

Weak social ties a killer for male whales

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A Southern Resident killer whale breaches out of the water. Credit: Kenneth Balcomb, Center for Whale Research

Male killer whales are more likely to die if they are not at the centre of their social group, new research suggests.

Scientists from the universities of Exeter and York (UK) and the Center

for Whale Research (USA) found the most socially isolated males were three times more likely to die in any given year than those in the "most central social positions".

The effect was much stronger in years where food was scarce, and it did not affect females - possibly because males are larger and need more support from the group to get enough food.

The findings come from research on Southern Resident [killer whales](#), a critically endangered population in the Pacific Ocean that - following a recent death - numbers just 76.

"This research highlights the importance of [social bonds](#) to male killer whales, and shows that males that are less socially connected are more likely to die when times are hard," said lead author Dr Samuel Ellis, of the University of Exeter.

"Killer whales are highly cooperative, and males at the centre of a [social group](#) are likely to have better access to social information and food-sharing opportunities."

Southern Residents were among the groups from which killer whales were taken into captivity in the 1960s and 70s, and human activity is now posing much greater threats to their survival, according to Ken Balcomb from the Center for Whale Research

"Salmon is the main food for these whales, and stocks have been driven down by overfishing and the blocking of spawning grounds by damming rivers," Mr Balcomb said.



A male Southern Resident killer whale. Credit: Center for Whale Research

"These factors make it all the more important to understand the drivers of survival and mortality among these whales."

Co-author on the study Dr Dan Franks, from the University of York, said: "Our research shows the importance of considering social positions and family ties in understanding and predicting the future of endangered populations."

Previous research has shown sociability has an effect on human life expectancy, but this is the first study to show that social position across the lifespan can predict survival in non-human animals.

"These whales have been studied for more than 40 years and they are all recognisable by unique markings," said senior author Professor Darren Croft, of the University of Exeter.

"By seeing which whales regularly swam together across a year and across multiple years, we started to understand a network of what in humans we would call friendships.

"In terms of this research, a central social position meant [whales](#) either having many individual connections or being the connection between two or more groups."

Professor Croft added: "On a broad scale, research like this examines the fundamental question of why social relationships and friendships have evolved."

More information: Mortality risk and social network position in resident killer whales: sex differences and the importance of resource abundance, *Proceedings of the Royal Society B*, [rspb.royalsocietypublishing.org1098/rspb.2017.1313](https://royalsocietypublishing.org/doi/10.1098/rspb.2017.1313)

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