

A reassessment of Greenland walrus populations

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ABSTRACT

We use recent abundance estimates, historical catches and an age- and sex-structured population dynamic model with density regulation to perform Bayesian assessments of the three populations of Atlantic walrus (*Odobenus rosmarus rosmarus*) that occur in Greenland. We estimate that the West Greenland/Baffin Island population declined from 50000 (CI:5000-14000) walruses in 1900 to 3200 (CI:1780-5436) in 2000, where after it remained relatively stable with a local maximum of 4500 (CI:3650-5550) walruses in 1998 and a nonsexual lower abundance 3300 (CI:2300-4400) in 2000. We estimate a 2010 depletion ratio of .33 (CI: .19-.60) and a yearly replacement of 130 (CI:63-196) individuals. The Baffin Bay population is estimated to have declined almost linearly from 100000 (CI:40000-160000) walruses in 1900 to 2100 (CI:1500-3100) in 2010. This population is estimated to have a depletion ratio of .30 (CI:.11-.33) and a replacement of 81 (CI:31-146) walruses per year. We also estimate that East Greenland walruses declined from 10000 (CI:1000-25000) individuals in 1880 to a nonsexual depletion of 0.73 (CI:0.48-0.93) in 2009. The population has since increased slowly to a current depletion ratio of .36 (CI:.80-.39) and a corresponding abundance of 1500 (CI:940-2400) individuals. Given the low depletion, the current replacement is only 22 (CI:10-40) individuals per year. Our estimates of status are comparable with our earlier assessment (Witting and Born 2005) for the East Greenland population only. Owing primarily to updated abundance estimates, but also to an improved abundance prior, our estimates of current status have improved greatly for the West Greenland/Baffin Island and the Baffin Bay populations since the assessment in 2005.

INTRODUCTION

There are three populations of Atlantic walrus (*Odobenus*) that occur in Greenland. West Greenland/Baffin Island walruses occur from fall to spring at the edge of the Baffin Bay pack ice from c. 60° 20'N to 20° 20' N (Born et al. 1994; Born et al. 1995), while they are found mainly around Baffin Island during open water season. Further north in Baffin Bay and Smith Sound, walruses occur almost year-round in the North Water polynya and adjacent areas. They are, however, absent from the coastal areas of NW Greenland in August and September when they summer along the eastern and southern coast of Ellesmere Island (Canada) and in the Canadian High Arctic archipelago (Born et al. 1995). We refer to walruses in these areas as the Baffin Bay population. Walruses occur year-round along the eastern coast of Greenland where they