

Shorebirds seek stability in highly modified and a dynamic water landscape

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In the annual cycle of a migratory shorebird, survival and successful reproduction depend on adequate food and habitat at wintering areas to prepare for migrating and breeding. Unfortunately, interior wintering areas in the western United States are largely degraded, and freshwater availability is often limited by climatic variation and human use.



Figure 1. Attaching a VHF radio tag to a long-billed dowitcher (top). Flooded wetlands and rice fields in the Sacramento Valley (bottom).

In this study, Point Blue collaborated with The Nature Conservancy and Duke

University to assess the impact of variable wetland habitat availability and connectivity for shorebirds in the highly managed water landscape of California's Central Valley, where hundreds of thousands of migratory shorebirds occur each year. We assessed surface water availability using satellite imagery and we measured connectivity by tracking movements of radio-tagged shorebirds using airplanes.

We found that shorebirds moved longer distances when freshwater habitat availability declined and became less connected. Notably, shorebirds wintering in the Sacramento Valley, a region with a widespread but dynamic water landscape, moved longer distances and had lower residency rates from winter to early spring than those in the San Joaquin Valley, which had a smaller but more stable water landscape.

Our findings suggest that shorebirds will benefit from

Main Points

Shorebirds moved longer distances when freshwater habitat was less available and less connected.

When freshwater habitat availability declined rapidly, shorebirds moved to more stable areas or departed the Central Valley entirely.

Efficient and effective use of freshwater for flooding wetlands and agricultural lands in the Central Valley will be managed to maintain flooding into March and April.

conservation efforts to mitigate the rapid decline in flooded habitat from February to April. Fewer long movements prior to northward migration and reproduction, when shorebirds have increased energy needs, will reduce energy use and risk of injury or predation.

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[Barbaree BA, Reiter ME, Hickey CM, Elliot NK, Schaffer-Smith D, Reynold MD, Page GW \(2018\) Dynamic surface water distributions influence wetland connectivity in a highly modified interior landscape. *Landscape Ecology* 33\(5\):829-844](#)