

CLIMATE DRIVEN HABITAT ALTERATIONS

Robert Suydam, Ph.D.

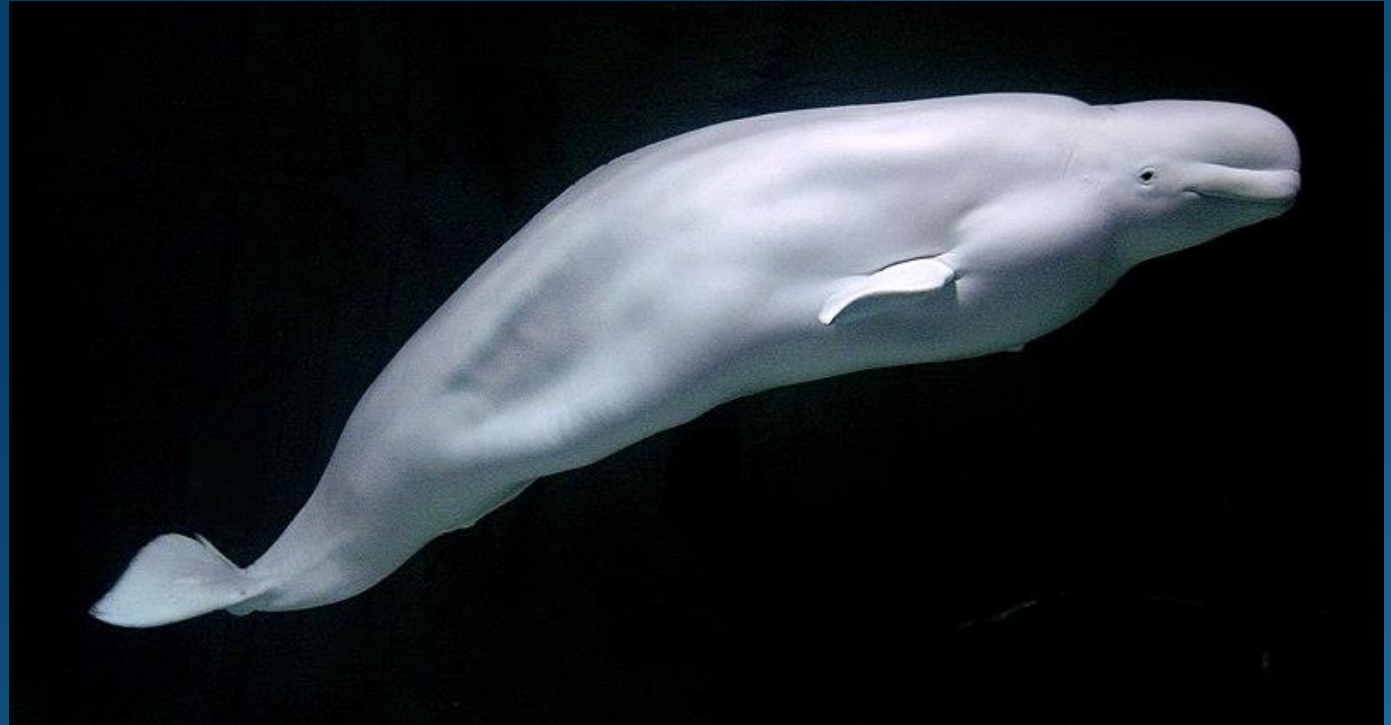
MMC Committee of Scientific Advisors

Retired North Slope Borough, Utqiagvik, Alaska

OBJECTIVES

- PRESENTATIONS
- Marine mammal habitat is changing due to climate change. Learn what we know about those changes.
- On-going mitigation

- PANEL DISCUSSION
- What can we do about it (i.e., mitigation)?
- Can we measure the success of mitigation?



FLORIDA MANATEE

- Long-term impacts of nutrient run-off and seagrass degradation threaten manatees
- Unusual water-temperature fluctuations can cause cold snaps; while higher surface-water temperatures contribute to more severe hurricanes and lethal algal blooms
- Hurricanes, in turn, destroy seagrass and oyster beds necessary to sustain a manatee's ecosystem
- Climate change combined with loss of habitat and food sources due to urban development threaten the species' future



AMAZON RIVER DOLPHINS

- Boto and tucuxi, Amazon and Orinoco River basins
- 175 dead botos and 30+ tucuxis in Lake Tefé, Brazil, >September 2023
- Historic drought: water levels decreasing and temperatures of 102°F, air quality diminishing
- No evidence of an epizootic disease, cyano-bacteria
- Euglenophycin has been detected in water



POLAR BEARS

- Listed in 2008; threat of extinction due to loss of sea ice due to climate change
- 19 populations; not uniform response to sea ice loss
- Beaufort Sea stock declining, ~575 bears?, poorer body condition and cub production
- Chukchi Sea stock stable?, ~3000 bears?, decent body condition and cub production
- Future responses? Are polar bears resilient?

