HARBOR SEAL POPULATION STUDIES AND FACTORS INFLUENCING COUNTS AT NANVAK BAY, ALASKA

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Nanvak Bay is the largest harbor seal haulout in northern Bristol Bay and the only site in the Bering Sea where harbor seals were monitored annually during the 1990s. Standardized counts of seals were conducted daily from mid May through September or October in 1975, and from 1990 - 1998. The mean of the annual average count during each year in the 1990s was 178 (range 118 – 250); maximal counts during the 1990s ranged from 400 - 581. In 1975, the maximal count was 6 times greater than the average maximal count during the 1990s. Variation in the number of seals hauled out was modeled as a cubic polynomial with separate curves for each year. We investigated how the number of seals hauled out in Nanvak Bay were influenced by environmental and other conditions, including cloud cover, wind direction, wind speed, the interaction of wind direction and speed, precipitation, tide stage, date, time of day, and count quality. Cloud cover, wind direction, and the interaction term did not contribute to explaining seal abundance and were dropped from the model; all other variables were significant ($p<0.05$). Wind speed was negatively related to abundance (-0.6 seals/ 1mph

increase in wind speed). Seal abundance was also negatively related to precipitation with an average of 16% fewer seals counted during rainfall. Counts of very good quality averaged 31-40% higher than counts of lower quality. Fine-scale data collected annually in a standardized manner at index sites such as Nanvak Bay aid in understanding and interpreting changes in haulout patterns and numbers of seals ashore. Fine-scale (e.g., daily counts) population data from land-based counts were also compared to coarse-scale (e.g., periodic counts) population trend data collected during aerial counts to help determine optimal monitoring periods.

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ABSTRACTS

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