

## Hatchery Fish Dominate the Burman River

An Uu-a-thluk project is providing insight into the delicate balance between hatchery-reared fish and naturally spawning salmon. Originally launched after Canada and the US negotiated a new annex to the Pacific Salmon Treaty, the project is helping evaluate the need for continuing a 15% catch reduction for chinook in southeast Alaskan fisheries. It is also revealing some troubling results for naturally spawned salmon.

"The returning adults over age three were 93% hatchery fish," said Uu-a-thluk biologist, Roger Dunlop, referring to a 2009 study performed on the Burman River in Mowachaht/Muchalaht territory. "In the 2009 return, 7% were naturally spawned, 64% were Burman enhanced chinook, and 29% had strayed from other WCVI hatcheries (mainly the Conuma). If it wasn't for enhancement, there would be almost nothing coming back to the Burman River. This is a similar situation to other wild chinook populations for WCVI streams."

With such results, one might be tempted to see hatcheries as crucial to saving salmon populations on the west coast of Vancouver Island. After all, the hatchery fish Dunlop refers to are reared in a protected environment to ensure their survival as fry. Natural spawners grow up in streams the old fashioned way. Dunlop is quick to correct this notion.

"These enhancement projects provide more fish, which is what everyone wants, but they also encourage fishing at levels that cannot be sustained by current wild production. If hatchery production ceased in Nootka Sound, the local terminal area recreational fishery would collapse within a few years."

In fact, hatchery fish may actually contribute to the declines in natural spawners.

"Three years ago, 50% of the fish that returned to the Burman were natural spawners," Dunlop said. "You can conclude that the wild fish population is surviving at a much lower rate than the enhanced fish."

One possible reason for this is competition with larger, faster hatchery fish for food.

Another may be greater vulnerability of small wild fish to predators. In both cases, hatchery-raised fish—which are released into the wild at a larger size—have an advantage.

With the presence of fish farms in Muchalaht Inlet since 2004, sea lice may also be affecting juvenile salmon migrating to sea from the Burman and other rivers. "The lethal load size for lice on Atlantic salmon smolt is 1.6 lice per gram," Dunlop said. "Our wild juvenile chinook are 0.5 to 0.7 grams when they leave the rivers. If these tiny wild fish get even one louse on their bodies, it could be fatal or stress them out so they're more susceptible to diseases."

Neither fish farm operators nor DFO are providing the data they collect as a condition of licensing, so potential sea lice impacts cannot be ruled out as a contributing factor.

While the interactions of hatchery-raised fish and natural spawners isn't the focus of Uu-a-thluk's work on the Burman River, Dunlop and workers from Mowachaht/Muchalaht First Nation will continue gathering data to help them understand population trends. If WCVI chinook stocks are shown to be consistently and far enough above the escapement goals to be set by the Pacific Salmon Commission, the 15% reduction on the Southeast Alaska chinook fishery could be removed after 2014. Similarly, if projects in the southern US indicate improved returns for stocks of concern, the 30% reduction in the WCVI chinook fishery could also be reduced or eliminated.

According to Dunlop, Uu-a-thluk's study is showing clear results when both natural spawners and hatchery fish are considered together. "There are more fish overall than the usual assessment methods portray. This study shows a more accurate depiction than what we've had in the past."

New funding through the Sentinel Stocks Program will also allow Uu-a-thluk biologists to conduct similar studies on the Moyeha River, providing work opportunities for Ahousaht members.

"The Moyeha is an intact watershed that's never been logged," Dunlop said. "There has been no direct enhancement, so it has fewer complicating factors."

The Canada/U.S. Sentinel Stocks Committee has confirmed \$276,000 in funding for the two chinook estimation projects for 2010. If the projects are successful, Uu-a-thluk and First Nations staff will be eligible to continue both for three more years.

"Why don't we have more wild fish back? That's the question. We don't know," Dunlop concludes. "These studies are just one piece of the puzzle."

At right: Roger Dunlop samples a carcass in 2009. The information collected on studies like this one helps him determine whether fish are hatchery reared or natural spawners; Mowachaht/Muchalaht fisheries crew members portage a cataraft along the Burman River in 2009. Below: Wes Savey, Jamie Jack and Jamie James tag and scale sample salmon at the Burman River during the 2009 study.



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