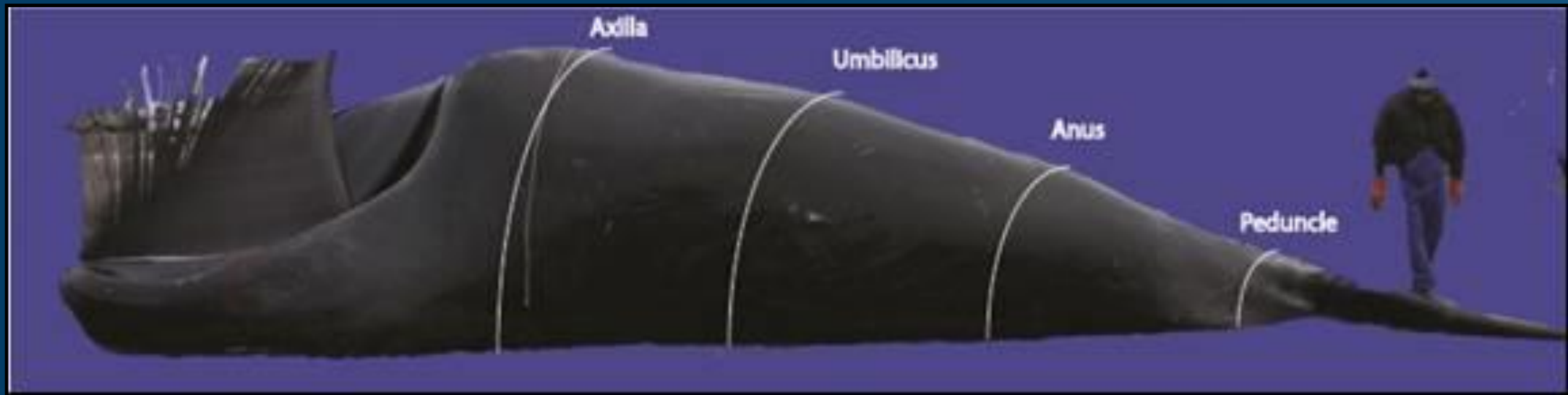


BOWHEAD WHALES—WESTERN ARCTIC

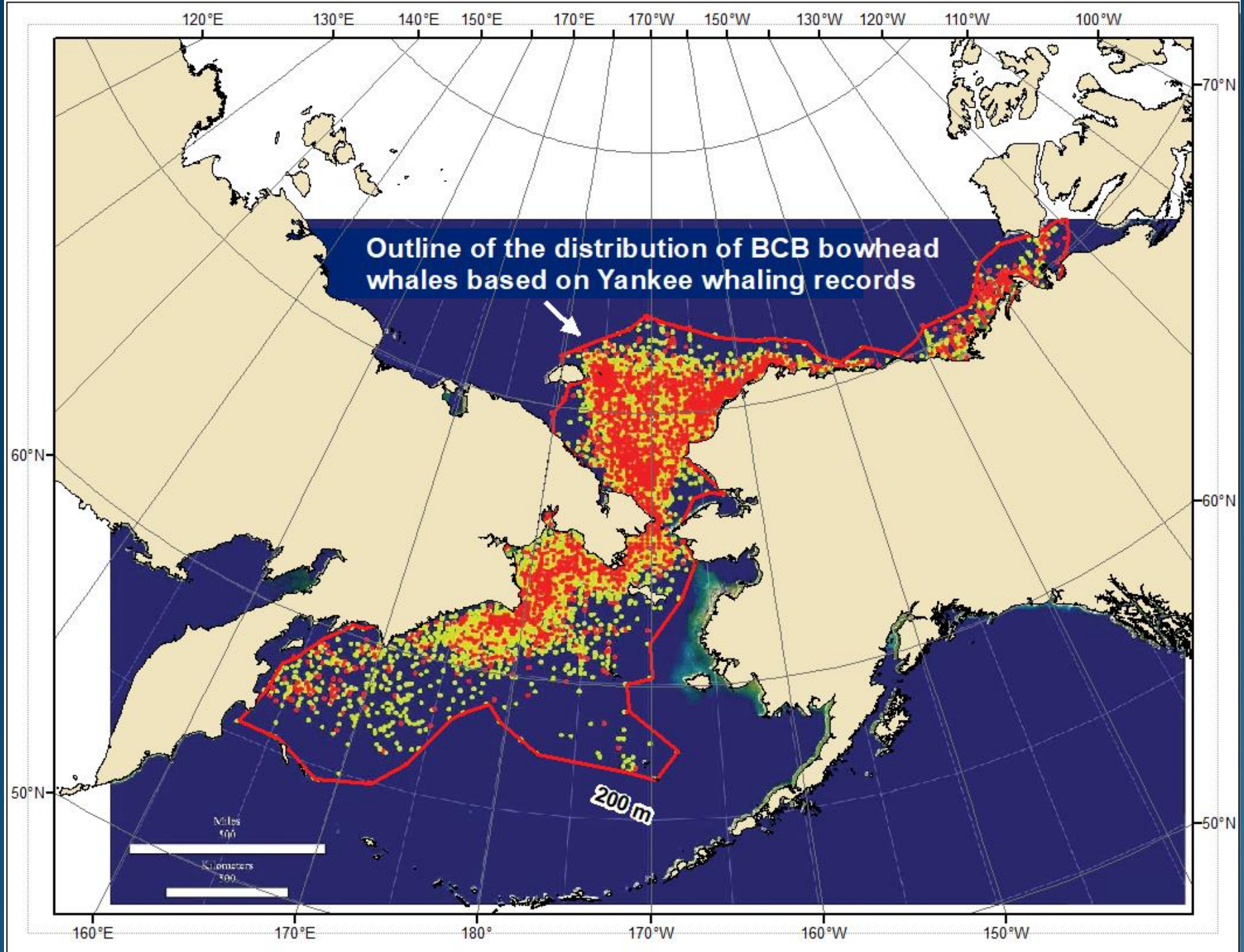
- Important subsistence species
- Body condition (George et al. 2015)
- Distribution (Citta, Quakenbush et al.)
- Responding positively

