



# California Ricelands Salmon Project

California Rice Helping Salmon  
in the Sacramento Valley

Rice farmers and fish biologists working together to help struggling salmon populations by developing strategies to raise juvenile salmon in winter-flooded rice fields.



## Historical Salmon Ecology

Before the landscape of the Sacramento Valley was forever altered to pave the way for farming and cities, juvenile salmon used the floodplain extensively to help them thrive and successfully find their way to the ocean. This was due to a floodplain environment with abundant food resources (zooplankton), outstanding habitat and relatively few predators.

Life was good for fish before these significant land use changes emerged at a time when society did not yet fully appreciate salmon's reliance on the ecology of the floodplain.



Seasonal floodplain inundation.

## Altered Salmon Ecology

The major landscape change that impacted the natural ecology of Sacramento Valley salmon was the physical containment of the Sacramento River within a system of levees. This divorced young salmon from floodplains, forcing them to remain in the mainstem of the Sacramento River. Contrary to what many people may assume, the river has relatively low levels of food for these small fish. They also are forced to deal with high stream velocities and a river populated with sizable fish predators.

Just because the natural ecosystem has been altered doesn't mean we can't develop a strategy, under highly managed conditions, to restore some of those ecological benefits. That is the very journey California rice is taking in its efforts to optimize rice fields as habitat for these fish through the innovative work of the California Ricelands Salmon Project.

**Upper left:** Sample of floodplain water literally "alive" with fish food.

**Bottom left:** Typical views of the river separated from the floodplain by levees.



## Discovering New Approaches (2018-2020)

The Natural Resources Conservation Service (NRCS) and donor sponsors (noted on back panel) joined the California Rice Commission (CRC) to implement a key project (Phase I) to accomplish the following:

- Evaluate the survivorship of salmon raised in winter-flooded rice fields out to the ocean
- Evaluate the performance of various farm practices for salmon-rearing

To accomplish these objectives, the project team implemented the following activities:

- Worked with about 40,000 hatchery fish over two field seasons
- Prepared special test fields with four different types of fish habitat management
- Monitored salmon in the modified fields and assessed their growth rates
- Radio-tagged nearly 2,000 fish to track their journeys to the ocean



One of the rice field sites where salmon rearing is being tested.



Top: Rice field-reared salmon from our study fields being released into the Sacramento River.

Bottom: UC Davis Research Team measuring and tagging juvenile salmon as part of our field testing.

## Innovation in Action (2021-2024)

The NRCS and other project sponsors are joining CRC again for Phase II of this innovative work to accomplish the following:

- Implement the new habitat practice on full-size, working rice farms
- Implement strategies to provide volitional passage of salmon onto project fields during flood events and enable their safe return to the river through special fish-friendly field drainage features
- Assess in-field predation and survival
- Assess survival of rice field-reared fish to the ocean
- Perform modeling work to evaluate potential population benefits
- Perform regional monitoring of tagged hatchery and wild salmon to better understand overall their riceland habitat use

# Partnership is the Key

The California Rice Commission acknowledges the valuable project sponsors, scientists, agencies and growers who are all contributing to make this work a reality.

## Scientific Researchers

UC Davis Center for Watershed Science  
UC Davis Dept of Wildlife, Fish & Conservation Biology  
California Trout

## Collaborating Agencies

California Dept of Water Resources  
National Marine Fisheries Service  
U.S. Fish and Wildlife Service

## Major Sponsors



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## Current Project Sponsors

Agriscience  
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Corteva  
Grow West  
Lundberg Family Farms  
Northern California Water Association  
The Nigiri Project

## Phase I Sponsors

Almond Board of California  
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River Garden Farms  
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Please visit [Salmon.Calrice.org](https://salmon.calrice.org) to learn more!

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