

# Rice field management to increase habitat value for waterbirds

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Habitat loss is one of the primary threats to wildlife worldwide. For waterbirds, habitat has been lost as wetlands have been converted to agriculture, floodplains have been disconnected from rivers, and waterways have been dredged or filled. What remains of waterbird habitat is vulnerable to climate change, as warming temperatures and increasing demands by people reduce water availability.

Rice agriculture provides important alternative flooded habitat for waterbirds in many regions globally. In the Sacramento Valley of California, rice provides 85% of the habitat available to wintering waterbirds.

Many rice farmers put water on their fields in winter to decompose rice straw residue using several methods. In a recent study by Point Blue and Audubon California, we compared waterbird density and water depths of Sacramento Valley rice fields in four rice field flooding treatments: (1) Maintenance flooding - fields are flooded and maintained at a specific depth with additional water applied as needed; (2) One-time flooding - fields are flooded and thereafter receive no additional water other than rainfall; (3) Boards-in - fields are not intentionally flooded but have boards placed in water control structures to capture

rainfall; (4) Boards-out - fields are not intentionally flooded and do not have boards replaced into water control structures.

Densities of waterbirds were higher in the flooded treatments compared to non-flooded treatments. One-time flooding provided the most suitable water depths for long-legged waders and shorebirds while maintenance flooding provided the most suitable water depths for dabbling ducks. The maintenance flooding treatment decreased in the potential to provide suitable water depths for dabbling ducks at the end of the study period, yet increased in the potential to provide habitat for long-legged waders and shorebirds. The one-time flooding treatment sustained and increased potential habitat for all three waterbird guilds over the study period.

Existing partnerships between the rice industry, rice growers, the USDA Natural Resources Conservation Service (NRCS), and other stakeholders will help evaluate and guide the implementation of these findings through public or private conservation programs such as the NRCS Waterbird Habitat Enhancement Program. An integrated approach to winter rice field management will continue to provide agronomic benefits to farmers, recreational opportunities to the

public, and habitat for waterbirds; a win-win for birds and farmers in the face of climate change.

## Main Points

Partnerships are important when developing creative solutions for maintaining waterbird habitat in a highly managed landscape.

The practice of winter flooding of rice fields provides important alternative waterbird habitat.

A combination of winter flooding practices provides valuable habitat to multiple waterbird groups.

Strum, K.M., M.E. Reiter, C.A. Hartman, M.N. Iglecia, T.R. Kelsey, C.M. Hickey. 2013. [Winter management of California's rice fields to maximize waterbird habitat and minimize water use](#). *Agriculture, Ecosystems and Environment* 179:116-124.

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