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Can flooded rice fields be a solution in California water war?

By Tara Duggan

California is the country's second-largest rice producer, after Arkansas, and the $5 billion crop is particularly well suited to the Sacramento Valley's clay soil.

But that does little to ease the frustration fishers and ecologists feel as native salmon populations plunge because of warming water temperatures in the Sacramento River. The situation has driven environmental groups like the Natural Resources Defense Council to sue the U.S. Bureau of Reclamation for giving too much water to rice farms — and not saving enough for salmon.

Although seeing thousands of acres of rice fields covered shin-deep in water might seem wasteful to some, not everyone sees it that way.

Still, you could say that fisheries biologist Jacob Katz is swimming upstream in his opinion that rice farms and wildlife can, and should, coexist. In fact, to hear Katz tell it, rice farming could be California's salvation, its last opportunity to restore the Central Valley watershed as close as possible to its origins.

"You can really finally break the logjam of this mentality of conflict of fish or farms. That's why rice is really remarkable," says Katz. "Rice fields can be surrogate wetlands for fish and birds."

There's no doubt that rice is a thirsty crop. The state's half million-plus acres of rice farms are the fourth-largest consumer of irrigated water after alfalfa, pastureland and pistachios/almonds (a combined category), according to the Pacific Institute, based on the most recently available data from 2010. In recent years, rice farmers have cut back planting because of reduced water allotments, although senior water-rights holders received 100 percent of their usual allotment this spring.

Katz works closely with these stakeholders — the rice farms, irrigation districts and state and federal agencies — as the Central Valley director of California Trout, a nonprofit that works to restore habitat for steelhead trout and salmon. He also heads up the Nigiri Project, named for the Japanese sushi dish that combines rice and fish. The five-year

Photo: Scott Strazzante, The Chronicle

Jacob Katz, California Trout senior scientist, walks on a check between rice fields in Woodland, (Yolo County).

experiment brings baby salmon into flooded rice fields during winter to feast on insects until they're fat and strong enough to migrate down the Sacramento River to the San Francisco Bay and, finally, the ocean, where they spend several years maturing.

The experiment has achieved the state's fastest growth rates ever recorded for juvenile salmon. In theory, these "floodplain fatties," as they're dubbed, are much more likely to survive the harrowing journey to adulthood. But Katz's vision goes beyond this one project; he has his eye on reforming the state's water infrastructure altogether, as he explains in "No Going Back," a short film about the project that will be released later this summer.

"This is a story about California," he says in the film's opening, with preacherly passion and a dusty cowboy hat. "California is all about water: Water that flows through one of the most productive agricultural valleys on earth. This is a story about fish, water and people."

And, lest we forget, it's about rice.

Though it can be seen as contrarian, Katz's point of view on rice's role in California's water crisis stems from how things were before the Gold Rush. As Jeffrey Mount, founder of the Center for Watershed Sciences at UC Davis, explains in the film, spring snowmelt would flow down the Sierra and into the river and surrounding floodplain, covering an area 400 miles long and 30 miles wide.

Photo: Liz Hafalia, The Chronicle

Black Fox Koshihikari rice from Robbins Rice Co. The company is part of the Nigiri Project, hosting juvenile salmon in its fields during wintertime flooding.

Photo: Scott Strazzante, The Chronicle | Rice field in Woodland (Yolo County).

The Central Valley was covered in wetlands. The sky was dark with the waterfowl that feasted on the baby salmon that gulped down the insects that ate the plants that grew in the shallow, sunlit water.

But you can't grow crops in an uncontrolled floodplain, so the state channeled the water into central levies and irrigation canals, leading to the loss of an estimated 95 percent of the original wetlands.

In the levies, the water is deep and fast moving — too cold and dark to grow the plants and insects that nurture wild bird and fish populations. The wild geese and ducks — estimated in the tens of millions — that once stopped in the Central Valley along the Pacific flyway dropped. More and more dams were built on smaller tributaries, disrupting salmon's migratory pathways.

"When we levied the system, we made this great compromise where wildlife abundance was replaced by agricultural abundance," says Katz. "It doesn't have to be that way."

Things changed in the 1990s. Before then, rice farmers flooded their fields during the growing season, from spring to fall. After draining the fields for harvest, they burned the leftover plant stubble to prepare the ground for the next growing cycle. But that caused air-quality issues, so the practice was outlawed.

To make the stubble rot away instead, many farmers began to flood their fields again in winter, during bird migration. Along with established wildlife refuges, the fields provided habitat to the birds.

"We're seeing all-time high duck and geese populations compared to the '70s, when there were all-time lows," says Katz. (However, many of the wildlife refuges, which depend on irrigation, are also struggling during the drought.)

While the birds have no trouble reaching the flooded fields, native fish are limited by barriers in waterways. That's why the Nigiri Project trucks baby salmon onto rice fields, at least until Katz achieves his dream of changing the levee system to make the fields fish-accessible. After expanding to seven locations on 300 to 400 acres, the goal is to eventually bring juvenile salmon to tens of thousands of acres.

Photo: Liz Hafalia, The Chronicle

Jacob Katz, California Trout senior scientist, opens a screw gate at rice fields in Woodland (Yolo County).

Katz's plan — rice farms and the ecosystem co-existing in harmony — may be admirable, but there's a major problem:

The baby salmon are dying before they can even make it to the rice fields.

"If the fish don't get out of egg stage, or there isn't enough water in the habitat to get them where the floodplain is, (then) providing habitat to the fish is not a benefit," says Jonathan Rosenfield, conservation biologist at the Bay Institute, a watershed conservation organization.

After reports came out in October that 95 percent of young winter-run baby Chinook salmon died because of warm river conditions, for the second year in a row, the Bay Institute joined the Natural Resources Defense Council in its lawsuit against the U.S. Bureau of Reclamation over agriculture water allotments.

"Every good thing has its limits. Not denying the benefits that rice currently has to waterfowl and wildlife, there's simply not enough water to grow all that rice," Rosenfield says.

Katz, for his part, agrees that rice farmers need to be judicious about water use, but he points out that much of the water soaks back into the landscape and recharges the depleted aquifers. Katz argues that this rice runoff actually plays a valuable role during drought.

"I've always felt that agriculture, instead of being seen as the villain, needs to be seen as a big part of the solution," Katz says. "It's not about separating managed lands from the wild. It's about incorporating the wild into our managed places."

In the meantime, Katz, fishing waders at the ready, will keep his sights trained both on the Central Valley's wildlife and its managed places, at least until the waters run dry.

Tara Duggan is a San Francisco Chronicle staff writer. Email: tduggan@sfchronicle.com Twitter: @taraduggan

Jacob Katz
Central California Program Director
jkatz@caltrout.org

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