Population Ecology and Management of Polar Bears in Davis Strait

This study of polar bears in Davis Strait used mark-recapture-recovery data collected between 1974 and 2008 to estimate current rates of recruitment, survival and population abundance. By relating the changes observed in the population to changes to harvest and to other factors such as changes in prey, population density and ice conditions, this study broadens our understanding of the ecology of Davis Strait polar bears.

The Davis Strait population of polar bears is characterized by low recruitment rates, moderate survival rates and high population density in an environment of high prey density, but deteriorating ice conditions. Low recruitment rates may reflect density effects and possibly deteriorating ice conditions. The population size is estimated to be 2,158 ± 180 (SE, 2007), a likely increase from the 1970s. The density appears to be higher than polar bear densities in other seasonal-ice populations. Variation in survival, recruitment and age-structure among different geographic sub-regions of Davis Strait was detected. It is likely that population density and ice decline interact to influence the vulnerable young age-classes. The higher survival and reproduction that were observed in the southern portion of Davis Strait (i.e., Labrador and Northern Quebec) compared with bears in northern regions may be because of an increase in harp seals in Labrador. The study found some influence of summer-time sea ice concentration and harp seal abundance on polar bear survival in Davis Strait, but best models contained time and geographic variation, with no environmental temporal covariates. It appears that the current level of harvest is being sustained, but the population is no longer increasing.

The harvest has been, and continues to be an important and effective tool in the management of polar bears in Nunavut. Adaptive strategies are required for polar bear populations that are experiencing changes in productivity, reductions in habitat, and that are spending more time on shore and in contact with humans. The authors of the study “suggest that polar bear managers re-examine historical management goals such as retention of historical abundance (i.e. a target population size) during periods of environmental change.”