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New Research: Financial incentives create critical waterbird habitat in extreme drought

Recent drought caused severe impacts on Central Valley wildlife and habitat

Projections by climate scientists suggest that severe droughts may become more frequent over the next century, with significant impacts to wildlife habitat. Fortunately, new research from scientists at Point Blue Conservation Science and The Nature Conservancy shows how financial incentive programs can create vital habitat for waterbirds, filling a critical need in drought years.

Between 2013 and 2015, the Central Valley of California sustained an extreme drought, dramatically reducing wildlife habitat. The area is recognized as of hemispheric importance for waterbirds, which use flooded agricultural land and wetlands as habitat. Under two innovative financial assistance programs, farmers are provided with an incentive payment to flood their fields at key moments to create habitat for waterbirds. Until this research, the landscape effects of these incentive programs had not been rigorously studied.

Point Blue and The Nature Conservancy researchers used satellite images to evaluate two issues: 1) the impact of the 2013-2015 drought on waterbird habitat in the Central Valley; and, 2) the amount of habitat created by incentive programs.

“Before this research was completed, we had a sense that these programs were succeeding in offsetting the impacts of the drought on wildlife, but now we know exactly how critical they are in providing bird habitat in the Central Valley,” said Dr. Matt Reiter, Principal Scientist and Quantitative Ecologist at Point Blue and lead author of the study. “Program managers should place a high priority on maintaining these incentive programs in the face of more frequent severe droughts in order to sustain waterbirds in the Central Valley and the Pacific Flyway,” he added.

Data analysis showed that there were declines of up to 80% in the amount of open water on post-harvest agricultural fields and declines of up to 60% in managed wetlands, in comparison with non-drought years. Crops associated with the San Joaquin Basin, specifically corn, as well as wetlands in that basin showed larger reductions in open water than rice and wetlands in the Sacramento Valley. Overall, the satellite data showed that the 2013-2015 drought in the Central Valley was more severe than previous drought years between 2000 and 2011.

Looking at the amount of habitat created by incentive programs, researchers found that a large portion of the open water in rice fields during key times of the year that are critical to waterbirds could be attributed to the programs. BirdReturns, a program paid for and administered by The Nature Conservancy, provided up to 61% of all available flooded rice habitat on some days during the fall of the drought years studied. The Waterbird Habitat Enhancement Program, administered by



the Natural Resources Conservation Service (NRCS), created up to 100% of available habitat on some days during the winter and on average, created 64% of available habitat.

“As we experience these wild swings between droughts and flooding, we know we need to be more agile from year to year as conditions change. Critical to that dynamic conservation is understanding what works and what doesn’t and having the data to adjust on the fly,” said Dr. Mark Reynolds, Lead Scientist, Migratory Bird Program, The Nature Conservancy. “It’s incredibly rewarding to know these programs made a significant impact to these bird populations during these extreme drought years. It gives us a blueprint for what to do when we encounter another drought.”

“NRCS has been administering our waterbird habitat incentive program for 8 years and it’s great to have strong supporting data now on how well it’s working,” said Alan Forkey, Assistant State Conservationist for NRCS. “Learning that, during drought years in winter, on average over 60% of the available bird habitat was provided by Farm Bill conservation programs makes it clear that we are achieving the desired benefits.”

The article, “Impact of extreme drought and incentive programs on flooded agriculture and wetlands in California’s Central Valley” was published on June 29th in the peer-reviewed journal *PeerJ* (DOI 10.7717; <https://peerj.com/articles/5147/>).

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About Point Blue Conservation Science:

Point Blue advances conservation of birds, other wildlife and ecosystems through science, partnerships, and outreach. Our highest priority is to reduce the impacts of habitat loss, climate change, and other environmental threats while promoting nature-based solutions for wildlife and people, on land and at sea. Visit Point Blue at www.pointblue.org.