

# Alaska salmon returning smaller amid climate change

Chinook salmon decreasing in size

By **HAL BERNTON**  
*Seattle Times*

Alaska salmon have gotten smaller in recent decades, a downsizing that appears to be largely driven by climate change and increased competition for food as hatcheries release some 5 billion young fish into the north Pacific each year, according to a study published this month by U.S. and Canadian researchers in the science journal Nature Communications.

Alaska provides the vast majority of the United States’ wild salmon, and their smaller size is reducing the number of eggs that these fish produce and their value to commercial and other fishermen.

That decline encompasses salmon runs all over the state but varies by species and region. Chinook returning across a broad expanse of western and northern Alaska were some 10% smaller than the average size before 1990. Meanwhile in south-east Alaska, sockeye salmon declined — on average — by only about 2%.

Many of these salmon appear to be returning from the ocean earlier to freshwater spawning grounds, and that’s why they are smaller as they reach coastal-area harvest zones.

“There are two ways they could be getting smaller — they could be growing less and be the same age but smaller, or they could be younger — and we saw a strong and consistent pattern that the salmon are returning to the rivers younger than they did historically,” said Eric Palkovacs, study co-author and professor of



Becky Bohrer/AP Photo

**Salmon churn in the water waiting for their chance to make their way up the fish ladder at Douglas Island Pink and Chum, in Juneau, Alaska.**

ecology and evolutionary biology at the University of California, Santa Cruz.

The study used Alaska Department of Fish and Game sampling information gathered between 1957 and 2018 from 1,014 locations across the state. The study looked at 12.5 million size and age measurements from Chinook, coho, chum and sockeye, four of the five species of salmon that return to spawn in freshwater.

Chinook are the largest salmon. The study estimates that the body-size declines observed in Chinook have decreased egg production by 16%, knocked 21% off their value and reduced by 26% the meals that these fish can provide to rural Alaskans.

“Reductions for other species were less dramatic but still substantial,” the study stated.

Others researchers also have looked at the decline in Chinook size. A study by University of Washington and federal fishery researchers published last year in the proceedings of the National Academy of Sciences looked at Chinook that returned to spawn in West Coast river systems but migrated to feed in ocean waters much farther north.

That study pointed to orcas, which prey on the Chinook, as a big cause for the decline in the size of these fish.

The southern resident orcas, which depend on Chinook for their survival, are struggling and are listed as an endangered species. Other causes for the decline of the southern residents, which frequent Puget Sound, include noise masking their ability to hunt as well as pollution.

But off British Columbia and Alaska, orcas are doing well. Fish-eating resident populations have nearly tripled their numbers over a 50-year period, according to Jan Ohlberger, a University of Washington research scientist and a co-author of the study.

“Something has to be affecting the survival rates of the oldest fish,” said co-author Daniel Schindler, a University of Washington professor of aquatic and fishery science, in a statement released last year. “It’s clear there are lots of unanswered questions, but if you take a weight-of-evidence approach, most arrows are pointing to marine mammals — and killer whales, in particular.”

## Measure: Modeled after immigration sanctuary laws

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Hoffman worked with Rob Taylor, a gun rights activist from Coos County and chairman of the Committee for the Preservation of the Second Amendment, to craft the measure.

Taylor has worked with the Oregon Firearms Federation and the Tenth Amendment Center to customize the Second Amendment sanctuary measure for use in counties throughout the state.

Similar gun rights measures in 2016 were considered legally vulnerable, Taylor said, so a new version was drafted.

The measure is modeled after immigration sanctuary laws that limit police cooperation with federal immigration agents.

Taylor said the goal is to help turn every county in Oregon into a Second Amendment sanctuary. The progress is tracked on a website called Sanctuary Ordinance with the motto, “One

County At A Time!”

“There is a goal in this country by certain segments in politics that want to defund the police, disarm the civilians and let loose the criminals,” Taylor said. “And we believe that we have a right to defend ourselves and that right comes from the Second Amendment. So anything we could do to reiterate that point — now is the time to do that.”

Martin LeTourneau, a Seaside resident and retired federal employee, said he intends to campaign against the measure.

He is involved in Indivisible North Coast Oregon’s South County group and has been attending the local Black Lives Matter protests. At some of the protests, counterprotesters have openly displayed firearms.

“I support the Second Amendment. But I do not support the idea that anyone has the right to openly carry a loaded weapon anywhere that they want,” he said. “I do

not think that that is appropriate. And I think that it is creating the situations that will result in unnecessary injuries and deaths.

“And for me, it’s a very personal issue because we have had local and regional alt-right protesters show up at our BLM protests.”

Russ Mead, a Seaside resident and law professor at Lewis & Clark College in Portland, said Oregon has few gun laws. The laws that the Legislature has agreed on, he said, are common-sense restrictions like requiring background checks.

“So let’s think about the good these laws serve,” he said. “We want the sheriff department to bust someone who sets up a business selling guns to 8-year-olds after school. We want background checks to keep arms out of the hands of the mentally ill. We want law enforcement to confiscate the pistol from someone recently convicted of pistol-whipping their girlfriend.”



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