

Older killer whales make the best mothers

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Killer whales (*Orcinus orca*) nearing the menopause may be more successful in rearing their young. New research published in BioMed Central's open access journal *Frontiers in Zoology* shows that estimated survival rates for calves born to these older mothers were 10% higher than those for other calves.

Eric Ward from the Northwest Fisheries Science Center, Seattle, USA, coordinated a team of researchers who studied killer whales inhabiting the inland and nearshore waters of Washington state (USA) and British Columbia (Canada). They used a 30-year dataset collected by the Center for Whale Research and Canada's Department of Fisheries and Oceans. He said, "During annual photographic surveys, nearly every individual in the population has been recorded. Each animal has unique pigmentation, scars, and fin shapes, allowing us to track the survival and reproductive performance of each female over time".

The authors aimed to investigate what benefits killer whales derive from the menopause. One theory, termed the "attentive mother hypothesis", is that giving birth to calves and then losing the ability to reproduce helps the mother to focus on bringing up her offspring, without wasting time and energy on further pregnancies. The authors' results support this theory to an extent in that during a calf's first year of life, having a mother who was nearing menopause increased chances of survival. According to Ward, "We found that the oldest mothers may also be the best mothers. Older females may be more successful in raising young because of maternal experience, or they may allocate more effort to their offspring relative to younger females".

Killer whales are extremely long lived, with one female believed to be more than 90 years old. Males rarely live past 50, but female life expectancy is considerably longer. Females can produce their first calf as early as age 10, and continue to produce offspring until their early 40s.

Citation: The role of menopause and reproductive senescence in a long-lived social mammal, Eric J Ward, Kim Parsons, Elizabeth E Holmes, Kenneth C Balcomb III and John KB Ford, *Frontiers in Zoology* (in press), www.frontiersinzoology.com/

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