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MMS Research on Cetaceans and Anthropogenic Presence

Monitoring bowhead whale migrations in Beaufort Sea

"Bowhead whales occur farther offshore in heavy ice years during fall migrations across the Central Alaskan Beaufort Sea (142 W. to 155 W. longitudes). Bowheads generally occupy nearshore waters in years of light sea-ice severity, somewhat more offshore waters in moderate ice years, and are even farther offshore in heavy ice years.

While other factors (other than sea ice) may have localized effects on site-specific distributions, broad-area distributions of bowhead whale sightings in the central Alaskan Beaufort Sea are related to overall sea-ice severity"

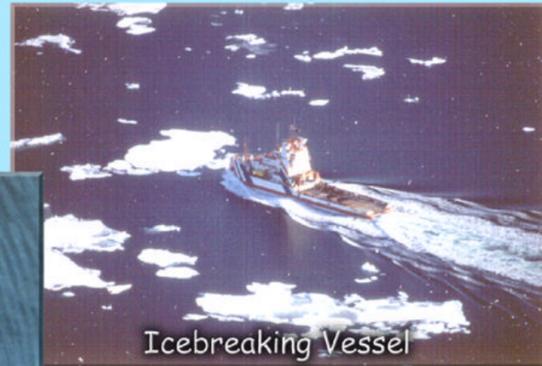
- Treacy, S. 2002



Bowhead survey plane



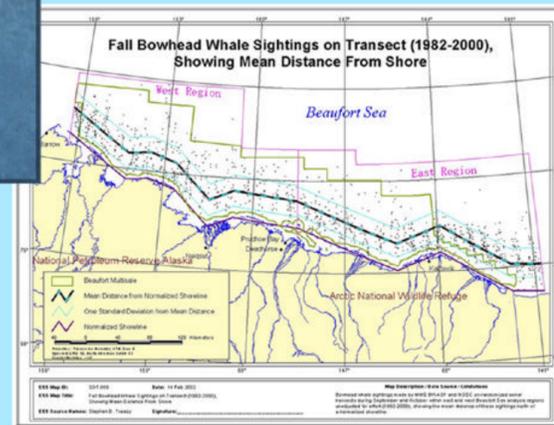
Bowhead whale



Icebreaking Vessel



Bowhead survey plane crew



Sperm whales in the Gulf of Mexico and the seismic industry

A long-term sperm whale study program was initiated in the Gulf of Mexico Region in 2000. It began as an interagency agreement with the National Marine Fisheries Service and evolved into a cooperative agreement with Texas A & M Research Foundation.

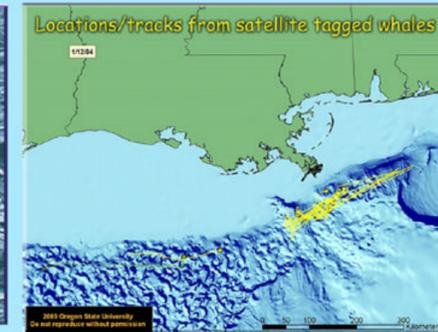
This is a unique effort, with research conducted by Oregon State University, Woods Hole Oceanographic Institution, Scripps Institution of Oceanography, Ecologic Inc., Durham University, Universities of Colorado and South Florida, and Texas A & M at Galveston. The Sperm Whale Seismic Survey (SWSS) has direct coordination with Lamont-Doherty Earth Observatory and Naval Research offices at Stennis Space Center. Funding and/or material support is provided by Minerals Management Service, the International Association of Geophysical Contractors, the Industry Research Funders Coalition, the Office of Naval Research, the National Science Foundation, and the National Fish and Wildlife Foundation. Current plans are to continue with the SWSS program through 2006.



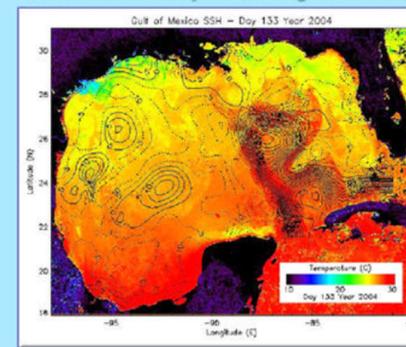
Approaching a sperm whale for tagging and biopsy



Digital tag attachment

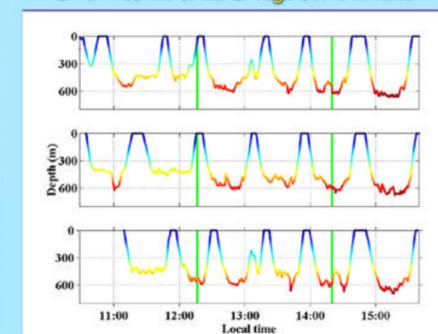


SSH conditions in May 2004, showing "Titanic" Eddy



NOAA Ship Gordon Gunter with sperm whales in GOM

Dive Profiles from D-tags for 3 whales



Objective:

Long-term monitoring of the fall migration of bowhead whales, Alaska Beaufort Sea for OCS decision making and stewardship:

Goals:

- Bowhead Whale Aerial Survey Project (BWASP)
- Provide real-time data to MMS and NMFS on the general progress of the fall migration of bowhead whales across the Alaskan Beaufort Sea, for use in protection of this endangered species;
- Define the annual fall migration of bowhead whales, significant inter-year differences, and long-term trends in the distance from shore and water depth at which whales migrate;
- Monitor temporal and spatial trends in the distribution, relative abundance, habitat, and behaviors (especially feeding) in Arctic waters;
- Provide an objective wide-area context for management interpretation of the overall fall migration of bowhead whales and site-specific study results;
- Record and map beluga whale distribution and incidental sightings of other marine mammals.

Objectives:

Gain a better understanding of sperm whale biology and behavior in the GOM, characterization of sperm whale habitat, and investigation of potential impacts of anthropogenic noise associated with the oil and gas industry.

Goals:

- Sperm Whale Biology
 - S-tags, D-tags, B-Probe
 - Genetic sampling
 - Photo ID
 - Mesoscale population study
 - Passive acoustic monitoring
- Habitat Characterization
 - Remote Sensing
 - Near Surface Measurements
- Impacts of anthropogenic noise
 - S-tags: compare tagged whale locations with location of seismic vessels
 - measure ambient noise
 - analyze seismic vessel noise

Some Preliminary Accomplishments

- S-tags:
 - 41 satellite tags attached to whales (2002-18; 2003-15; 2004-8)
 - 7 tags still transmitting (2003-2; 2004-5)
 - Longest operational tag = 689 days
- D-tags:
 - 30 digital tags attached to whales (2002-19; 2003-11)
 - 6 controlled exposure experiments (CEE)
- Genetic Sampling:
 - More than 150 samples obtained from biopsy darts and sloughed skin
- Photo-identification:
 - ~160 photo identifications made, some animals resighted after more than 5 years
- Passive acoustic monitoring and tracking
 - Detected and monitored whales including their range and depth
- Calibration study (2003)
 - Conducted deep (3,200 m) and shallow water (30 m) calibrations of airgun arrays