

Observations of Marine Mammals of Beringia, with particular emphasis on the Pacific Walrus (*Odobenus rosmarus divergens*) and ribbon seal (*Histiophoca fasciata*)

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Funding Source: This project has no formal funding source, but is a collaboration among the investigators, funded through their various institutions and personal resources.

Data Set Overview. Data collection for this project has been conducted on the *USCGC Healy* as a “ship of opportunity” during winter-spring cruises of 2006, 2007, and 2008. Its objective has been, and continues to be, to observe marine mammals in the context of their sea-ice “seascape” habitat. Emphasis has been placed on the winter-spring period during which Pacific walruses and ribbon seals use sea ice for reproduction, molting, rest, and as a platform for feeding and migration. The thesis is that marine mammals partition sea-ice habitat according to their life-history requirements: for Pacific walruses, “broken pack” and for ribbon seals “loose pack” provide this habitat.

The concept of a sea-ice “seascape” was first described and classified by Ray and Hufford (1969) following descriptions of the preferences of ice-dependent (pagophilic) marine mammals for particular ice conditions (Burns *et al* 1981). Inherent in this concept is the recognition that sea ice is a highly dynamic feature of the arctic-subarctic, and that sea-ice dynamics are necessary for assessing marine-mammal distributions. More recently, climate change and dramatic reductions in sea ice have been recognized as clear threats to these species populations and phenological relationships (Ray *et al* 2006). Furthermore, the involvement of native indigenous hunters in our research has proved essential (Krupnik and Ray (2007).

Caveat. The data files and maps included herein are an attempt to enumerate walruses and ribbon seals or their distributions throughout their ranges, but rather in the context of sea-ice “seascape” dynamics. For this purpose, we are evaluating sea-ice satellite imagery

and ground observations at three scales: region-wide, seascape type, and patch of walrus/ribbon seal occurrence.

Data Collection and Processing.

Ship. Data collection for marine mammals and sea-ice conditions was by visual and photographic means from the bridge of *Healy*, as well as from helicopter, as noted below. G.C. Ray was able to participate only in cruises HLY0601, courtesy of Chief Scientist J. Grebmeier, and HLY0701, courtesy Chief Scientist R. Sambrotto. In all years, the U.S. Fish and Wildlife Service (Kathy Kuletz, Migratory Bird Management, Anchorage, supported by the North Pacific Research Board) assisted with surveys and mapping of observations. In 2007 and 2008, Michael Cameron and colleagues of the NOAA National Marine Mammal Laboratory, Seattle, Washington, provided walrus observations. In 2008, Chadwick Jay and Anthony Fischbach, U.S. Geological Survey, Anchorage, Alaska provided the same.

2006. HLY0601: bridge observers G.C. Ray, E. Labunski, bridge; helicopter flights courtesy PI J. R Lovvorn.

2007. HLY0701: bridge observers G.C. Ray and E. Labunski.

HLY0702: bridge observers L. Labunski and K. Kuletz.

Both cruises: helicopter flights and additional observations of walruses courtesy of NOAA/National Marine Mammal Laboratory (M. Cameron and associates), Seattle.

2008. HLY0801: bridge observers L. Labunski and K. Kuletz.

HLY0802: bridge observers L. Labunski and K. Kuletz.

Both cruises: helicopter flights and additional observations of walruses courtesy of C. Jay, U. S. Geological Survey, Anchorage.

Supporting data. As mentioned above, interpretation of the observations included here require additional information. Aboard *Healy*, images were downloaded from a number of satellites (AVHRR, DMSP, QUICKSCAT Radarsat) on a near real-time basis. However, the great majority of satellite images necessary for our analysis has been compiled by G. Hufford of NOAA/National Weather Service. Satellite data are assisted by on-board photography for classification of sea-ice type along cruise pathways. Concordantly, I. Krupnik has been in contact with villages on St. Lawrence Island (Gambell and Savoonga) for local sea-ice information and weather data.

Data formats. Two types of files are included here. Excel (xls) files include the times, dates, locations, and numbers of animals observed. Maps (jpg) files are maps of these locations, in all cases compiled and formatted by L. Labunski, assisted by R. Smith (Scientific Illustrator, Charlottesville, VA). Codes for files are: Wal=walrus, RbSe=ribbon seal, comb=combined observations from all observers, 5/8, etc.=date.

HLY0601-Wal-comb-obs-5.8-5.29.xls

HLY0601-Wal-comb-obs-5.8-5.29.jpg
HLY0601-RbSe-comb-obs-5.8-6.2.xls
HLY0601-RbSe-comb-obs-5.8-6.2.jpg

HLY0701-02-Wal-comb-obs-4.14-6.10.xls
HLY0701-02-Wal-comb-obs-4.14-6.10.jpg
HLY0701-RbSe-comb-obs-4.21-5.9.xls
HLY0701-RbSe-comb-obs-4.21-5.9.jpg

HLY0801-FWS-Wal-obs-3.15-3.25.xls
HLY0802-FWS-Wal-RbSe-obs-4.4-5.4.xls
HLY2008-USGS-Wal-aerial-recon.csv
HLY0801-02-FWS-Wal-obs-3.15-5.4.jpg
HLY0801-02-FWS-RbSe-obs-3.15-5.4.jpg

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