Study finds Chinook salmon key to orcas

Hatchery stocks are important

By GENE JOHNSON
Associated Press

SEATTLE — For more than a decade, Brad Hanson and other researchers have tailed the Pacific Northwest's endangered killer whales in a hard-sided inflatable boat, leaning over the edge with a standard pool skimmer to collect clues to their diet: bits of orca poop floating on the water, or fish scales sparkling just below the surface.

Their work established years ago that the whales depend heavily on depleted runs of Chinook, the largest and fattiest of Pacific salmon species, when they forage in the summer in the inland waters between Washington state and British Columbia.

But a new paper from Hanson and others at the NOAA Fisheries Northwest Fisheries Science Center provides the first real look at what the whales eat the rest of the year, when they cruise the outer Pacific Coast — data that reaffirms the central importance of Chinook to the whales and the importance of recovering Chinook populations to save the beloved mammals.

By analyzing the DNA of orca feces as well as salmon scales and other remains after the whales have devoured the fish, the researchers demonstrated that while the whales sometimes eat other species, including halibut, lingcod and steelhead, they depend most on Chinook. And they consumed the big salmon from a wide range of sources — from those that spawn in California's Sacramento River all the way to the Taku River in northern British Columbia.

"Having the data in hand that they're taking fish from this huge swath of watershed across western North America was pretty amazing," Hanson, the study's lead researcher, said. "We have to have hard data on what these whales are actually doing."

There are officially 74 whales in the three groups of endangered orcas, known as the J, K and L pods of the southern resident killer whales. Three calves have been born since September, but those are not yet reflected in the count because only about half of the babies survive their first year.

Facing a dearth of prey, contaminants that accumulate in their blubber and vessel noise that hinders their hunting, the whales are at their lowest numbers since the 1970s, when hundreds were captured — and more than 50 were kept — for aquarium display. Scientists warn the population is on the brink of extinction.

The paper, published March 3 in the journal PLOS One, suggests that efforts to make Chinook more abundant off the coast in the nonsummer months could especially pay off, and that Columbia River Chinook hatchery stocks are among the most important for the whales. It also suggests that increasing the numbers of nonsalmon species could help fill the gaps for the whales when Chinook aren't available in the open ocean.

The National Oceanic and Atmospheric Administration has already used some of the data, which has been available internally as scientists awaited the study's publication, in proposing what areas to designate as critical habitat for the whales. Officials could use it in prioritizing certain habitat restoration efforts or in timing hatchery production of salmon to best benefit the whales, said co-author Lynne Barre of the National Marine Fisheries Service's Protected Resource Division.

The information could also be key in setting limits for fisheries; the Pacific Fisheries Management Council has recommended that NOAA curtail fishing if Chinook abundance is forecast to drop below a certain level.

The researchers encountered the whales 156 times from 2004 to 2017, with most of the fecal and prey samples from the outer coast being collected in 2013 and 2015 — when the whales were easier to find because they were satellite tagged. There were big runs of Chinook those years, which might have been reflected in their findings; since then, Chinook numbers have fallen up and down the coast due to drought in California and warmer ocean conditions.

In the summer, when the whales forage in the inland waters of the Salish Sea, their diet is almost entirely Chinook — mostly those that return to spawn in Canada's Fraser River, the paper said. By September, as coho salmon return to spawn in the region's rivers, they make up about half of the orcas' diet, with a mix of Chinook, chum and coho providing sustenance through the fall.

In the winter, when the whales spend more time on the outer coast, they turn to nonsalmon species, apparently because Chinook are more spread out and harder to find.

Barre said it may be surprising that the orcas focus so much on Chinook when there are so many other fish in the sea, but research has also suggested that the whales might target them because the nutritional value of the big, fatty fish is worth the calories burned catching them.

"It would certainly make our lives easier if they were eating a lot more of the other things that are available," she said.

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> **Lynne Barre of the National Marine Fisheries Service's Protected Resource Division**

Ken Balcomb/Center for Whale Research

A long-term study published this month reaffirmed the importance of Chinook salmon to whales even when they cruise the outer Pacific Coast, where the fish are harder to find.

Risk: 787 virus cases recorded in county

return to a sense of normalcy. I encourage all Oregonians to keep it up and to get your vaccine when it's available to you."

Brown announced a new two-week caution period to help counties on the brink of higher risk levels bring case rates back down again.

"The caution period will allow counties to re-focus efforts to drive back down creeping case numbers, and give local businesses additional certainty on their plans for operating," the governor's office said in a statement. "If, at the end of the caution period, case rate data still puts the county at a higher risk level, the county will move to that level."

Clatsop County is one of 13 counties that will be at lower risk through March 25. Two counties will be at extreme risk, nine will be at high risk and 12 will be at moderate risk.

Counties with a population of 30,000 or more are evaluated for risk based on virus cases per 100,000 over two weeks and the test positivity rate for the same period.

Counties at lower risk have a case rate under 50 per 100,000 people, and may have a test positivity of 5% or less.

As of Saturday, Clatsop County had 36 cases per 100,000 over a two-week period. Test positivity was 3.2%.

Capacity for indoor dining at restaurants and bars in counties at lower risk is 50% with a midnight closing time. Up to 300 people can dine outdoors. Tables must be limited to eight people.

Gyms, indoor pools, museums, theaters and other entertainment venues can operate at 50% of capacity.

Grocery stores, pharmacies, retail shops and shopping malls can operate at 75% of capacity.

Churches can convene at 75% capacity indoors and 300 people outdoors.

Indoor social gatherings must be limited to 10 people from four households in counties at lower risk. Outdoor gatherings can have 12 people.

Indoor and outdoor visits are allowed at long-term care facilities.

The county has recorded 787 virus cases since the pandemic began. According to the county, 18 were hospitalized and six have died.

"It has been a blessing for so many businesses to have this additional capacity and choice available to them these past two weeks," David Reid, the executive director of the Astoria-Warrenton Area Chamber of Commerce, said in an email. "The continued low case counts bolster the evidence that businesses, including restaurants and indoor entertainment, can operate safely with the precautions in place.

"We expect and hope to see this trend continue, reinforced by increased vaccinations and we urge customers and citizens to follow the safety precautions businesses ask of them and to remain vigilant in their own lives so we can continue this reopening safely."

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