



California is still at risk of flooding. Maybe rivers just need some space.

BY Lauren Sommer
May 28, 2023

With much of California's massive snowpack yet to melt, downstream communities remain on high alert for flooding. Hundreds of homes were destroyed or damaged during the record-breaking winter, which tested the state's aging flood infrastructure.

Communities are looking for ways to protect themselves from future floods, and some are using a novel solution: just giving rivers some space to flow.

Building homes on the waterfront comes with a long-term arms race: levees must be built and maintained over time to hold back floodwaters. With climate change making storms more intense, many levees will need to be raised or improved.

Now, a growing number of projects are trying to work with nature, instead of trying to contain it. Levees are being removed and moved back, creating natural floodplains that are designed to fill with water when rivers run high. The idea is to take pressure off downstream levees by giving water somewhere to go farther upstream.

Floodplain restorations also create much-needed wildlife habitat. But buying out and relocating landowners, whether farmers or homeowners, can be challenging. Getting necessary permits can take years, because most flood regulations are written to keep levees in place forever.

"We have to find ways to do this more efficiently," says Julie Rentner, president of River Partners, a river restoration non-profit. "It's not ok for it to take 25 years to undo the paperwork that we put in place a generation ago."



(Above) The melt of California's massive snowpack has led to chronic flooding in the Central Valley this spring, like this riverfront park near the town of Grayson. *Lauren Sommer/NPR*

Farmworker communities at risk

When heavy floods hit the farmworker communities of Pajaro and Planada this winter, John Mataka watched it closely.

He knew it could easily have been his town, Grayson, California. It's also a lower-income, farmworker community located next to a river in the Central Valley. After decades of underinvestment in their infrastructure, residents felt vulnerable.

"It's not just farmworkers and people that don't speak English living in these communities," says Mataka, a Grayson resident. "We're people. We're human. We've got needs."

As California's snowpack has melted, swelling the San Joaquin River, roads into town have been shut down due to flooding.



Mataka's neighbors watched nervously as the river overtopped its banks, edging closer to houses and staying high for weeks.

But even as the water rose, Mataka felt less worried than he had in the past because of a \$46 million dollar project completed nearby.

"I believe that it saved our community from some drastic flooding this year," he says.

Giving the river room

Just a few miles upstream from Grayson, hundreds of acres of land are covered in water, submerging the trunks of willow and cottonwood trees.

"We love to see the floodwater on our property," says Jon Carlon, co-founder of River Partners, as he looks across the water from an aluminum boat.

This land is designed to flood. About a decade ago, it was mostly fields of tomatoes, melons and wheat. But being at the confluences of two rivers, the property was prone to being damaged when the river ran high. River Partners struck a deal to buy the land, using state and federal grants.

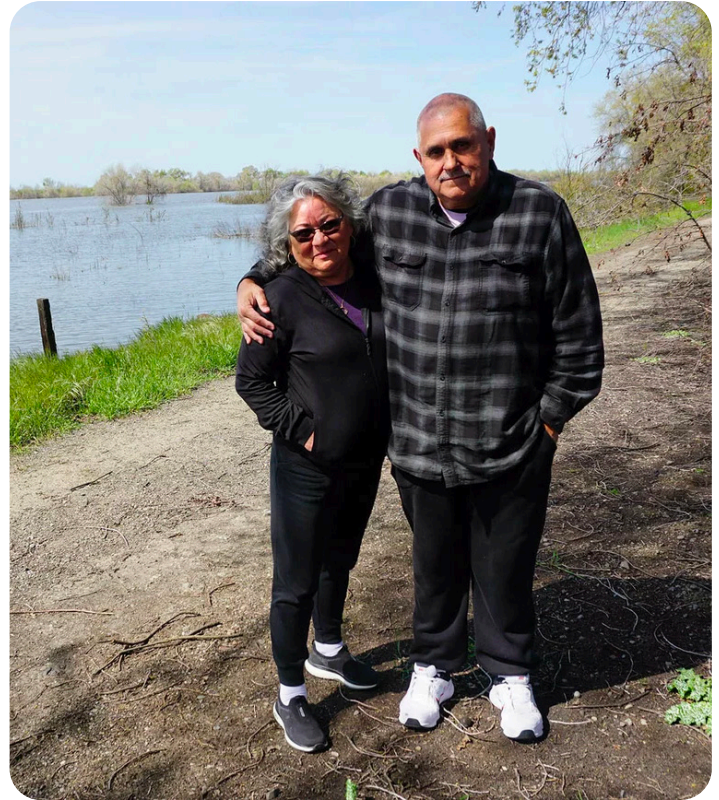
"We had a very successful ranching and farming operation here, but there was always that element of risk," says Bill Lyons, the former landowner.

