

# Growing risks from hatchery fish

May 14 2012

---



Sockeye, BC, Canada (Barrie Kovish)

A newly published collection of more than 20 studies by leading university scientists and government fishery researchers in Alaska, British Columbia, Washington, Oregon, California, Russia and Japan provides mounting evidence that salmon raised in man-made hatcheries can harm wild salmon through competition for food and habitat.

"The genetic effects of mixing hatchery fish with wild populations have been well-documented," says journal editor David Noakes from Oregon State University. "But until now the ecological effects were largely hypothetical. Now we know the problems are real and warrant more attention from fisheries managers."

The research volume, published in the May issue of Environmental

Biology of Fishes, brings together 23 peer-reviewed, independent studies carried out across the entire range of [Pacific salmon](#), including some of the first studies describing the impact of hatcheries on [wild salmon](#) populations in Japan and Russia.

The studies provide new evidence that fast-growing hatchery fish compete with wild fish for food and habitat in the ocean as well as in the rivers where they return to spawn. The research also raises questions about whether the ocean can supply enough food to support future increases in hatchery fish while still sustaining the productivity of wild salmon.

"This isn't just an isolated issue," says Pete Rand, a biologist at the Wild Salmon Center and a guest editor of the publication. "What we're seeing here in example after example is growing scientific evidence that hatchery fish can actually edge out wild populations."

Losing wild fish would mean losing the genetic diversity that has allowed salmon to survive for centuries. Unlike hatchery fish, wild [salmon populations](#) have a range of highly specialized adaptations to the natural environment. These [adaptations](#) not only help them return to their home streams to spawn, but also increase their ability to withstand environmental changes like increases in [ocean temperature](#) and extreme variations in stream flows. Hatchery fish, as the name implies, are hatched from eggs fertilized in a controlled environment and raised in captivity until they are big enough to release into the natural environment. They lack the [genetic diversity](#) of wild fish that provides insurance against fisheries collapses.

Hatcheries have been used for many years in an attempt to increase catch in the over \$3 billion Pacific salmon commercial fishing industry and to offset losses of wild salmon that have suffered serious declines due to dams and habitat degradation.

"These studies suggest that even more caution is needed to make sure hatchery programs keep wild salmon safe, and don't inadvertently hurt the long term potential of salmon runs," says Rand.

Since the mid-1970s, large increases in hatchery programs in the U.S., Canada, Russia and Japan have released billions of fish into the water. And the increasing global demand for salmon has resulted in calls to further expand hatchery production, especially in Russia and Alaska. In a 2010 open letter to Alaska hatcheries, seafood processors proposed increasing pink salmon hatchery returns by 25%-115% over the next five years. Similarly, Russian hatchery managers stated in 2010 that Russia is planning to build 23 new hatcheries that would increase the country's hatchery production by 66% or 680 million fish.

"The scale and magnitude of our current hatchery production system is enormous," says Rand. "Five billion juvenile salmon are released each year worldwide, and the prospect of additional increases in hatchery production is worrisome for the long-term survival of wild salmon."

## **Not Just a Local Problem**

Scientists are also uncovering surprising interactions on an international scale. One of the new studies indicates that chum salmon (a type of Pacific salmon) released from hatcheries in Asia, mostly from Japan, have played a significant role in causing declines in a wild chum salmon population in remote western Alaska, 2500 miles away.

"Genetic data show that these fish share the same feeding grounds in the open waters of the Bering Sea and North Pacific Ocean," says author Greg Ruggerone of Natural Resources Consultants. "With billions of hatchery chum released each year, the abundance of adult chum salmon from hatcheries is now much greater than wild chum salmon, so it is not all that surprising that we are seeing evidence of competition in the

North Pacific."

This competition is likely to get tougher with predicted changes in ocean conditions. Recent climate patterns have made ocean conditions temporarily favorable enough to support large populations of salmon, but as these patterns shift, the amount of food in the ocean available for salmon could drop significantly, making it even harder for wild populations to survive.

These results have caused many scientists to point to the need for a new international agreement or treaty to address the expansion of hatchery salmon in the open waters of the North Pacific.

Many industry leaders, academic scientists and government agencies also highlight the importance of more research to understand the full impact of [hatchery fish](#) on wild salmon. "Wild salmon represent the backbone of the Alaska salmon fishery," says Stew Grant of the Alaska Department of Fish and Game, a contributing author to the special issue. "We need more information about the impacts of hatchery salmon entering our wild salmon rivers."

"There is no substitute for wild salmon. They must be our first priority," says Guido Rahr, President of the Wild Salmon Center. "Wild salmon are an important part of local culture and a cornerstone of economic health for fishing communities. And once you lose the resilience that wild salmon contribute to our salmon fisheries, it's almost impossible to bring it back. Given these new findings, we urge fishery managers across the North Pacific to examine the science and err on the side of caution when considering hatchery practices and expansions."

**More information:** [www.springerlink.com/content/0378-1909/94/1/](http://www.springerlink.com/content/0378-1909/94/1/)

Provided by Wild Salmon Center

Citation: Growing risks from hatchery fish (2012, May 14) retrieved 26 April 2024 from <https://phys.org/news/2012-05-hatchery-fish.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.