Bay ecosystems and provide other ecosystem services. This will require linking planning and engineering to landscape ecological and physical processes at a range of temporal and spatial scales, beyond standard project planning approaches. Efforts are underway to begin meeting these challenges/opportunities, but more pilot projects and new approaches will be needed to design, test, and scale up these strategies.

Keywords: Adaptation, Wetlands, Ecosystem Services

Session Title: Future Solutions for the Bay (I)

Speaker Biography: Robin Grossinger is a Senior Scientist at SFEI, where he directs the Resilient Landscapes program. For 20 years, Robin has analyzed how San Francisco Bay and other California landscapes have changed since European contact, using these data to highlight opportunities and guide landscape-scale restoration strategies. The innovative work of Robin and his colleagues has helped scientists, managers, and the public appreciate the dramatic transformation and the resilience of the state's ecosystems.

Speaker Biography: Jeremy Lowe is a Coastal Geomorphologist at ESA. He has 28 years of experience in coastal wetland restoration and flood protection, 14 of which are on the Pacific West Coast. His work has included the design of seawalls for Hong Kong airport; sea defenses for Venice, Italy; wetland restoration in Venice, California; and is the author of wetland design guidance for San Francisco Bay, Puget Sound and the Lower Columbia Estuary. More recently, Jeremy has been working on climate change adaptation in San Francisco Bay. He is co-chair of the Habitat Evolution workgroup for the Baylands Goals Update.

The Updated Baylands Goals: A Collective Vision of the Baylands for the Next Century

Letitia Grenier, Baylands Ecosystem Habitat Goals, letitiag@gmail.com

Over 100 members of the estuarine science and management community are producing a future vision for restoring and maintaining the ecological integrity of the Baylands for the next century. Collaborative teams have synthesized the current science on key drivers of change, how the Baylands habitats will evolve under future scenarios, interactions between the Baylands and the Bay and adjacent terrestrial areas, risks to plants and wildlife, and carbon sequestration. This Update to the Baylands Goals will present short- and long-term visions for the future Baylands and the actions required to achieve these visions. This presentation will cover the project purpose, collaborative process, key drivers of change, future scenarios analyzed, regional vision for 2030 and 2100, and overarching recommended actions.

Keywords: Climate Change, Baylands Goals Update, Drivers of Change, Recommended Actions

Session Title: Future Solutions for the Bay (I)

Speaker Biography: Letitia Grenier is the Science Coordinator for the 2014 Update to the Baylands Ecosystem Habitat Goals. She was born and raised in coastal California and maintains a lifelong interest in conservation of our native ecosystems. She has been working in estuarine ecology for the past 15 years. She received her Ph.D. from the Environmental Science, Policy and Management Department at UC Berkeley, focusing on conservation biology and specializing in tidal marsh animal ecology. Her previous research has included tidal marsh food webs, the relationship of animal fitness and behavior to tidal marsh habitat structure, and bioaccumulation of contaminants in estuarine food webs. Currently, Dr. Grenier is working to enhance the impact of science on the conservation of California's estuaries by focusing on landscape-scale, collaborative, science syntheses for the San Francisco Bay and the Sacramento-San Joaquin Delta.

Guided Q & A: How the Baylands are Projected to Change Over the Next Century and Recommended Actions to Increase Ecosystem Resilience

Moderator: Matt Gerhart, State Coastal Conservancy

This double-long presentation will be a guided question and answer session designed to communicate the key recommendations and findings of the Baylands Goals Update. The discussion will touch upon the broad range of topics that the Goals Update addresses, such as the following:

- What are the most important drivers of change that will affect the Baylands?
- Looking across the various modeling efforts, how are tidal marshes expected to change in elevation and extent over the next 100 years?
- How do we need to be thinking about the interaction between the Bay and the Baylands when it comes to climate change?
- What is the importance of the Terrestrial-Estuarine Transition Zone and what pressures will this area face over the next century?
- What are the most critical concerns for native plant and wildlife communities?
- How does carbon sequestration and greenhouse gas flux factor into restoration planning?
- What are the most important recommendations for the region coming out of the Goals update? For Suisun Bay? For San Pablo Bay? For Central Bay? For South Bay?

Session Title: Future Solutions for the Bay (I)

Panel Members: Chairs of the Baylands Goals Science Workgroups
Donna Ball, Co-chair of the Terrestrial-Estuarine Transition Zone workgroup
John Bourgeois, Co-chair of the Habitat Evolution workgroup
Josh Collins, Co-chair of the Terrestrial-Estuarine Transition Zone workgroup
Steve Crooks, Co-chair of the Carbon and Greenhouse Gas workgroup
Steve Herbold, Co-chair of the Wildlife workgroup
Wim Kimmerer, Co-chair of the Bay Interface workgroup
Marilyn Latta, Co-chair of the Bay Interface workgroup
Jeremy Lowe, Co-chair of the Habitat Evolution workgroup
Nadav Nur, Co-chair of the Wildlife workgroup

Panel Member Biography: Donna Ball has worked as the Habitat Restoration Director at Save The Bay since 2012, where she functions as the lead scientist and guides the Habitat Restoration Team to provide over 250 on-the-ground community-based habitat restoration events annually, specifically focused on restoring transition zone habitat. Donna has worked as a restoration ecologist for over 10 years and has worked on a variety of large and small-scale tidal restoration projects in San Francisco Bay and in estuaries along the West Coast. She earned a M.S. in Environmental Science from Western Washington University, with a focus on marine and

estuarine environments. She is co-chair of the Terrestrial-Estuarine Transition Zone workgroup for the Baylands Goals Update.

