Cetaceans of BOWFEST: Distribution off Barrow, Alaska 2007-2011

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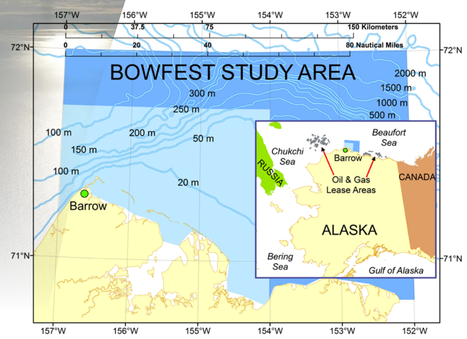
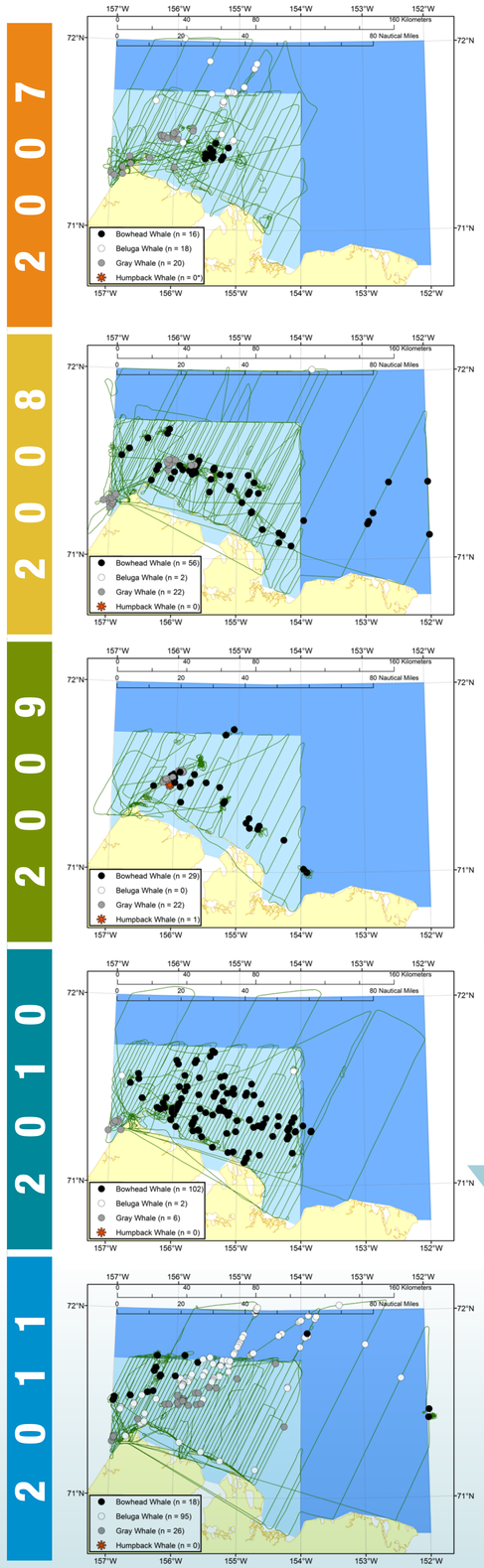
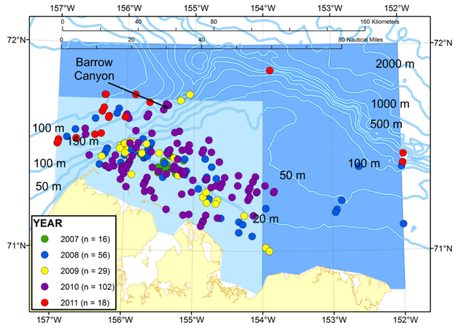


ABSTRACT: The Bowhead Whale Feeding Ecology Study (BOWFEST), funded through an Interagency Agreement between the Bureau of Ocean Energy Management (BOEM) and the National Marine Mammal Laboratory (NMML), conducted field operations from 2007 to 2011. The impetus was to minimize potential impacts from petroleum development activities by gaining a better understanding of bowhead whale (*Balaena mysticetus*) behavior and distribution. This was a multi-disciplinary study involving oceanography, acoustics, tagging, stomach sampling, and aerial surveys. Research focused on late summer oceanography and prey densities relative to bowhead distribution over continental shelf waters near Barrow, Alaska. The aerial survey component provided information on the spatial distribution of bowheads as well as other cetacean species, including: beluga (*Delphinapterus leucas*), gray (*Eschrichtius robustus*), and humpback whales (*Megaptera novaeangliae*). Sighting numbers were variable from year to year for bowheads (mean=44, SD=36, range: 16-103) and belugas (mean=23, SD=41, range: 0-95), but fairly consistent for gray whales (mean=19, SD=8, range: 6-26). Only one humpback whale was observed by the aerial team (in 2009). Each species distribution was calculated for all whale sightings (weighted by group size) over the 5-year period (using 1SD "Directional Distribution" ellipses in ArcView capturing ~68% of sightings). Overall each species occupied a unique region within the study area: bowheads on the continental shelf along the 20m isobath (in all years except 2011); belugas over the Barrow Canyon; and gray whales along the 50m isobath.

