

The goldfields: A tale of two legacies

Hydraulic mining was 'catastrophic' for the environment, but recent efforts have gone far toward restoring it

by Andrew Creasey acreasey@appealdemocrat.com | Updated 6 months ago

Recommended by [Outbrain](#)

Editor's Note: *This is another in an occasional series concerning the Yuba Goldfields. This part deals with environmental impacts.*

The Yuba Goldfields have a complicated environmental legacy.

Lining a 12-mile stretch of the lower Yuba River — home to some of the most important spawning habitat for salmon in the state — the Goldfields represent both environmental triumph and devastation.

The mounds of cobble and gravel were created by huge dredges that sifted through the million of cubic yards of soil and sediment that washed down from the Sierras during the height of Gold Rush. In many ways, the Goldfields are the graveyard of the Gold Rush — the bones that remain after the flesh was picked clean. It remains as the legacy of untold effects of mining activities on the Yuba River and its life forms.

"We're talking about impacts that date back to the 1860s — impacts that were really massive and catastrophic," said Gary Reedy, senior river scientist with the South Yuba River Citizens League. "There were huge impacts for spawning success and the destruction of riparian vegetation."

0417 Goldfields: The Yuba Goldfields is a warren of knobby gravel mounds. - Andrew Creasey/Appeal-Democrat



All of those consequences, and all of the factors that still challenge the restoration efforts on the Yuba River, can be tied back to the Gold Rush and hydraulic mining — two watershed moments that led to the dredging boom of the 20th century and the creation of the Yuba Goldfields.

A beginning and an end

Hydraulic mining was an environmental disaster, just about anyone agrees. Miners sent water down long channels running downhill, building up pressure before firing the water like a laser out of cannons to shear away whole hillsides and lay bare gold buried underneath.

The leftover soil and sediment accumulated in the mountains before a massive flood in the 1860s pushed it down to the valley floor, said Curt Aikens, general manager of the Yuba County Water Agency.

The deluge of soil wreaked havoc on the valley floor, raising the river levels and burying farmland beneath mud and sludge.

Similar conditions existed up and down the Sierras where hydraulic mining was practiced. But the Yuba River saw the worst, said Geoff Rabone, program manager for YCWA.

Between 1849 and 1909, almost 1.6 billion cubic yards of sediment washed down into the Central Valley from a number of rivers, including the Feather, American and Bear rivers. Almost 44 percent — 685 million cubic yards — washed down the Yuba River, Rabone said.

In a 1924 master's thesis for the University of California, Berkeley, G.E. Hanson described the impacts of a rising river of sediment on Rose Bar.

"As the river rose, sweeping its muddy water over the valley, the bar passed out of sight. In its stead was a long uneven bed of sand and cobble stones, interspersed with cast-off clothing of the miner or the detritus which he had caused," Hanson wrote. "Over this bed ran numerous streams of muddy yellow water, while buried underneath no less than 70 feet was the once-famous Rose Bar."

The impacts were so severe that on Jan. 7, 1884, Judge Lorenzo Sawyer brought hydraulic mining to an abrupt halt by prohibiting the discharge of debris in the Sierras.

Ironically, in light of the ecological damage still to come, it's been called one of the first environmental decisions to come from the federal courts.

While the trail that led to the Sawyer decision brought more than 2,000 witnesses with 20,000 pages of written testimony, the impacts those millions of cubic yards of material had on the environment was largely unknown.

"There were no fish biologists describing the impacts when massive amounts of sediment followed the Yuba River into the floodplain," Reedy said. "There is no good description of that."

A path to extinction

Historical accounts of the spring-run Chinook salmon population in the Yuba River prior to the impacts of gold mining indicate large numbers of the fish were taken by miners and Native Americans as far upstream as Downieville on the North Yuba River, according to the Central Valley Recovery Plan from the National Marine Fisheries Service.

"During the construction of the original Bullards Bar Dam (1921-1924), the number of salmon that congregated and died below the dam was so large, the salmon had to be burned," the NMFS report stated.

But issues with hydraulic mining sediment washing down from the mountains persisted into the 20th century, eventually leading to the construction of Englebright Dam in 1941, Rabone said.

The 260-foot-tall structure effectively stopped the sediment from reaching the valley floor, but it also completely blocked access to the cool waters of the upper reaches of the Yuba River that salmon and steelhead used to spawn.

Cut off from cold water and trapped in the lower Yuba River, salmon and steelhead began to decline.