Over the years, River Partners removed earthen berms that were holding back the river. Around 1,600 acres were restored to wildlife habitat, planted with native California trees and grasses, creating the Dos Rios Ranch Preserve. The ground is dry most of the year, but when heavy winters arrive, the river is free to spread across the floodplain.



(Above) John Carlon of River Partners says restoring floodplains can help take pressure off downstream levees by storing floodwaters, as well as providing much-needed wildlife habitat.

Lauren Sommer/NPR



(Above) Grayson residents Lilia Lomeli-Gil and John Mataka stand next to a restored floodplain at the edge of town, providing a new open space for the community.

Lauren Sommer/NPR

"We're looking back in time," Carlon says. "We're looking at what this river looked like 100 years ago."

This watery habitat is rare in California. Before the era of dam-building, the state's rivers would seasonally flood every year as the snow melted in the Sierra Nevada, creating a vital refuge for birds and fish. Development has destroyed 95% of the riparian habitat in the Central Valley. The San Joaquin River is so heavily tapped by cities and agriculture that in many years, it runs completely dry.

The Dos Rios Ranch Preserve is now being proposed as California's next state park. Today, the surrounding area has few parks and recreation areas available for residents.

"Having a refuge, an outlet, somewhere where you can go back to basics - that's what we should strive for," says Lilia Lomeli-Gil, a Grayson resident. "I think what's happening here is a major contribution to that balance."

Floodplains as flood protection

As the river spreads out and slows down in the floodplain, water experts say it can help absorb a major pulse of floodwater,



potentially reducing the risk for communities downstream.

“All this water flows past populated areas,” Carlon says. “So you’re taking that pressure off those downstream communities by moving the levees back up here.”

Floodplains can also be more adaptable to climate change, since they can handle varying levels of water. Levees are designed to handle only a certain amount of flow. Carlon says traditional concrete infrastructure is often in conflict with the way rivers naturally behave.

“Rivers move and that’s a really hard concept for us with property rights and roads and infrastructure,” Carlon says.

Wide floodplains also allow water to seep into the ground, filling up underground aquifers. Many aquifers in the Central Valley are at the lowest levels ever recorded, after being heavily pumped for agriculture for decades.

Regulations are for levees to stay put, not move

Projects to move levees back - “levee setbacks,” as they’re known - are being done around the country, including on the Missouri River and elsewhere in California. But they can often take more than a decade, given the complexities of buying land and securing the permits.

In urban areas, residents often don’t want to be displaced or bought out. Rural areas often have larger parcels where it’s easier to piece together the necessary land. But taking agricultural fields out of production also can face pushback.

“We have low-hanging fruit where we haven’t yet urbanized the floodplain,” says Rentner of River Partners. “Those are the spots we really need to prioritize moving on right away.”

Historically, it’s been hard for levee setback projects to get federal support from the U.S. Army Corps of Engineers, the agency responsible for levees and flood protection. The agency evaluates projects using a cost-benefit analysis - so if the rural land being protected isn’t worth as much, it doesn’t justify the cost of constructing the project.

The Biden Administration has been pushing agencies to consider “engineering with nature.” The Army Corps and others are now looking at how to include social and environmental benefits in their analysis, in addition to simply the cost of moving levees.



(Above) Moving levees and creating floodplains can more than a decade, since securing the land and permitting can be challenging. *Lauren Sommer/NPR*

“They’ve been hard to justify from an economic standpoint in the past,” says Beth Salyers, deputy district engineer with the U.S. Army Corps of Engineers Sacramento District. “I think we are seeing some positive changes when it comes to our ability from the federal level and the national level to do these types of projects where we have setback levees.”

Still, sorting out federal, state and local permits can take years, since most regulations were written to ensure the levees were preserved for the long-term.

“When we engineered these levees back in the 1950s and 60s, nobody was thinking about how you undo the levee,” Rentner says.

With the damage from the winter storms, California is facing a new urgency to invest in its flood infrastructure. In the Central Valley alone, a new state flood protection plan puts the cost between \$25 and \$30 billion dollars over the next 30 years. California officials say floodplain restoration should be a piece of the puzzle.

“We should think bigger, because it’s working,” Rentner says. “Maybe it’s not so ambitious to imagine that we could scale this tremendously, to the point that it actually makes a really big difference in the way California manages its water.”

