Project Title: Application of a Broad-Scale, Multi-Species Monitoring Program to Assess Shorebird Population Response to Future Land Use and Climate Change

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Ecoregions: Bay-Delta and Central Valley

Partners and Management Relevance

Shorebird populations in North America have experienced declines due to habitat loss and the impacts of climate change will add more pressures particularly through declines in water resources and sea-level rise. Understanding how shorebird populations will respond to changes in land use and climate requires multi-scale population and habitat monitoring. Application of these monitoring data resources can inform climate-smart conservation and management at local and landscape scales. Previous California Landscape Cooperative (CA LCC) funding for our project titled, "A Broad-Scale, Multi-Species Monitoring Protocol to Assess Wintering Shorebird Population Trends in Response to Future Land Use and Climate Change" resulted in the development and implementation of a CA LCC-wide monitoring program for shorebirds and centralized databases in the California Avian Data Center, the quantification of the distribution, abundance and variability in shorebird habitat in the Central Valley, the development of shorebird habitat association models, online data summary applications available to resource managers and the public, and an "iterative learning" quantitative framework for adaptive management. These products are complete and continue to improve through leveraged funds, although efforts are needed to integrate this work into decision making processes of conservation practitioners. These products are needed urgently for shorebird population objective setting, population tracking, and shorebird habitat conservation prioritization and management being completed in the coming year by the San Francisco Bay Joint Venture (SFBJV) and the Central Valley Joint Venture (CVJV) as part of revisions to their implementation plans, and as well by wetland managers in the Central Valley.

Our project will facilitate information exchange between scientists and managers to advance decision-making and conservation with the most up-to-date data on the status of shorebird populations and habitat availability. Our monitoring data and iterative habitat association modeling can be used to evaluate how different management or conservation strategies would affect shorebirds across a large landscape both now and under future habitat scenarios. At a more local management level, our work with the Sacramento National Wildlife Refuge, supported by the CA LCC, quantified the effect of habitat availability in the surrounding landscape on wetland use by shorebirds, and identified optimal areas to invest in wetland restoration given patterns of water availability regionally. Using this model example, we will work with other wetland managers to assess how best to utilize or additionally make available the shorebird monitoring data, landscape habitat assessments, and habitat modeling efforts to inform their management decisions.

Our proposed work will help to meet all three CA LCC strategic objectives via several CA LCC identified strategies. This project will serve as the platform to engage in discussions to connect our science with wetland management at a landscape scale. The workshops will articulate and solidify shared goals around the shorebird work we have done to date and the monitoring and analysis our LCC funded program will continue to do into the future. We believe this effort will result in a shared vision and understanding of how to best apply existing data to support optimal, climate-smart, wetland management. Together, we will also identify key knowledge gaps at both local and landscape scales for

shorebird conservation and management and define strategies to coordinate climate-smart wetland management more broadly across the CA LCC.

This work will include partners from the SFBJV and CVJV, as well as at the US Fish and Wildlife Service's Sacramento National Wildlife Refuge Complex, the Grasslands Water District and other USFWS and California Department of Fish and Wildlife wetland managers throughout the Central Valley. We will also work with other entities conducting evaluations of waterbirds in the Central Valley as part of CA LCC funding including USGS, Ducks Unlimited, and University of California-Davis.

Work Summary

Conducting workshops separately with CVJV and SFBJV partners, we will jointly evaluate the capacity of the shorebird monitoring program, habitat availability and association modeling framework, and data summary applications to (1) inform shorebird population objectives and over time assess whether progress is being made towards those objectives, (2) identify the impacts of habitat management and conservation actions on shorebird populations, and (3) result in climate management decisions. This will include a discussion of how the resources we have developed in conjunction with the monitoring program could be used most effectively by the JVs and specifically for their implementation plan revisions.

We will also share our data products with wetland managers more broadly across the Central Valley. We will organize two workshops (one in Sacramento Valley and one in San Joaquin Valley) of wetland habitat managers in the Central Valley (e.g. Grasslands Water District, FWS Refuge Managers, DFW Wildlife Area Managers) to present our CA LCC shorebird and habitat data products and develop a list of ways in which these products (or some extension of them) can be accessible most effectively for managers. We will include our current partners from the Sacramento National Wildlife Refuge complex and seek a broader audience of wetland managers from throughout the Central Valley to better understand knowledge gaps and decisions that could benefit from these data. These workshops will inform refinements to our existing decision support tools and development of new decision support applications that wetland managers will use.

Matt Reiter, PhD and Catherine Hickey, MSc of PRBO Conservation Science will lead this work. Matt has been the Principal Investigator on this project since its initiation in 2010. Matt and Catherine serve on the Shorebird/Waterbird Technical Subcommittee for the CVJV. Catherine Hickey is a Conservation Director with extensive experience developing partnerships and working closely with resource managers. Catherine is on the board of the CVJV, and serves on the US Shorebird Conservation Plan Council and the U.S. North American Bird Conservation Initiative Committee.

Products will include (1) four workshops; (2) a written assessment (~5 pages), based on the outcomes of the two JV workshops, of the current shorebird monitoring program and related products' effectiveness to meet CVJV and SFBJV tracking needs, including recommended improvements to design, implementation, and data dissemination to maximize usefulness for the JVs; (2) a list of decisions that face wetland habitat managers in the Central Valley and the tools needed to make those decisions; and (3) a summary of recommended improvements to existing data summary applications and the most effective ways to disseminate our data products to make them useful for an individual wetland manager's decisions and facilitate more coordinated landscape-scale management decisions.

Workshops: Fall 2013 – Winter 2014

Final products: May 31, 2014

Budget

California Landscape Conservation Cooperative 2013 Budget

Budget Categories	CA LCC Request	Partner(s) Contribution(s) (monetary)	Partner(s) Contribution(s) (non-monetary value/in-kind)	**Total**
Salaries	$ 16,693.00	$ 3,280.00		$ 19,973.00
Supplies	$ -			$ -
Overhead	$ 6,367.00	$ 1,305.00		$ 7,672.00
Equipment	$ -			$ -
Other (travel and food)	$ 1,500.00	$ 450.00		$ 1,950.00
Total	$ 24,560.00	$ 5,035.00		$ 29,595.00