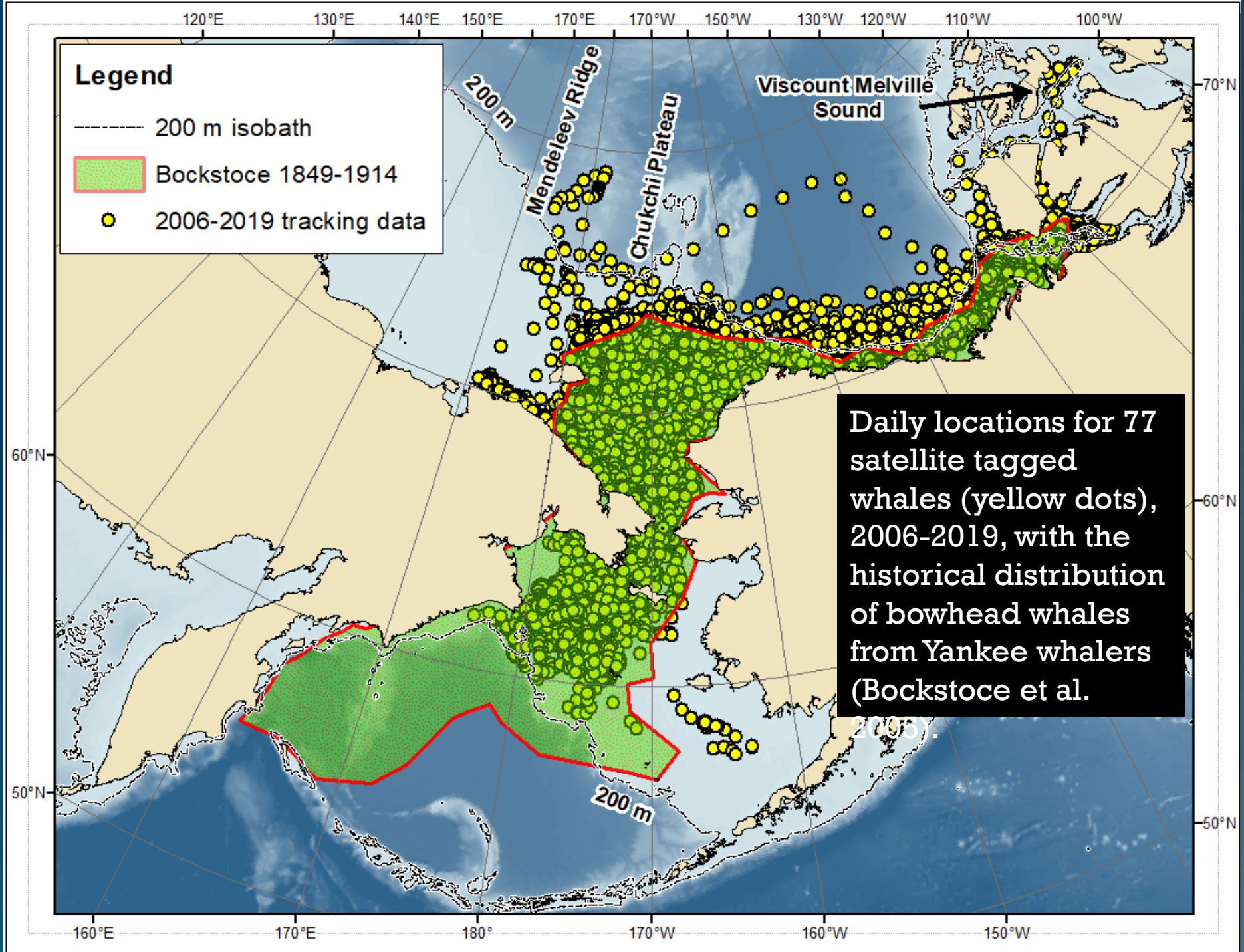


NORTH SLOPE BOROUGH DATA

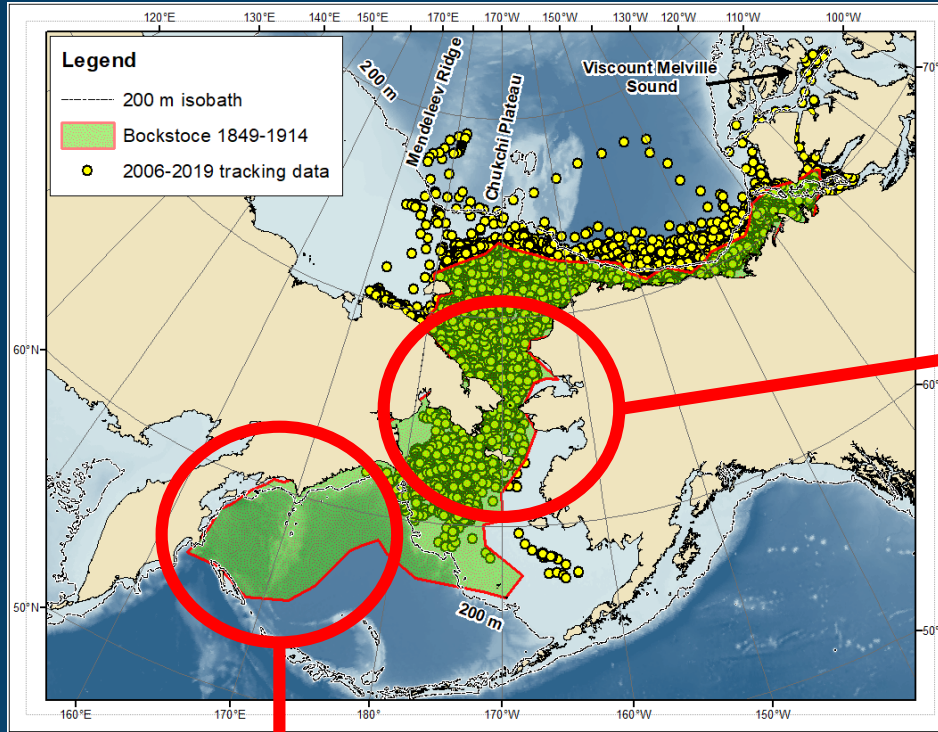


- **Body condition in subadults improved over the summer**
 - Open water over several regions in the Beaufort Sea
 - Duration of melt
 - Onset of freeze-up





Daily locations for 77 satellite tagged whales (yellow dots), 2006-2019, with the historical distribution of bowhead whales from Yankee whalers (Bockstoe et al. 2005).



During winters with normal ice extent, most bowheads overwinter north of the shelf-break in the Bering Sea. During years with low ice extent, BCB bowheads overwinter north of St. Lawrence Island and in the Chukchi Sea.

Yankee whalers found BCB bowheads summering in the SW Bering Sea; it is unclear why bowheads no longer summer here or anywhere else in the Bering Sea. Speculation that a population segment may have been eradicated by Yankee whalers.



**Thank
you!**