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Pilot program begins to study non-native predators suspected of decimating young Stanislaus River salmon

The first portion of a collaborative five-year project intended to support salmon and trout in the Stanislaus River began this spring with local fish biologists using electro-fishing to determine how many predators lurk along a stretch of the river.

Called the Native Fish Plan, the project will study the impact of non-native predatory fish on native salmon, as well as potential solutions for improving salmon survival, such as removing predators from specific stretches of the salmon migration route.

The Oakdale and South San Joaquin Irrigation Districts are jointly funding the research at an annual cost of \$1 million.

The project is authorized by the Water Infrastructure Improvements for the Nation Act (passed by Congress in December 2016), which requires OID and SSJID to work with the National Marine Fisheries Service (NOAA Fisheries) to establish a pilot program in the river to investigate the effectiveness of removing predatory fishes to improve salmon survival. The results of this project can be used to design management actions that will benefit native fish in the river.

FISHBIO scientists and technicians, based in Oakdale, have been collecting data in the Stanislaus River for nearly 25 years. Recently, they spent time on the river near Caswell State Park in Ripon, just east of where it meets the San Joaquin River.

Boats that transmit electrical current into the water were used to momentarily stun fish so they could be collected, identified, processed and released. Stomach and scale samples were collected from key predatory fish species to evaluate their diet composition and age composition, respectively, to help assess the relative risk of each predatory species to juvenile Chinook salmon.

Prior to release, fish were tagged with a Passive Integrated Transponder (PIT) tag to identify the same fish if it is recaptured. This information can be used to determine the size of predator populations as well as assess the movement and survival of tagged fish.

FISHBIO President Doug Demko said the work this spring was made more difficult by the higher flows and cooler temperatures in the river – both a result of a deep Sierra snowpack and above-average

runoff. “But even under these extreme conditions,” he said, “we still captured a significant number of striped bass, largemouth bass and smallmouth bass.”

Those voracious predators that inhabit the Delta and the rivers that flow into it are one of the main reasons less than 5% of the young salmon born in the Stanislaus River are estimated to survive their perilous journey each spring to the Pacific Ocean.

“The importance of this study is that it’s about science in our river,” said Steve Knell, OID’s general manager. “Most of the decisions in Sacramento are based on what’s happening elsewhere. But we know our river is at the southern end of salmon habitat today. Our weather is warmer, our water is warmer and our conditions are different and thus more stressful on these native fisheries.”

Added SSJID General Manager Peter Rietkerk: “The districts appreciate the collaboration with NOAA Fisheries and California Department of Fish and Wildlife on this study. Predation is an area of growing interest in the fisheries science community and we appreciate the willingness of the fisheries agencies to engage in cutting edge research.”

FISHBIO’s research in the fall, when adult salmon swim upstream to spawn and then die, also has consistently revealed that most of the adults in the Stanislaus River are not natives of it, as is the case in a naturally sustaining population. Instead, almost all are fish that were raised in hatcheries, and then trucked to and released in the east end of San Francisco Bay – allowing them to avoid the gauntlet of predators in Central Valley rivers and Delta.

The problem is these hatchery-raised fish do not have the sensory imprint that native fish possess that allows them to identify which river they were born in. Hatchery fish can end up in any river to spawn, undercutting efforts to develop naturally sustaining populations.

Another aspect of the ongoing Native Fish Plan project is to scientifically evaluate the effect of removing non-native fish using electrofishing to reduce predation pressure on juvenile salmon.

A pilot-level, experimental removal of non-native predatory fish was conducted earlier this year with the help of devices called Predation Event Recorders, or PERs. Each PERs unit is outfitted with a waterproof GPS-enabled dog collar to track its location, temperature and light sensor, event logger and GoPro camera, and is tethered to a hatchery-origin Chinook salmon smolt. The PERs are released in the river to drift downstream, and if the salmon smolt on a string is eaten, the device will record the time, location and footage of the predatory species.

These devices are being used to compare the relative rates of predation between a stretch of the river where predators have been removed versus a different area where no predators were removed. Removed fish are relocated from the study area.

The results of this project will help determine whether reducing the number of non-native predatory fish can help increase the survival of young salmon and the abundance of native fish in the Stanislaus River.

About Us: The [South San Joaquin Irrigation District](#) was established in 1909 and is located in Manteca. It provides agricultural irrigation water to about 55,000 acres in Escalon, Ripon and Manteca. In 2005, the district expanded into providing domestic water service to selected cities within its territory. The [Oakdale Irrigation District](#) was created in 1909 and provides agricultural water to about 62,000 acres in northeastern Stanislaus County and southeastern San Joaquin County.

OID and SSJID hold senior water rights on the Stanislaus River. For more than 100 years, our agencies have responsibly delivered surface water to farms in San Joaquin and Stanislaus counties, and for SSJID, thousands of homes in San Joaquin County. We are committed to sensible water policies, innovative irrigation techniques, prudent conservation practices, and important investments in biological studies of the river and fish habitat.

Save the Stan is a public education effort by SSJID and OID to inform Californians about the threat posed by the state's plan to take more water from the Stanislaus River. For more information, go to www.savethestan.org or our [Facebook page](#).