MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Alaska

Planning Areas: Beaufort Sea, Chukchi Sea

Title: Populations and Sources of Recruitment of Polar Bears (AK-05-02)

MMS Information Needs to be Addressed: The study will enhance MMS analysis of oil-spill/polar bear mortality models and provide direct input to population-recovery models currently under development for the Alaskan Beaufort Sea Region. Study information will be used for NEPA analysis and documentation for Beaufort Sea Lease Sales. It will also contribute information used for mitigation related to Northstar, Liberty, if approved, and DPPs.

Total Cost: $1,319,000 **Period of Performance:** FY 2005-2011

Conducting Organization: University of Alberta, Canada

MMS Contact: Chief, Alaska Environmental Studies Section

Description:
Background The approximately 22,000-27,000 polar bears of the world are currently divided among 19 recognized "populations" circumscribing the Arctic Region of the Northern Hemisphere. Although these units are referred to as "populations" there is no genetic or behavioral basis for assuming genuine isolation. The designation of these geographic populations has been largely political, in conformance with management needs, even though the units are inadequate for evaluating population discreteness, for estimating recovery from perturbations, setting harvest goals, or accounting for gene flow. Polar bears are important for subsistence, are considered a high-profile species by the general public, are the focus of a rapidly developing ecotourism industry in several Arctic coastal villages, and may be affected by disturbance and spilled oil potentially associated with OCS oil-and-gas development. Long-term monitoring of juvenile-adult polar bears has not previously been accomplished and will greatly enhance understanding of basic biology and population demographics for this key age group and the population as a whole.

Past studies of individual polar bear movements suggest that adults occupy somewhat restricted home ranges; however data are generally restricted to females because it is difficult to fit adult males with transmitter collars. In any case, adult movements do not accurately represent population structure because natal dispersal is the dominant control against population isolation in most vertebrates, with male-biased natal dispersal dominant among mammals. Thus, data on the movements of juvenile polar bears, including their adult home-ranges, is the missing critical element.

One benefit of the study is to expand collaboration between local university/government researchers and subsistence hunters along the Canadian Beaufort Sea (and adjacent coastlines). Such collaboration will complement previous/ongoing studies conducted in the Alaskan Beaufort

Sea Region, but will add fresh new insights because of the emphasis on representative gene flow and dispersal. Approximately 200 polar bears are already expected to be captured in the Canadian Beaufort Region each year for the next 4 years. This study is timed to take advantage of considerable savings in logistics by partnering with that ongoing Canadian study.

Objectives The objective of this study is to provide data necessary for interpretation of the population structure of polar bears in North America. Emphasis will be placed on understanding the importance of natal dispersal in polar bears and, specifically, on the extent to which bears born in, or near, Canada make use of United States land, nearshore, or OCS habitats at various life stages

Methods

1. Develop a partnership between University and Canadian Government polar bear biologists, and Canadian Natives to implement a study of juvenile polar bears using long-lived satellite transmitters for monitoring.
2. Test and Deploy satellite transmitters with the capability to permit multi-year (3-5 year) monitoring of juvenile polar bears. Verify and test remote release mechanisms for collars.
3. Capture juvenile polar bears and deploy up to 15 such satellite transmitters per year for 3 years.
4. As possible, take blood and tissue specimens for archival at AMMTAP, for genetic analysis, and for contaminants analysis.
5. Evaluate current and potentially more ecologically rigorous population designations in light of data from this study and other sources.

Current Status:

Polar bears were instrumented (n=18) during spring 2007 and tracking continues for most bears. Additional instruments will be deployed during spring 2008. Annual reports are due July 2006, 2007, 2008, and 2009 and a stand-alone final report is due October 2010.

Final Report Due: 2010

Publications Completed: None

Affiliated WWW Sites: http://www.mms.gov/alaska/

Revised Date: March 2008