

SCIENTISTS SAVING ENDANGERED SALMON GET HELP FROM GENE-SLICING TOOL

Relevant for: Science & Technology | Topic: Science and Technology- developments and their applications and effects in everyday life

Emily Funk, an associate specialist at the University of California Davis, collects a mucus sample from a Chinook salmon to determine its exact species while on a research vessel on the San Joaquin River off Antioch, California, U.S., May 25, 2021. | Photo Credit: [REUTERS](#)

A gene-editing tool that has led to new cancer therapies and a rapid test for COVID-19 is now helping scientists find endangered species of salmon in the San Francisco Bay.

The CRISPR-based Sherlock tool can identify four types of Chinook salmon, including Sacramento winter-run and Central Valley spring-run, which are both protected under the federal Endangered Species Act.

"The Chinook are a great fit actually because all of the runs, more or less, look the same," said Andrea Schreier, an adjunct associate professor at the University of California Davis and coauthor of [a study](#) published last year in *Molecular Ecology Resources* that examined using this genetic identification on the endangered Delta smelt.

"They're visually very similar and the current method we have to identify the different types is based on what length they are at a particular age and it's not very accurate."

Sherlock, which stands for Specific High-sensitivity Enzymatic Reporter Unlocking, identifies the fish using their genomic sequence. Researchers begin by taking swabs of mucus from the fish and combining with reagents that will glow if certain snippets of DNA are present. The battery-powered fluorescent reader gives results in 30 minutes, ideal for field research.

By identifying the species, researchers believe they can better monitor population sizes and habitats.

With extreme drought gripping California, some rivers are too warm for the salmon to survive, forcing the state to truck 17 million young fish to the San Francisco Bay from hatcheries.

Emily Funk, an associate specialist who joined the team in July 2020, said the conservation angle drew her to the project. "I think it's important to preserve our ecosystems," she said. "I hope we can save the fish in our oceans."

Melinda Baerwald, an environmental program manager with the California Department of Water Resources and coauthor of the study, plans to deploy the technology at water pumping stations, which can impact endangered species.

"You don't have to wait for weeks or in some cases months to find out the answer to if you're impacting an endangered or threatened species," she said, adding that they currently have to drive an hour and a half to a lab to confirm the identity of a species. "Instead, you can find out at the moment that you're actually interacting with that species if you are affecting it."

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The authors also suggest that the lines could be contemporary with the neighbouring memorial stones

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