Panel Member Biography: John Bourgeois has worked in San Francisco Bay since 1999 where he currently serves as the Executive Project Manager of the South Bay Salt Pond Restoration. Previously, he worked as a restoration ecologist with the ecological consulting firm H. T. Harvey & Associates. Prior to coming to California, John worked at the USGS National Wetland Research Center, the Louisiana Department of Natural Resources, and the Institute of Pacific Islands Forestry. John has a M.S. from the University of Louisiana at Lafayette and a B.S. from Tulane University. He is co-chair of the Habitat Evolution workgroup for the Baylands Goals Update.

Panel Member Biography: Josh Collins is the Lead Scientist at SFEI. He oversees the development and integration of SFEI's scientific work. Dr. Collins is a landscape ecologist and regional ecological planner with special expertise in mapping and assessing stream and wetland ecosystems. He received his Doctorate in Entomological Sciences at the University of California at Berkeley and did post-doctoral work in Geography and Ecology at the UC Berkeley and UC Davis. Since joining SFEI, Dr. Collins has initiated continuing programs in wetland science, watershed science, historical ecology, and regional GIS. Dr. Collins chairs the technical team supporting California's new wetland and riparian area protection policy. He is co-chair of the Terrestrial-Estuarine Transition Zone workgroup for the Baylands Goals Update.

Panel Member Biography: Steve Crooks is the Climate Change Program Manager with Environmental Science Associates, working on the science and policy of wetlands restoration, climate change adaptation and mitigation. He is a founder of the International Blue Carbon Initiative, a member of the IPCC Expert Group developing guidance on the inclusion of wetlands management into national GHG inventory accounting, and an accredited advisory on wetland methodology and project development under the Verified Carbon Standard. He is co-chair of the Carbon and Greenhouse Gas workgroup for the Baylands Goals Update.

Panel Member Biography: Bruce Herbold has been working with fishes of the estuary since 1979, when he began graduate studies at UC Davis with Peter Moyle. He petitioned to add delta smelt to the list of California's threatened fish and wildlife. After getting his PhD, Bruce started work at USEPA to develop new water quality standards to protect estuarine habitat. These standards were eventually adopted into state law. Since then he has worked on a variety of tasks to improve the scientific basis for management decisions in the estuary, largely through the Interagency Ecological Program. Bruce retired from USEPA in January 2013 and has begun consulting. He is co-chair of the Wildlife workgroup for the Baylands Goals Update.

Panel Member Biography: Wim Kimmerer is a Research Professor of Biology at the Romberg Tiburon Center of San Francisco State University. He received his PhD in Biological Oceanography at the University of Hawaii, and had a postdoctoral fellowship at the University of Melbourne, Australia. He has conducted studies in the San Francisco Estuary on effects of freshwater and tidal flow on habitat, abundance, and movement of plankton and fish; the influence of introduced species and human interventions; and population dynamics, reproduction, growth,

and mortality of foodweb organisms. He received the Brown-Nichols Science Award at the 2012 Delta Science Conference. He is co-chair of the Bay Interface workgroup for the Baylands Goals Update.

Panel Member Biography: Marilyn Latta is a California Coastal Conservancy Project Manager who works on the SF Bay Subtidal Habitat Goals Project, Invasive Spartina Project, Living Shorelines Project, and additional regional projects and collaborative planning efforts in San Francisco Bay. Marilyn has worked on various aspects of estuarine habitat restoration and environmental education since 1995 on the California Coast and San Francisco Bay. She holds a dual degree in Marine Biology/ Zoology from Humboldt State University, and has worked for multiple education and policy organizations, including the Catalina Island Marine Institute, Headlands Institute, The Watershed Project, The Ocean Conservancy, and Save The Bay. She is co-chair of the Bay Interface workgroup for the Baylands Goals Update.

Panel Member Biography: Jeremy Lowe is a Coastal Geomorphologist at ESA. He has 28 years of experience in coastal wetland restoration and flood protection, 14 of which are on the Pacific West Coast. His work has included the design of seawalls for Hong Kong airport; sea defenses for Venice, Italy; wetland restoration in Venice, California; and is the author of wetland design guidance for San Francisco Bay, Puget Sound and the Lower Columbia Estuary. More recently, Jeremy has been working on climate change adaptation in San Francisco Bay. He is co-chair of the Habitat Evolution workgroup for the Baylands Goals Update.

Panel Member Biography: Nadav Nur came to Point Blue Conservation Science (formerly PRBO Conservation Science) in 1989 as its first Quantitative Ecologist, having been trained as an ecologist (PhD, 1981) and as a statistician (MS, 1991). In 1996 he initiated Point Blue's tidal marsh bird project focusing on the habitat and landscape features needed to maintain and recover tidal marsh-dependent species of concern. Since that time he has focused on the design and monitoring of tidal-marsh and riparian habitat restoration, to understand the influences on the use and value of restored habitat by birds. In recent years he had studied the demography of tidal marsh birds and climate change impacts on seabirds. He is co-chair of the Wildlife workgroup for the Baylands Goals Update.