

Four years after California's largest dam removal project, how are the fish doing?

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Four years ago, construction crews with huge jackhammers tore apart a 10-story concrete dam in the wooded canyons of the Carmel River, between the Big Sur hills and the beach front town of Carmel.

The destruction of the San Clemente Dam, which had blocked the river since 1921, remains the largest dam removal project in California history. It's still early, but one of the main goals of the project seems to be on track: The river is becoming wilder, and struggling [fish populations](#) are rebounding.

"We don't want to do the touchdown dance yet, but so far things are looking good," said Tommy Williams, a biologist with the National Oceanic and Atmospheric Administration, who has monitored the Carmel River's recovery. "It's just amazing how fast these systems come back. Everything is playing out like we thought."

Removal of the century-old dam is being watched closely around the country as a potential model for how to demolish other aging, dangerous and obsolete dams and restore rivers to a natural state not seen in generations.

The 106 foot-tall dam had been located 18 miles up river from Monterey Bay. In 2016, the first year after it was removed, researchers found that no [steelhead trout](#), an iconic type of rainbow trout listed as threatened under the Endangered Species Act, swam past its former site to a tagging location seven miles upriver. By 2017, seven steelhead had made the

trip. Last year, the count was 29. So far this year, 123 steelhead have traveled upriver.

"We're seeing progress. I'm surprised that it has been happening in such a short time," said Aman Gonzalez, who managed the dam removal project for California-American Water, the company that owned it.

The more of the muscular, silvery fish make it upstream, the more the species can expand back into its traditional range, scientists say, increasing the number of places where the fish can spawn and produce more babies in the years ahead.

The broader lesson, scientists say, is one of hope. Despite declines in other species, some [wildlife species](#)—from the Great Plains bison to Pacific gray whales to [bald eagles](#)—have rebounded significantly, despite plummeting close to extinction, after humans recognized what was killing them and corrected it. For bison and whales, it was hunting. For bald eagles, it was the now-banned chemical DDT.

For steelhead trout, dams built across the West over the past century blocked their ability to swim to the ocean and return upriver to spawn, crashing their populations.

"They just need the right conditions, and they'll come back," said David Boughton, a research ecologist with NOAA in Santa Cruz. "They are a resilient, hardy species."

When San Clemente Dam was built in 1921, the curved arch structure was a key source of water for growing Monterey Peninsula towns.

But its reservoir became silted up with sand and gravel that washed downriver over the years. By 2002, San Clemente's reservoir was so silted up that it stopped supplying water.

Worse, state inspectors declared in 1991 that the aging dam, with its rusted pipes, railings and valves, was at risk of failure in an earthquake—a disaster that could wipe out hundreds of homes downstream. So Cal Am Water had two choices: Shore up a useless dam for \$49 million, or tear it down and restore the river for \$84 million.

At first, the water company leaned toward buttressing the dam because it was cheaper. But the National Marine Fisheries Service said it was not likely to issue permits because the dam blocked the migration of steelhead, protected by the Endangered Species Act.

The impasse was broken after Cal Am named a new president, and former U.S. Rep. Sam Farr pushed for removal. Under the deal they struck, Cal Am provided \$49 million by raising water rates \$2.94 a month on its 110,000 customers in Monterey County. Another \$25 million came from the California Coastal Conservancy in Oakland, through state parks and water bonds. And the remaining \$10 million came from federal grants and private donations.

Construction crews couldn't simply dynamite the dam, however.

That would have released all of the sediment behind it—2.5 million cubic yards, or enough to fill 250,000 dump trucks—and killed everything in the river. It also could have flooded 1,500 homes downstream.

"All that sediment, how do you move it?" said Gonzalez. "Where do you move it? It would have become a 10-year project. That's why we decided to leave it in place."

Instead, under the contract awarded to Granite Construction of Watsonville, workers rerouted the Carmel River for half a mile into an adjacent stream, San Clemente Creek. The giant sediment pile was

shaped, compacted and blocked off.

Crews recycled the dam's steel. They broke the concrete pieces ranging in size from softballs to boulders. They buried the debris in the sediment pile and covered it with willows, sycamores and other native plants. They built rocky step-pools, each one foot higher than the previous one so the fish could migrate upriver more easily.

They also tore out the Old Carmel River Dam, a 32-foot-high structure half a mile downstream that was built in the 1880s to provide water for Hotel Del Monte, the resort that was the precursor to Pebble Beach.

When the rains came in the wet winter of 2017, the river moved millions of tons of sand, gravel, broken trees and other debris downriver. It reclaimed its historic meandering path. The debris created pools and hiding places for young fish to avoid snakes, birds and other predators.

Scientists say they will need another decade to make sure the experiment is working.

"If we go into another big drought, we expect there to be an impact," Williams said. "But we're making more resilient populations of fish, so they should be able to withstand it."

One more dam remains upriver from the San Clemente site. Los Padres Dam, built in 1946, is partially silted up and 148 feet high. Scientists are studying the feasibility of removing it. Cal Am draws its water now from wells alongside the river.

Other dam-removal projects, including four huge dams on the Klamath River at the Oregon-California border, along with the 165-foot Matilija Dam in Ventura County and others, are slated for removal. Many of the projects just need money.

At the Carmel River, though, other species, such as lampreys, an eel-like fish, are coming back, and tributaries are showing more wildlife.

"The river is recovering to its natural state," said Tim Frahm, Central Coast Steelhead coordinator with Trout Unlimited, an environmental group. "We hope it will be as healthy in a few years as it was 100 years ago."

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