ABSTRACTS

DAY 1: Wednesday, March 1st

1) **Buena Vista Rancheria of Me-Wuk Indians Wetlands Inventory, Monitoring, and Assessment Program**
In 2021, Buena Vista Rancheria of Me-Wuk Indians applied for and was awarded the WPDG, which is currently in progress. The goals of the grant are to develop and write an inventory, monitoring, and assessment strategy for the Tribe's wetland program, and to collect a year's worth of baseline data from the wetland on the Tribe's reservation. In our presentation, we will give a background on our Tribal wetland program, describe our work to develop our monitoring and assessment program, and explain how the WPDG helped fund this. Finally, we will share our methods for baseline monitoring and share some preliminary hydrological data from our wetland.

2) **Conservation of California's Great Valley Vernal Pool Landscapes: User's Guide and Reference Manual** Our project identifies, characterizes, and develops a conservation framework for 5-10 large, remaining vernal pool habitat blocks in each of eight designated Vernal Pool Regions within California's Great Valley. The project builds on a recent WPDG-funded project completed by the same team as well other past vernal pool conservation planning efforts by USFWS and CDFW (USFWS Vernal Pool Recovery Plan and Designated Critical Habitat; CDFW Classification of Vernal Pool Regions). Habitat blocks were selected among the 20 largest remaining blocks in each region that offer the best opportunities for achieving landscape-scale conservation and preserving each region's unique habitat and biodiversity elements. Given limited conservation funding, the project results will help focus ongoing conservation within large, representative, sustainable habitat blocks rather than small, isolated blocks. Our project also supports the current interest by resource agencies and conservation groups in voluntary, 'grassroots' conservation approaches, as represented by CDFW's new Regional Conservation Investment Strategies (RCIS) program. Our main final output is a book, in both hard copy and digital formats, titled 'Conservation Guide to Great Valley Vernal Pool Landscapes – User's Guide and Reference Manual'. It will serve as a hands-on guide for pursuing conservation on both a regional and local scale. We will also produce a geodatabase of the target habitat blocks and associated geographic and species data. The report and geodatabase will be provided to agencies, conservation groups, mitigation interests, and others involved in conservation work in the Great Valley. The geodatabase will be uploaded as an integral component of public websites related to wetland and species conservation.

3) **Nutrient thresholds to protect water quality, coral reefs, and nearshore fisheries**
A ridge-to-reef framework was developed for 26 watersheds around Guam that linked watershed use, dissolved inorganic nitrogen (DIN) concentrations, and coral-reef assemblages. The purpose was to identify nutrient criteria for water quality standards using: 1) percent exceedances as defined in USEPA guidance documents, and 2) undesirable changes in the coral-reef assemblages. The second purpose was to partition the impacts of two primary stressors facing coral reefs, watershed pollution and fishing pressure. Two independent analyses revealed a similar 0.10 mg/l DIN threshold to protect water quality and coral-reef assemblages. While

coral diversity was negatively influenced by DIN, the cover of some stress-tolerant corals increased, such as Porites rus, making coral cover alone a poor indicator of watershed pollution. Less intuitive, DIN predicted increased food-fish biomass that was accounted for by smaller generalist herbivores/detritivores, representing homogenized assemblages, while fishing pressure reduced biomass. Emerging revisions to water quality standards will be discussed.

4) **Pyramid Lake Paiute Tribe Wetland Program Development**
The Pyramid Lake Paiute Tribe has been successful in receiving WPDG funding for several years and has used this money to accomplish extensive wetland mapping and monitoring as well as research on amphibians and benthic macroinvertebrates. The wetland program has also been able to create an herbarium and native seed bank under the WPDG funding. Working under a PPG with the water quality department, the Tribe has been able to create a comprehensive inventory and bioassessment data set that spans over fifteen years. The wetland specialist will talk about the tools used to evaluate the health of the wetlands on the reservation and the prioritization of sites for voluntary restoration activities.

