

Incentive Programs Provide Critical Support for Waterbird Habitat During Extreme Drought

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The Central Valley is recognized as a region of hemispheric importance for waterbirds, which rely on highly managed water in flooded agriculture and wetlands as habitat. Between 2013 and 2015, California sustained an extreme drought. Key to effective water management and waterbird conservation is to understand the impact of the drought on waterbird habitat availability.

Incentive programs that pay landowners to provide wildlife habitat are a global conservation strategy. In the Central Valley, The Nature Conservancy's BirdReturns Program and the Natural Resources Conservation Service's Waterbird Habitat Enhancement Program (WHEP) create wetland habitat in agricultural fields for waterbirds. The amount of habitat these programs contribute, particularly during extreme drought, has not been evaluated.

We used satellite data to evaluate the impact of the 2013–2015 drought on

waterbird habitat in the Central Valley and to measure the amount of habitat created by incentive programs.

The 2013-2015 drought had severe impacts on habitat available to birds. We found up to 80% declines in post-harvest flooded agriculture and 60% open water declines in managed wetlands compared to non-drought years. Crops associated with the San Joaquin Basin, specifically corn, as well as wetlands there had larger reductions in open water than rice and wetlands in the Sacramento Valley.

Our analysis showed that incentive programs created a large portion of the open water in post-harvest rice during the drought. BirdReturns provided 39% of the post-harvest flooded rice during the fall, when flooded habitat is at its lowest and waterbirds are in high abundance, and WHEP created 64% of the habitat during the winter. Overall, incentive programs provided 35% of the habitat on the landscape October through March.

Main Points

The 2013-2015 drought in the Central Valley was more severe than drought years during 2000-2011 and reduced waterbird habitat in agriculture and wetlands by 30-80%.

Seasonal wetlands and agriculture had larger declines in the San Joaquin Basin compared to Sacramento Valley.

Incentive programs provided 35% of the habitat on the landscape during the drought and up to 100% of the habitat on some days.

Incentive programs can help sustain waterbird populations in the face of increasing frequency and severity of drought.

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