

Unlocking the secrets of killer whale diets and their role in climate change

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Researchers can now accurately predict the diets of remote killer whale populations using their blubber fatty acids. Credit: Dr. Rune Dietz from Aarhus University

Killer whale populations are invading the Arctic, causing significant disruptions to an ecosystem already deeply affected by climate change. A team of McGill researchers has discovered new clues to understand how killer whales impact their environment—by reconstructing their diets using the lipids in their blubber.

"Using this analysis, we will better understand how their diets change and how they may potentially disrupt Arctic food webs," said Anaïs Remili, a Ph.D. candidate at McGill's Department of Natural Resource Sciences and lead author on the study.

To reconstruct the [whales'](#) diets, the researchers used a model called Quantitative Fatty Acid Signature Analysis (QFASA) using samples from captive killer whales. They then measured the fatty acid composition of the wild Greenland killer whales and potential prey species the whales may feed on. Finally, they applied the modeling approach to estimate that the whales mainly feed on harp and hooded seals, species that researchers found in some of the whales' stomachs.

This new tool has the potential to improve understanding of diets of killer whales around the world, and how killer whales might impact Arctic food webs in the future.

"Validation of quantitative fatty acid signature analysis for estimating the diet composition 2 of free-ranging [killer whales](#)," by Anaïs Remili et al., was published in *Scientific Reports*.

More information: Anaïs Remili et al, Validation of quantitative fatty acid signature analysis for estimating the diet composition of free-ranging killer whales, *Scientific Reports* (2022). [DOI: 10.1038/s41598-022-11660-4](https://doi.org/10.1038/s41598-022-11660-4)

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