5) **Using the EPA Core Element Framework to Guide the Prioritization of Headwater Wetland Restoration in Support of Climate Resiliency in Yurok Country**
Following EPA Region 9 priorities for climate change adaptation/resilience, the Yurok Tribe Environmental Department (YTED) aims to identify what attributes make specific headwater wetland ecosystems climate resilient. YTED incorporates environmental DNA (eDNA) surveys of sensitive amphibian species (e.g., Coastal Giant Salamander, Foothill yellow-legged frog, Coastal Tailed Frog, Southern Torrent Salamander), the EPA's Stream Duration Assessment Method for the Western Mountains (SDAM) and stage probes in headwater wetlands and downstream lotic systems to monitor biotic responses to surface water quality and quantity through extended periods of drought. Additionally, YTED will update its previous Wetlands Program Plan (WPP) to guide the prioritization and restoration of headwater wetlands in future projects, contributing to the development of a Headwaters Wetlands Preservation and Restoration Plan. Project adaptations and management implications are discussed as well as the influence of traditional stewardship practices (e.g., cultural fire) within the project area.

6) **Building Capacity of the California Wetland Program to Protect and Restore Vernal Pools**
The California Wetland Program Plan seeks to strengthen protection for wetlands in many ways, including building capacity to track the net benefits of wetland policies and programs, using the State's Wetlands and Riparian Area Monitoring Plan (WRAMP). This project builds capacity to protect vernal pool habitats in the Central Valley using the WRAMP toolset by: (1) updating the CA Aquatic Resource Inventory (CARI) for vernal pools; (2) updating information about vernal pool projects and related impact areas in Project Tracker; (3) developing an ambient baseline assessment of vernal pool systems condition; and (4) creating a Habitat Development Curve to forecast and assess the performance of projects. The inventory update, baseline assessment, and HDC was advised by the Level-1 and Level-2 Committees of the California Wetland Monitoring Workgroup (CWMW) of the CA Water Quality Monitoring Council (WQMC), following the updated CRAM Technical Bulletin, and has been integrated into EcoAtlas for public use.

DAY 2: Thursday, March 2nd

1) **Developing the Wetland Recovery Project Regional Monitoring Program: Building Capacity for Assessing Wetland Recovery Efforts in Southern California**
Although progress has been made towards developing coordinated wetland management in California, there has not been an agency-led initiative to standardize intensive assessment

methods. Consistent approaches and protocols are needed for California agencies to allow for regional comparison across wetland restoration projects and assess how existing and newly restored wetlands are adapting to climate change. The Southern California Wetland Recovery Project targets this gap through the development of a Level-3 Regional Monitoring Program that refines the metrics and protocols scientists have developed and integrates them into permit- and funding-required monitoring programs. The California State Coastal Conservancy has partnered with the Southern California Coastal Water Research Project, the Central Coast Wetlands Group out of San Jose State University, and the California Coastal Commission to develop the Regional Monitoring Program. The project is in its early stages, and we look forward to sharing our experience and hearing ideas from other WPDG awardees.

2) **Evaluation and Regional Comparison of USEPA Intensive, Level-3 Monitoring: Consolidating Coastal Wetland Datasets and Programs**

Monitoring and assessment strategies developed by the State of California and US Environmental Protection Agency (USEPA) call for coordinated and consistent approaches to monitoring and assessment as it can be difficult to compare datasets collected with varied methods. Yet it can also be challenging to decide on best protocols or alter established monitoring programs. Our collaborative effort applied USEPA's Level 1-2-3 framework to develop standardized protocols, data consolidation techniques, and applications for standard monitoring parameters with a focus on southern California wetlands. One key product was an update to the California Wetland Monitoring Manual that we first published in 2015; this updated monitoring manual has since served as a template and guide for the development of other frameworks throughout the state. In addition to updating the monitoring manual, we worked to define and categorize metadata as well as to consolidate and analyze regional data sets for vegetation, water quality, invertebrate, and fish monitoring parameters. Finally, we used a case study approach to identify various methods previously used to compare disparate datasets for each parameter and in the process of data consolidation, identified limitations and sources of error associated with individual parameters. Overall, the updated manual and the lessons learned from our data consolidation case studies advanced our ability to compare among wetlands and to develop more standardized monitoring frameworks for these vital ecosystems.

