

Killer whale DNA reveals distinct ties

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Scientists have discovered that populations of Australasian killer whales revolve around matrilineal ties after using DNA to determine their populations across the region.

Killer [whales](#) are the ocean's apex predator and have large influence

within the ocean, with shifts in their dynamics detrimentally affecting entire marine ecosystems.

Flinders University researchers say understanding their ecology, particularly in areas where data is currently unavailable, will contribute significantly to both their persistence and ecosystem viability as an important indicator of overall ocean health.

"We have found three populations of killer whales within Australasian waters, one in tropical and a second in temperate Western Australia, and a third in New Zealand. They each have distinct female-driven societies. These populations appear to have little movement between them, and a low number of breeders" says Flinders University Ph.D. Candidate, Isabella Reeves, the lead author of the study.

Within Australasia, seasonal killer whale aggregations have been recently discovered and they have known to also reside year-round in New Zealand waters.

There is currently [limited information](#) available about the species in these regions, so conservation management strategies are lacking with researchers deploying over two decades worth of DNA samples to underpin the new baseline population data.

"We suspected, based on the little information we know about their diet, movements, and [family groups](#) that at least two distinct populations frequent Western Australian waters," says Cetacean Research Centre lead researcher, John Totterdell, a co-author.

Killer whales are highly culturally evolved, forming societies built on the foundation of social learning, and this often results in highly distinct populations that do not intermix.

"This is the first study on the number of killer whale populations and their connectivity in Australasia, and the findings can assist conservation management of these animals in the region. However, continued and dedicated research particularly along the east coast of Australia and Pacific Islands is needed to confirm if additional populations are present," says, Flinders University Associate Professor Luciana Moller, the senior author.

"We suspect based on citizen science data from Killer Whales Australia, there may be at least another population" says Reeves.

"This research provides the first baseline for [population](#) structure of Australasian killer whales to be used for management and highlights the need for increased research effort of these elusive animals," says Professor Moller.

This research was a [collaborative effort](#) between multiple universities, government departments, museums, research, citizen science organizations and New Zealand's Department of Conservation and mana whenua whom entrusted co-authors with the examination of their taonga species.

This study, "Population genomic structure of [killer whales](#) (*Orcinus orca*) in Australian and New Zealand waters," by Isabella M. Reeves, John A. Totterdell, Andrea Barcelo, Jonathan Sandoval-Castillo, Kimberley C. Batley, Karen A. Stockin, Emma Betty, Dave Donnelly, Rebecca Wellard, Luciano B. Beheregaray and Luciana B. Moller is now available in *Marine Mammal Science*.

More information: Isabella M. Reeves et al, Population genomic structure of killer whales (*Orcinus orca*) in Australian and New Zealand waters, *Marine Mammal Science* (2021). [DOI: 10.1111/mms.12851](https://doi.org/10.1111/mms.12851)

Provided by Flinders University

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