

Local and landscape habitat associations of shorebirds in wetlands of the Sacramento Valley of California

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The Sacramento Valley of California is a site of international importance for shorebirds despite having lost more than 90% of its historic wetlands. To maximize the value of conservation investments to restore and manage wetlands, a better understanding of the factors influencing shorebird use of wetlands is needed.

We evaluated factors influencing abundance and species richness of shorebirds using wetlands in the Sacramento National Wildlife Refuge Complex in early winter between 2000 and 2009. We studied which types of wetlands shorebirds used the most, including seasonally flooded marsh, permanent wetlands, vernal pools, and unmanaged wetlands. We also assessed how the size and management of the wetland as well as where the wetland was located on the landscape relative to other flooded areas and urban development affected shorebird use.

We found that seasonally flooded marsh was more important relative to other wetland types for the abundance of shorebirds and the number of different shorebird species. We also found that seasonally flooded wetlands should be larger than 40 ha and have topographical variation, specifically gradual transitions from wetland to upland rather than hard edges to wetlands defined by levees, to maximize use by shorebirds. Currently, on average, only 12% of managed wetlands in the Sacramento Valley are larger than 40 ha.

When 15-45% of the surrounding landscape was flooded within 10-km, shorebirds were most abundant on refuge wetlands. Using this information we identified a large region (350,000 ha) in the Sacramento Valley that could be managed in a way that would elicit a high shorebird response if a wetland were restored there. Only 6% of this region is permanently protected for conservation.

We identified opportunities to improve wetland management and to maximize the benefits of conservation investments for shorebirds in the Sacramento Valley. These results could also help determine optimal areas to incentivize flooded agriculture in the region surrounding wetlands to benefit shorebirds.

Main Points

Shorebirds were most abundant in seasonally flooded marshes.

Wetlands larger than 40 ha support more shorebirds and shorebird species.

More topographical variation within a wetland increases shorebird use.

Wetlands located within a landscape that is 15-45% flooded will have more shorebirds.

M.E. Reiter, M.A. Wolder, J.E. Isola, D. Jongsomjit, C.M. Hickey, M. Carpenter, J.G. Silveira. 2015. Local and landscape habitat associations of shorebirds in wetlands of the Sacramento Valley of California. *Journal of Fish and Wildlife Management* 6:29-43.