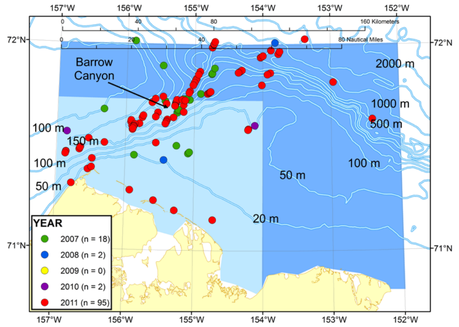
Annual Sightings & Effort



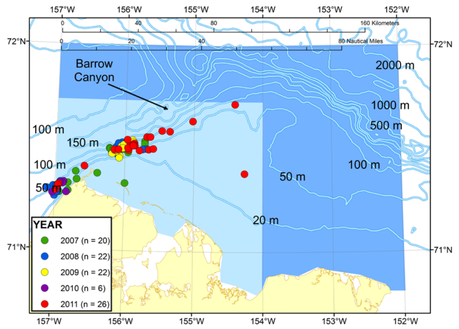
Distribution of Each Cetacean Species



Bowhead Whales

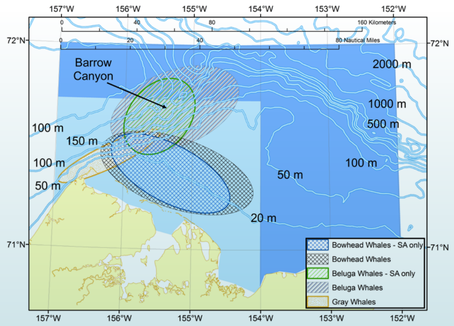


Beluga Whales

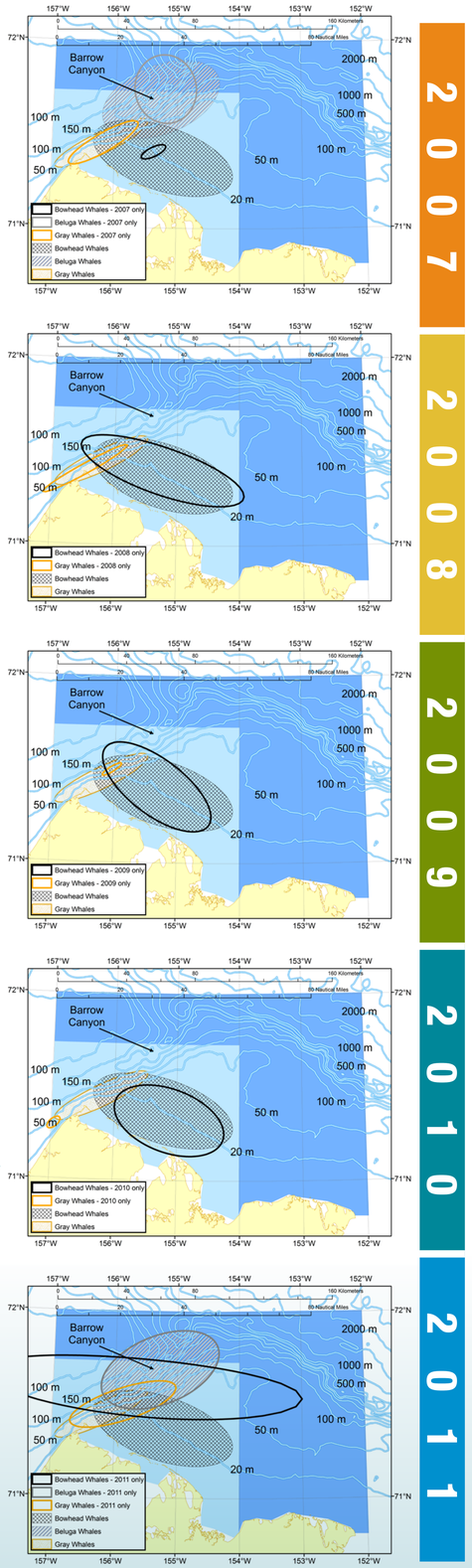


Gray Whales

Standard deviation ellipses reveal the regions occupied by bowhead, beluga, and gray whales during the 5-year study period. All gray whale sightings occurred within the small study area (SA) box. Analyses were also run using only SA sightings of bowheads and belugas to confirm the SA distributions were not significantly different from the analyses using all sightings.



Distribution (Annual v. All Years)



NOAA FISHERIES

BOEM Bureau of Ocean Energy Management

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