SEALS AND WALRUS DISTRIBUTION IN THE OFFSHORE NE CHUKCHI SEA: RELATION WITH POTENTIAL PREY ORGANISMS

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Bearded seal *Ugruk*

This marine mammal survey is part of the interdisciplinary Chukchi Sea Environmental Studies Program (CSESP), initiated in 2008 and sponsored by ConocoPhillips, Shell, and Statoil.

Pacific Walrus *Aaivik*

METHOD

Vessel-based marine mammal data were collected during July-October of 2008-2010 along line transects oriented in a north-south direction.

Density estimates were calculated using distance sampling methodology (Buckland et al. 2001; Buckland et al. 2004). The distribution of seal and walrus species within the three areas is displayed through kernel densities. See Figure 3 for more explanation.

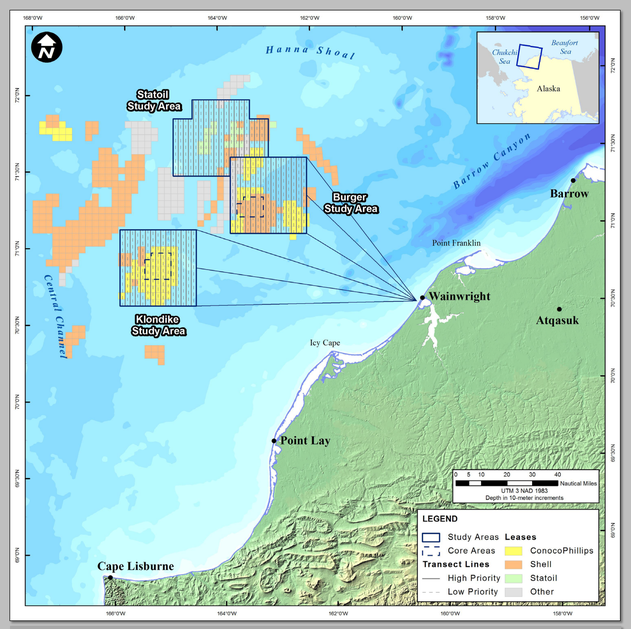

Figure 1. Overview of study areas and line transects.

Westward Wind

OBJECTIVE

Collect data on the abundance and distribution of marine mammals in and near three proposed exploratory oil and gas prospects in the offshore northeastern Chukchi Sea (Klondike, Burger and Statoil study areas). See Figure 1.

RESULTS

During a total of 17,781 km and 1,161 hours of on-transect effort in the study areas, 881 seals and 194 walruses were sighted. Densities were calculated using species-specific detection functions, corrected for parameters that affect probability of detection. Average densities per year and area ranged from 0 to 0.126 ind/km^2 for ringed seals, 0.006 to 0.036 ind/km^2 for spotted seals, 0.004 to 0.070 ind/km^2 for bearded seals, and 0.004 to 0.036 ind/km^2 for walruses. See Figure 2. Large confidence intervals (and thus lack of statistical difference) were caused by occurrence of sightings in clusters, excess number of zeros, and relatively low sample sizes.

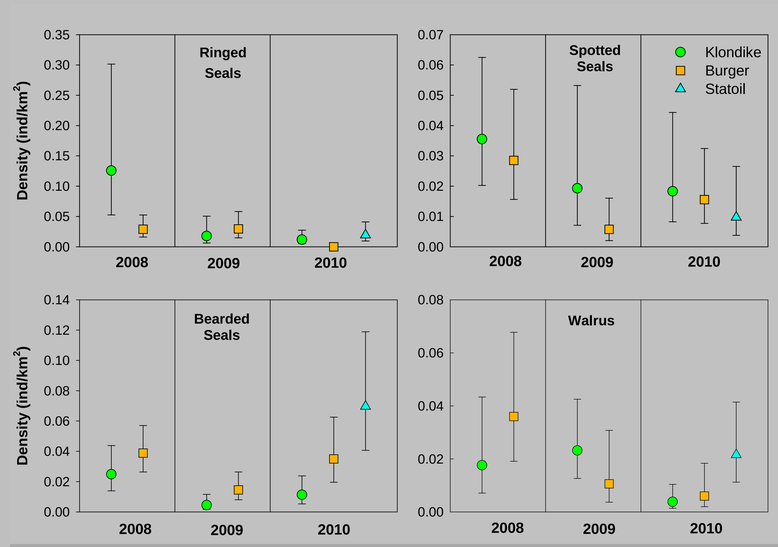

Figure 2. Seal and walrus density (with 95% confidence intervals) in the Klondike, Burger, and Statoil study areas for each season and year. Note the different density scales.

RESULTS

Although there was a high interannual variability in abundance of seals and walruses that partly reflected different ice conditions, the data suggest that benthic-feeding bearded seals and walruses generally were more common in the Burger and Statoil study areas, which are benthic-dominated ecosystems (Blanchard et al. 2011). Pelagic-feeding spotted seal species tended to be more common in the Klondike study area, which is a more pelagic-dominated system affected by waters from the Central Channel. Ringed seals did not show a clear preference. In conclusion, the different oceanographic conditions of the three study areas seem to affect the distribution of some pinnipeds more than others.

Figure 3. Kernel Density maps. More detailed explanation included in legend.

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