Millions needed to return salmon to California river

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Reviving chinook salmon on the San Joaquin River will cost more than $20 million - which may sound like a lot of money for 40,000 fish. But this rare project will take years of work, scientists say.

Three-quarters of those fish will be spring-run salmon, a threatened species already in danger of extinction in California. In the San Joaquin, the fish will have to survive in the southernmost salmon fishery on the continent - where the water sometime gets a little too warm for them.

Scientists say they haven't found similar reintroductions of the threatened spring-run salmon in a river like the San Joaquin, which had been dry in places for more than a half century. Federal officials need to breed a resilient fish for this river.

In February, federal officials began revealing details of the project that will include a $14.5 million hatchery near Friant Dam and more than $7 million to operate it for a decade.

The total is a small slice of the restoration cost, which could run as high as $1 billion. Farm critics say it would be cheaper to skip the expense of salmon restoration and just allow other fish, such as trout and blue gill, to populate the river.

"I think the river should be restored, but not with salmon," said farmer Kole Upton, who helped negotiate a legal settlement to restore the river but has since become a vocal critic of the project.

The salmon runs - which died after Friant Dam was built in the 1940s - are required by the settlement, signed by farm officials, environmentalists and the federal government in 2006. Salmon was a central theme of the environmental lawsuit to restore the San Joaquin River.

Federal officials say the hatchery will allow them to raise populations of federally protected spring-run salmon and protect the Northern California donor rivers providing the fish.

"You can't just collect 1,000 adult fish, so we will focus on getting small numbers of young and eggs from several places," said biologist Kim Webb with the U.S. Fish and Wildlife Service.

Two public meetings on the salmon restoration already have taken place. Others will be scheduled over the next year.

The project is part of a San Joaquin River restoration that began with experimental water releases from Friant Dam in October 2009. About 150 miles of the San Joaquin will be restored between Friant and the Merced River confluence.

In the next few years, federal officials will have to decide whether to run the restored river through flood bypasses or rebuild a section of river that has almost completely disappeared. The solution probably will cost hundreds of millions of dollars to purchase land and alter the river channel.

Even in the river's present condition, stray salmon have occasionally wandered up the San Joaquin during above-average rainfall years. But scientists say it will take more than a flow of water to meet the goals of the restoration agreement.

Officials will start with spring-run salmon late next year, mostly because it has the best chance of surviving.

In some years, the San Joaquin's spring-run salmon population was the largest in the Central Valley, according to federal officials.

"The spring-run population was in the tens of thousands," Webb said.

Conditions in the region favor the spring-run, which migrate from the ocean to its fresh-water origins in spring. Snowmelt and rain runoff in the San Joaquin provide cold, strong flows for the fish. The fish would spend the summer in deep, cool pools of water near Friant Dam before spawning later in the year, biologists say.

But the fall-run salmon don't have the same advantages. The San Joaquin's flows often are not as consistent or strong. The water also is warmer. So the fall-run population usually was smaller.

To begin rebuilding the populations, wildlife officials will collect eggs and fingerlings from Northern California streams such as Battle, Deer and Mill creeks, as well as the Feather River. They will be moved to a hatchery just below Friant Dam.

Collecting the fish from several creeks and rivers will help biologists breed strong fish, combining the survival traits fish have developed in their respective streams.

For instance, fish in one stream might be more resilient to warmer water than most salmon. Others might be more resistant to diseases. With wider genetic diversity, the new San Joaquin fish would have a better chance at surviving future changes, which some believe will include climate change.

"We really don't know what the conditions will be or how they will affect flow and water temperatures," said biologist Steve Blumenshine, a Fresno State professor of aquatic ecology.

The restoration target is 30,000 spring-run salmon and 10,000 fall-run salmon each year by the end of 2024. The hatchery's work would be suspended the following year if there are enough salmon, according to the plan.

The new hatchery is planned alongside a state trout hatchery, which has been in operation since the 1950s. The restoration will begin in December 2012 at the state's hatchery where there is enough room for a limited program of salmon breeding until the new hatchery is built. The new hatchery is scheduled for completion in 2014.

Possible money sources include federal funds and the state's 2006 clean water initiative, Proposition 84, but those details have not yet been worked out.