

## Hatched and Wild Salmon: A Bad Mix?

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Barrie Kovich, Wild sockeye salmon in British Columbia.



The pink and flaky salmon sitting on your dinner plate can be of three varieties: wild, farmed or hatched. As the name implies, wild salmon live and die by nature's hand alone. Farmed salmon are bred, born and raised agriculturally. Hatched salmon, though, lie somewhere in between: they are hatched by humans and then freed as youngsters to spend the rest of their lives in the wild.

Scientists have found evidence in the past of genetic problems with hatched salmon, including lowered genetic diversity and a [diminished ability to thrive in the wild](#). But a [collection of 23 studies](#) published this week in a special issue of the journal [Environmental Biology of Fishes](#) presents significant evidence of ecological problems posed by the hatched variety.

Every year, about five billion salmon are released from hatcheries, said Pete Rand, the senior conservation biologist at the [Wild Salmon Center](#) in Portland, Ore., and a guest editor for the special issue. Upon gaining their freedom, the hatched salmon generally live as wild ones do: some travel far into the ocean to feast before returning to their home river to spawn, and some spend their entire lives near the place they were born. Either way, hatched salmon are likely to interact with wild salmon at one point or another.

These interactions appear to be detrimental to wild salmon in three main ways, Dr. Rand said. First, the hatched salmon are “competing for food and space” with wild salmon once they’re freed, he said. Second, hatched salmon are often larger than wild salmon when they are released, and they have been known to prey on wild salmon. Lastly, diseases spread easily through the dense populations at the hatcheries and can be passed on to salmon in the wild.

Yet hatcheries are nonetheless [an important piece](#) of salmon sustainability.

“In certain cases, hatcheries are a lifeline,” Dr. Rand said. When fisheries harvest salmon, the abundance of hatched fish reduces the pressure on wild populations. Most hatcheries are intended to ensure that the demand for salmon is met without decimating dwindling wild populations, but Dr. Rand says there are also hatcheries whose sole purpose is augmenting endangered populations, serving as captive breeding programs.

Still, it’s important that hatched populations do not override or stamp out wild salmon, he added. Wild salmon are the keepers of the genetic diversity necessary for the survival of all salmon. “By having a diverse population,” Dr. Rand said, “salmon can withstand environmental change.”

Dr. Rand said that some ideas are floating around on how the hatcheries can operate without threatening wild populations. Marking hatched salmon so that they’re easily identifiable – clipping their fins, for example – will help scientists and fishermen discern between wild and hatched salmon and better understand the ecology of both, he said. And keeping hatcheries away from rivers with strong wild populations makes it less likely that hatched and wild salmon will interact.

Fish hatcheries are relatively new to southeastern Alaska (started up 35 years ago, as opposed to 100 to 150 years ago in some places). William Heard, a research biologist at the Alaska Fisheries Science Center and the author of [one of the papers](#) in the special issue, said that Alaska took some protective measures when the region began hatching fish.

“Our program is one of the few programs anywhere in the world where there’s still a very strong and healthy wild stock,” Mr. Heard said. Alaskans took care to build their hatcheries in rivers without major wild stocks, for example. Aside from limiting the chances that hatched and wild salmon will meet up, this makes it more likely that the hatched salmon, not wild ones, will be harvested in the hatcheries’ home rivers when the fish return.

Still, there’s always the chance that hatched and wild fish will mingle during their migrations in the open ocean. Russia, Japan, Canada and the United States, where the home rivers are, need to come to an international agreement over how to regulate hatcheries, Dr. Rand suggested. He favors curbing the number of hatched salmon allowed in the Pacific.

Mr. Heard agreed that an international cap on hatched salmon could be a good way of ensuring that they don’t throw the ocean’s ecology off balance. “The ocean is big,” he said, “and there are a lot of other things in there besides salmon.”