

## Monitoring the recovery of the southern right whale in South African waters

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After depletion from uncontrolled whaling in the 19<sup>th</sup> and early 20<sup>th</sup> centuries, southern right whales *Eubalaena australis* received international protection in 1935, but not before the population had sunk to possibly less than 1% of its original numbers. Aerial counts of right whale cow-calf pairs on the south coast of South Africa since 1971 indicate an annual instantaneous population increase rate of 0.069 a year (95% CI 0.064, 0.074). Annual photographic surveys since 1979 have resulted in 1 968 resightings of 954 cows with calves, individually recognised from their unique callosity patterns. Observed calving intervals ranged from 2 to 23 years, with a principal mode at 3 years and secondary modes at 6 and 9 years, but these make no allowance for missed calvings. Using a maximum likelihood model, a maximum calving interval of 5 years produces the most appropriate fit to the data, giving a mean calving interval of 3.16 years (95 % CI 3.13, 3.19). The same model produces an estimate for adult female survival rate of 0.990 (0.985, 0.996). The model is extended to incorporate information on the observed ages of first reproduction of grey-blazed calves, which are known to be female. This allows the estimation of first parturition (median 7.74 years, 95% CI 7.15, 8.33). First year survival rate was estimated as 0.713 (0.529, 0.896) and the instantaneous population increase rate as 0.070 (0.065, 0.075). Detection probabilities on surveys are generally high (>70%), and after an initial slight decline seem to have stabilised between 1990 and 2006. The current (2006) population visiting South Africa is estimated as some 4 100 animals, or about 20% of initial population size: the last parameter needs re-consideration. There are no signs as yet of a density dependent response in vital parameters.