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# FEMALE SEALS THAT BREED YOUNG ALSO ENJOY A SLOWER RATE OF AGING

W. Chris Oosthuizen , Guillaume Péron , Roger Pradel , Marthán N. Bester, and P. J. Nico de Bruyn 

## Study Description

We used capture–recapture data of female southern elephant seals collected over nearly four decades to test for negative or positive early–late life-history covariation. Specifically, we tested whether the onset and rate of actuarial senescence (the increase in mortality hazards with age) correlated with the age of first reproduction. Our analysis took into account that some breeding attempts and all deaths go undetected. We found that early reproduction correlated positively with survival in both the short and the long term. Females with an early age of first reproduction had lower rates of senescence and produced more offspring than those that delayed breeding.



Photo 1: Southern elephant seals (*Mirounga leonina*) are the largest of all seals. These marine predators inhabit the Southern Ocean and mostly breed at remote Subantarctic islands such as Marion Island. This image shows four adult females, an adult male “beachmaster,” and a 3-week-old, nearly weaned pup. Photo credit: Chris Oosthuizen



Photo 2. A 3-year-old southern elephant seal mother and her newly born pup at Marion Island. The age of first reproduction correlates with early life conditions experienced by females: females that were heavier as pups start to breed earlier as adults. Photo credit: Chris Oosthuizen



Photo 3. A researcher prepares to mark a young southern elephant seal with two hind-flipper tags. Similar to livestock ear tags, flipper tags give every individual elephant seal at Marion Island a unique identity, thereby allowing researchers to track the life history of individuals from birth to death. Photo credit: Chris Oosthuizen



Photo 4. Researchers at Marion Island have conducted regular surveys over a period of nearly 40 years to record information about the lives of southern elephant seals. Here, a researcher photographs breeding female elephant seals and their pups; digital photogrammetry will later be used to estimate the amount of energy expended by females to raise their pups to weaning. Photo credit: Chris Oosthuizen



Photo 5. A 17-year-old southern elephant seal mother with her 10-day-old pup. Female seals that breed young also enjoy a slower rate of aging (i.e., they have lower rates of actuarial senescence, the increase in mortality hazards with age) and produce more offspring in their lifetime than those that delay breeding. Photo credit: Chris Oosthuizen

These photographs illustrate the article “Positive early-late life-history trait correlations in elephant seals” by W. Chris Oosthuizen, Guillaume Péron, Roger Pradel, Marthán N. Bester, and P.J. Nico de Bruyn published in *Ecology*. <https://doi.org/10.1002/ecy.3288>.