

# New study questions impact of dams on salmon

By MATTHEW WEAVER  
Capital Press

Breaching the Snake River dams won't necessarily improve the survival rate of Chinook salmon, because returns of the fish appear to be similar everywhere, including areas with pristine freshwater habitats, a new study finds.

"Current efforts to conserve salmon populations assume that restoring habitats modified by anthropogenic factors — e.g. dams, dikes, forestry, road culverts, salmon farms in the coastal ocean — will improve salmon returns and at least partially compensate for worsening ocean conditions," the study says.

"However, if survival also falls by roughly the same amount in regions with nearly pristine freshwater habitats, it is difficult to argue for a major role of regional factors in causing the decline," it says.

The study was published Oct. 30 in the scientific journal *Fish and Fisheries*.

All Chinook populations are likely being similarly affected during their time in the ocean, because it is a shared environment, author David Welch told the Capital Press.

"There are still some big puzzles here, because so little research has gone on in the ocean," Welch said. "For example, we still don't know how salmon migrate through the ocean or whether different populations of the same species migrate to the same area of the ocean."

Welch is president of Kintama Research Services, a marine environmental consultancy in Nanaimo, British Columbia.

Commercial catch data show various salmon populations are caught in different regions of the ocean, but researchers have no idea how they migrated there or how long or where they take up residence during their two to three years in the ocean, Welch said.

Possible reasons for poor marine survival are likely multiple, the study finds, with theories including growth, hatchery practices, predation, competition, bycatch mortality in fisheries and ocean conditions.

The theory that the dams result in poorer survival of Snake River spring Chinook relative to mid-Columbia River Chinook populations after smolts migrate past the dams is specific to the Columbia River basin, the article states.

The theory still plays an important role in Columbia River salmon management, but direct tests of the theory have not found evidence to support it.

The decline of West Coast Chinooks is still cause for concern, Welch said.

"With the path many salmon populations are on, in terms of falling marine survival, they may well be headed for extinction,"



Chinook salmon congregate in a spawning channel. A new study found that Chinook survival in the ocean is the determining factor in the health of West Coast runs. Associated Press

*'IT RAISES THE BROADER QUESTION OF WHETHER THE ADVOCATES FOR EXTREME MEASURES LIKE DAM BREACHING JUST HAVE BLINDERS ON AND CAN'T REALLY SEE WHAT IS GOING ON.'*

David Welch | author of new study

he said. "This will cause all sorts of chaos because, especially in the U.S., it is against the law — the Endangered Species Act — to allow them to go extinct."

Bureaucratic and legal systems may not be set up to deal with a situation where key unknown problems are out at sea, while institutional structures are set up to largely respond by calling for more and more extreme responses in freshwater, he said.

Welch compared the situation to a doctor arguing for expanding a patient's lung capacity, when the patient has liver cancer. The expanded lung capacity doesn't address

the cancer, he said.

"The situation with salmon is that we have a lot of people trying to 'fix' possible problems in freshwater that they have identified as being poor," Welch said. "However, it is not at all clear that freshwater conditions can be improved anywhere near enough to compensate for the poor and still-worsening survival at sea."

Welch recommends Chinook salmon advocates support efforts to get to the root cause of the problems. They should insist on "rigorous evaluation" of proposed fixes to make sure they are actually going to be

effective, he said.

The paper collated almost 2,300 years of survival estimates for Chinook salmon, Welch said. Similarly extensive monitoring programs are going on for coho and steelhead, with other, less extensive monitoring programs for sockeye, pink and chum salmon, Welch said.

"The big question is why, with all this monitoring effort, has no one yet pointed out that survival was similar everywhere to what was reported for the Snake River?" he asked. "The data is all publicly available; it just took a lot of work to pull it all together and show the obvious."

Estimates of the survival of tagged adults returning to the Columbia River failed to recognize that harvest in fisheries was large and variable, which Welch considers "catastrophic" to those estimates.

"It raises the broader question of whether the advocates for extreme measures like dam breaching just have blinders on and can't really see what is going on," he said.



Michael Conroy/AP Photo

The first batch of bioengineered Atlantic salmon eggs in an incubation tray at AquaBounty Technologies' facility in Indiana last year.

## Court orders assessment of genetically modified salmon

By CANDICE CHOI  
Associated Press

NEW YORK — A federal court judge ordered the U.S. Food and Drug Administration on Thursday to conduct an environmental assessment of genetically modified salmon that he said was required for the agency's approval of the fish.

But the judge did not vacate the FDA's approval of the salmon for human consumption in the meantime, because he said the risk for near-term environmental harm is low.

"The FDA has to go back to the drawing board and do its homework," said George Kimbrell, legal director for the Center for Food Safety, one of the groups that filed suit challenging the agency's approval of the genetically modified salmon.

The ruling by U.S. District Court Judge Vince Chhabria in San Francisco centers on AquaBounty's salmon, which are genetically modified to grow faster than normal salmon. In 2015, the fish became the first genetically modified animal approved for human consumption in the U.S. after clearing other regulatory hurdles. AquaBounty began growing the fish in indoor tanks at an Indiana plant last year.

In an email Thursday, a representative for AquaBounty noted that the ruling covered the potential environmental impact of the fish, and not the health and safety of eat-

ing them. The company said the salmon are not yet being sold in the U.S.; it had previously said the fish could be in the market by late this year.

The FDA said in a statement that its approval of the salmon remains in place but did not address the judge's ruling on the adequacy of its environmental assessment.

To ensure the fish do not escape and breed with wild fish, Massachusetts-based AquaBounty says its salmon are raised in tanks and bred to be female and sterile.

But advocacy groups maintain the company's own tests have shown it's not 100% certain the fish would be sterile, and that the risk of fish escaping into waters could grow if the company were to expand operations.

In his ruling, Chhabria noted that the FDA determined the probability of the salmon escaping and surviving in the wild to be quite low. But he said the company's production could expand, and that "with every new facility built, the possibility of exposure grows." And even if it's unlikely the fish could get into the wild, he said the FDA was still required to assess the consequences of the possibility.

AquaBounty fish are Atlantic salmon injected with DNA from other fish species that makes them grow faster. The salmon already has been sold in limited quantities in Canada, where it doesn't have to be labeled as genetically modified, the company has said.

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