

# Killer whales feast on salmon in summer

January 6 2016

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Killer whales. Image: NOAA

Salmon are the primary summer food source for an endangered population of killer whales in the Pacific Northwest, according to an analysis of fish DNA in killer whale poop published Jan. 6, 2016 in the open-access journal *PLOS ONE* by Michael Ford from the National Marine Fisheries Service and colleagues.

This is the first study to thoroughly analyze killer whale [diet](#) based on fecal samples. Prior to this study, diet inference was primarily based on analysis of prey remains consumed by the whales at the surface, and it was uncertain if these were always representative of the total diet.

Estimating [killer whale](#) diet composition helps scientists understand interactions between predators and prey, but observing their diet directly is difficult. In this study, the authors used genetic analysis of fecal

material collected in their summer range in the Salish Sea in the Pacific Northwest, to estimate the diet composition of an endangered population of wild killer whales. They genetically sequenced 175 [fecal samples](#) collected from May to September from 2006-2011, which results in nearly 5 million individual sequences that they compared to potential fish from their diet.

They found that [salmon](#) made up >98% of the total sequences, which they inferred is the result of their diet. Of the six salmon species, Chinook salmon made up 80% of the sequences, followed by 15% coho salmon. They found that early in the summer their diet was dominated by Chinook salmon and coho salmon was greater than 40% in the late summer. Non-salmon fish were rarely observed. The researchers state their results highlight the importance of Chinook salmon in this population's summer diet and support earlier results based on surface prey remains.

Michael Ford adds: "Using an independent method, we have confirmed that salmon, and especially Chinook salmon, are by far the dominant component of this whale population's summer diet. The study helps to solidify our understanding of the ecology of this endangered population, and will be useful for continuing to prioritize recovery efforts."

**More information:** Ford MJ, Hempelmann J, Hanson MB, Ayres KL, Baird RW, Emmons CK, et al. (2016) Estimation of a Killer Whale (*Orcinus orca*) Population's Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE* 11(1): e0144956. [DOI: 10.1371/journal.pone.0144956](#)

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