

Conservation objectives to eliminate food shortages for migrating and wintering shorebirds in California's Central Valley

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Central Valley wetlands and flooded agriculture are of international importance to shorebirds, hosting over 500,000 migrating and wintering shorebirds each year. Historically, there was 10 times the current amount of flooded habitat, and the Central Valley likely supported more than double the current number of shorebirds. Increasing the amount of available habitat would benefit shorebird conservation well beyond the Central Valley, and provide benefits to the people of the Central Valley.

We worked with Central Valley Joint Venture partners to estimate how much food is needed to meet the long-term goal of supporting double the current number of shorebirds. We then compared this amount to the amount of food currently provided by managed wetlands and flooded agricultural fields, particularly post-harvest rice and corn. We accounted for the variable timing of flooding and depths in wetlands and agricultural fields, the average amount of food available per

acre of flooded habitat, and the amount of food left over from the previous day – if any.

At current population sizes, we identified a food supply shortage during the fall (Aug-Sept) when relatively little flooded habitat is typically available. If shorebird population sizes were doubled, the fall food shortage would increase and there would also be a substantial shortage during the spring (mid-Mar through Apr), after flooded agricultural fields and seasonal wetlands are typically drawn down.

Meeting the Central Valley Joint Venture's long-term goal would require eliminating food shortages by creating an extensive amount of additional flooded wetland habitat during the fall (53,370 acres) and spring (115,942 acres). Alternatively, changes in extent, timing, and depth of flooded habitats could greatly influence the shorebird food supply and reduce the number of acres needed. Our model provides an effective way of examining the potential outcomes of changes in wetland and agricultural flooding practices in this complex system.

Main Points

Together with Central Valley Joint Venture partners, we defined a long-term goal of supporting double the number of shorebirds that use the Central Valley.

We estimated the average amount of food provided by managed wetlands and flooded agriculture, and we found that meeting our goal would require more shorebird habitat during the fall and spring.

Changes to the amount, timing, and depth of Central Valley flooded habitats can increase the number of wintering and migrating shorebirds the Central Valley can support.

Dybala KE, Reiter ME, Hickey CM, Shuford WD, Strum KM, Yarris GS. 2017. [A Bioenergetics Approach to Setting Conservation Objectives for Non-Breeding Shorebirds in California's Central Valley](#). San Francisco Estuary and Watershed Science 15(1).