With no way to store cold water upstream of Englebright Dam and hundreds of miles of old mining ditches converted to distribution canals siphoning off Yuba River water to other watersheds, the water temperatures of the lower Yuba River began to rise, Rabone said.

"You had warmer water conditions, and the salmon and steelhead populations went downhill after the 1940s," Rabone said.

Tying this downfall to the Gold Rush was simply a matter of connecting the dots, Rabone said.

"Hydraulic mining led to the sediment, which led to the creation of the debris dams," Rabone said. "And Englebright Dam is the first barrier to salmonids getting into the upper watershed."

The temperatures were so high that barriers were erected at one time to prevent salmon migrating up the Feather River from straying into the deadly Yuba, Rabone said.

"There was a time when there were no salmon runs left in the river," Rabone said. In 1959, the spring-run Chinook salmon was reported as extinct in the Yuba River.

The turnaround

Conditions on the Yuba River began to change with the completion of New Bullards Bar Dam in 1969. The deep reservoir stored a large cold water pool, which mostly eliminated the temperature concerns on the Yuba, Rabone said.

The fish started to return, and, in 1991, the California Department of Fish and Wildlife reported that a population of spring-run Chinook salmon became re-established since the 1970s due to habitat conditions and straying fish from the Feather River, Rabone said.

The river was starting to heal, but the massive dredging efforts to strip bare the accumulated sediment of gold in the 20th century brought other challenges that still impact the Yuba.

A riparian wasteland

Before European settlement, the banks of the Yuba River were characterized by distinct riparian zones vegetated by tall trees, brush and vines, according to a study prepared for the YCWA by L. Allan James of the University of South Carolina.

That changed when the dredger mining industry exploded on the lower Yuba River.

At the turn of the 20th century, two mining companies started to dredge the river for gold, moving acres of land along the river banks by means of giant bucket lines.

One company was owned by W.P. Hammon. The other was called the Marysville Gold Dredging Co. The two companies would eventually merge and dredge the river for gold at various capacities throughout the century.

When these companies were finished, the 10,000-acre blotch of cobble mounds known as the Yuba Goldfields had been created and the rich riparian zones noted in James' report were mostly gone.

"It took the lower Yuba River and really devastated a great riparian habitat and replaced it with dirt and cobble," Aikens said.

The damage was done even beyond the 11-mile boundaries of the Goldfields, Reedy said.

"Some of those dredges worked up the entirety of the Yuba River — 21 miles of the river as we now know it had dredges in the river channel, tearing up riparian vegetation," Reedy said.

Riparian vegetation plays an important role in a river's ecosystem. It provides shade from the sun and shelter from predators. It creates pockets of slower moving water where juvenile salmon can grow faster and increase their strength for the arduous journey to the ocean, Rabone said.

"A river without riparian vegetation has no life," Reedy said.

A way forward

In 2011, SYRCL used a \$450,000 grant from the U.S. Fish and Wildlife Service to plant cottonwood and willow trees around Hammon Bar. SYRCL continues to monitor the results of the project today, and it appears to be a success, Reedy said.

"It's transforming a coarse river bar to a complex of habitats with sand and shade," Reedy said. "There's places soil will be created and a variety of riparian plants and animals that require that habitat, from bugs to birds, will flourish as a result of planting these trees."

More projects are planned up and down the lower Yuba River, Rabone said.

The U.S. Army Corps of Engineers is looking at around 20 potential projects as part of the Yuba River Restoration Feasibility Study, which has the YCWA as a non-federal partner.

Teichert Aggregates and Western Aggregates are partnering with groups such as SYRCL, to restore parts of the river while mining the aggregates left over from dredger mining for profit — a process spearheaded by Congressman John Garamendi, D-Walnut Grove.

"Our goal is to set an entire program for the Yuba River of using the mining companies to do river restoration and, in turn, allowing the mining companies access to the gravel they didn't have access to," said Andrew March, a field representative for Garamendi. "It's a win-win for everyone. The environmental groups get the river the way they want it to look, and the mining companies get the gravel."

All together, these efforts are reviving the Yuba River.

"The river is in a process of recovering from the hydraulic mining material, which was so extensive, and then the dredger mining activity, which is more of an immediate legacy," Reedy said. "We're seeing an increasing percent of vegetation in the river channel as a result of that recovery process."

CONTACT reporter Andrew Creasey at 749-4780 and on Twitter @AD_Creasey.