3) **Melding modern and conventional approaches towards developing Hawaii's first protection and restoration strategy for wetlands**

Hawai'i boasts a variety of wetland types with high levels of endemism, and cultural and socio-economic value. However, the function and status of these ecosystems are beset by invasive species, pollution, development, climate change, and other human impacts. In response, the Hawai'i Department of Land and Natural Resources (DLNR) and partners are developing a protection and restoration strategy specifically for Hawaiian anchialine pools and marshes. Guided by the U.S. EPA's Core Elements Framework, the strategy incorporates novel ecosystem monitoring and assessment practices, the review and development of regulatory frameworks, and efforts to promote the voluntary restoration and protection. As a collaborative effort, the Hawai'i Wetlands Protection and Restoration Strategy will direct future monitoring and assessment practices, guide local restoration efforts, and provide recognized legal protections to anchialine pools and marshes.

4) **Nevada Wetland Program Development – Inventory, Data Management Tools, and Partner Engagement**

The Nevada Division of Natural Heritage is leading a collaborative team with the Springs Stewardship Institute, the Desert Research Institute, and the Nature Conservancy to build our Wetland Program. EPA Wetland Program Development Grants have supported four primary tasks: 1) Compiling existing data and collecting new data on Nevada springs and springs-dependent species, 2) Improving Springs Online and data management; 3) Outreaching to and working with partners to update the Wetland Program Plan, and 4) Developing WetBar, a GIS-based level one wetland assessment tool. Thanks to this funding, we have gathered data on hundreds of springs, compiled information on 66 sensitive wetland-dependent species, improved database functionality, created tools to better analyze wetlands statewide, outreached to hundreds of partners, updated our Wetland Program Plan, and hired full-time staff to support the program.

5) **SF Estuary Wetlands Regional Monitoring Program – Designing monitoring for adaptive management through stakeholder collaboration.**

The SF Estuary Wetlands Regional Monitoring Program (WRMP) will generate data for decision-making to protect existing wetlands, increase restoration success, and enhance stewardship and human connections to wetlands. San Francisco Bay has already lost an estimated 90% of its wetlands, and forecasts of accelerated sea level rise, increased flooding, and erosion threaten the estuary's remaining tidal wetlands. In order to advance progress toward a regional goal of 100,000 acres restored by 2030, the WRMP is coordinating with managers, scientists, community groups, Tribal partners, and regulators to design monitoring that fills critical information gaps. This presentation will provide an overview of core program components, including a tiered science framework, regionwide monitoring network, and consensus-based governance structure. We will highlight key program areas recently funded by the WPDG program, including development of a public database, efforts to align with regulatory needs, and integration of community and Tribal values and forms of knowledge.

6) **Prioritizing Stream Protection, Restoration and Management Actions Using Landscape Modeling and Spatial Analysis**

Urban watersheds are often degraded by human activities, reducing their ability to provide ecosystem benefits. While governmental agencies have put forward plans for improving watershed health, resources are limited, and choices must be made as to which watersheds to prioritize and what actions to take. Prioritization tools often lack sufficient specificity, resolution, and automation to be useful in guiding decisions regarding restoration and management actions across regional or statewide scales. To address this, we developed a set of assessment and prioritization tools to support the protection of rivers and associated riparian habitats across California. The tool estimates stream condition at the NHD reach scale based on bioassessment data, uses EPA's StreamCat dataset to identify stressors, includes reach-specific models to help prioritize actions, and accounts for environmental justice using census tract data. Using the prioritization tool, we identified 38% of the stream reaches across California that should be considered the highest priorities for restoration and management actions. At the watershed scale, we were able to identify 7 -40% of reaches that should be prioritized for protection and 10-34% of reaches that should be prioritized for restoration, and management, depending on the watershed. The results of this project can help regional stakeholders and agencies prioritize hundreds of millions of dollars being spent to protect, acquire, and restore coastal stream and riparian habitats. The methods are directly transferable to any regional condition and stress data that can be readily obtained.