

# *Live from IPY!*

*29 May 2007*

*From the USCGC Healy in the Bering Sea*



*Benthic Predators in the Northern Bering Sea*





Raise your hand to ask a question

List of all participants

Return to the Lobby or Exit

Slides will be shown here

'Chat' with one person or the entire group

Connecting to server...  
You have connected successfully!  
You have entered the lobby.  
You have entered 'Arctic Research Consortium of the United States (ARCUS)'.  
Your media format is Third-party Conference Call.

Name	✓X	Hand
Heleen_Wiggins		

Exit Lobby - Help

ARCUS



## *What is PolarTREC?*

PolarTREC is a professional development experience in which K-12 teachers are paired with researchers in authentic polar research experiences.

In the next three years 36 teachers from around the United States will join scientists in the Arctic and Antarctic in celebration of the International Polar Year!

[\*www.polartrec.com\*](http://www.polartrec.com)



# *International Polar Year (IPY)*

## *2007-2009*

The International Polar Year (2007-2009) is an exciting scientific campaign focusing on the world's polar regions!

IPY is a time for discovery, science, learning, and awareness about the polar regions with activities for youth, scientists, and the public.

[\*www.ipy.org\*](http://www.ipy.org)



## *Who are we talking with today?*



**Jackie Grebmeier**  
Chief Scientist  
University of Tennessee



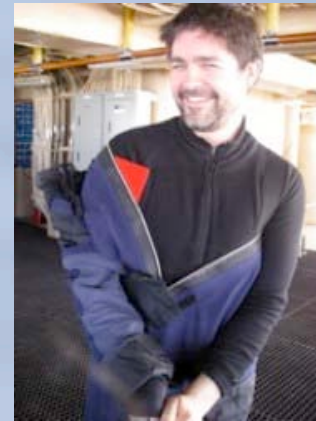
**Janet Warburton**  
PolarTREC Project  
Manager, ARCUS



**Lee Cooper**  
University of Tennessee



**Jim Lovvorn**  
University of Wyoming



**Mike Cameron**  
National Marine Lab/NOAA.



**Mike Apataki**  
Gambell Island, Alaska



## *Who are we talking with today?*



Perry Pungowiyi  
Savoonga, Alaska



Boby Ungwil  
John Spangalook School  
in Gambell, Alaska





## *Climate-Driven Change in Impacts of Benthic Predators in the Northern Bering Sea*



### ***Goal of the project:***

*Conduct transects over the northern Bering Sea to inventory the benthic population and document changes in the marine food web.*

### ***Dates:***

*16 May - 18 June 2007*

### ***Location:***

*Aboard the US Coast Guard Cutter Healy, in the Bering Sea*

# **CLIMATE-DRIVEN CHANGES IN IMPACTS OF BENTHIC PREDATORS IN THE NORTHERN BERING SEA**

**Jackie Grebmeier and Lee Cooper, University of Tennessee Knoxville  
And James R. Lovvorn, University of Wyoming**

**with Mike Cameron-NMML/NOAA; Mike Apatiki and Bobby  
Ungwiluk-Gambell, Alaska; Perry Pungowiyi-Savoonga, Alaska;  
and Janet Warburton-PolarTREC, Fairbanks, Alaska**







**USCGC Healy**



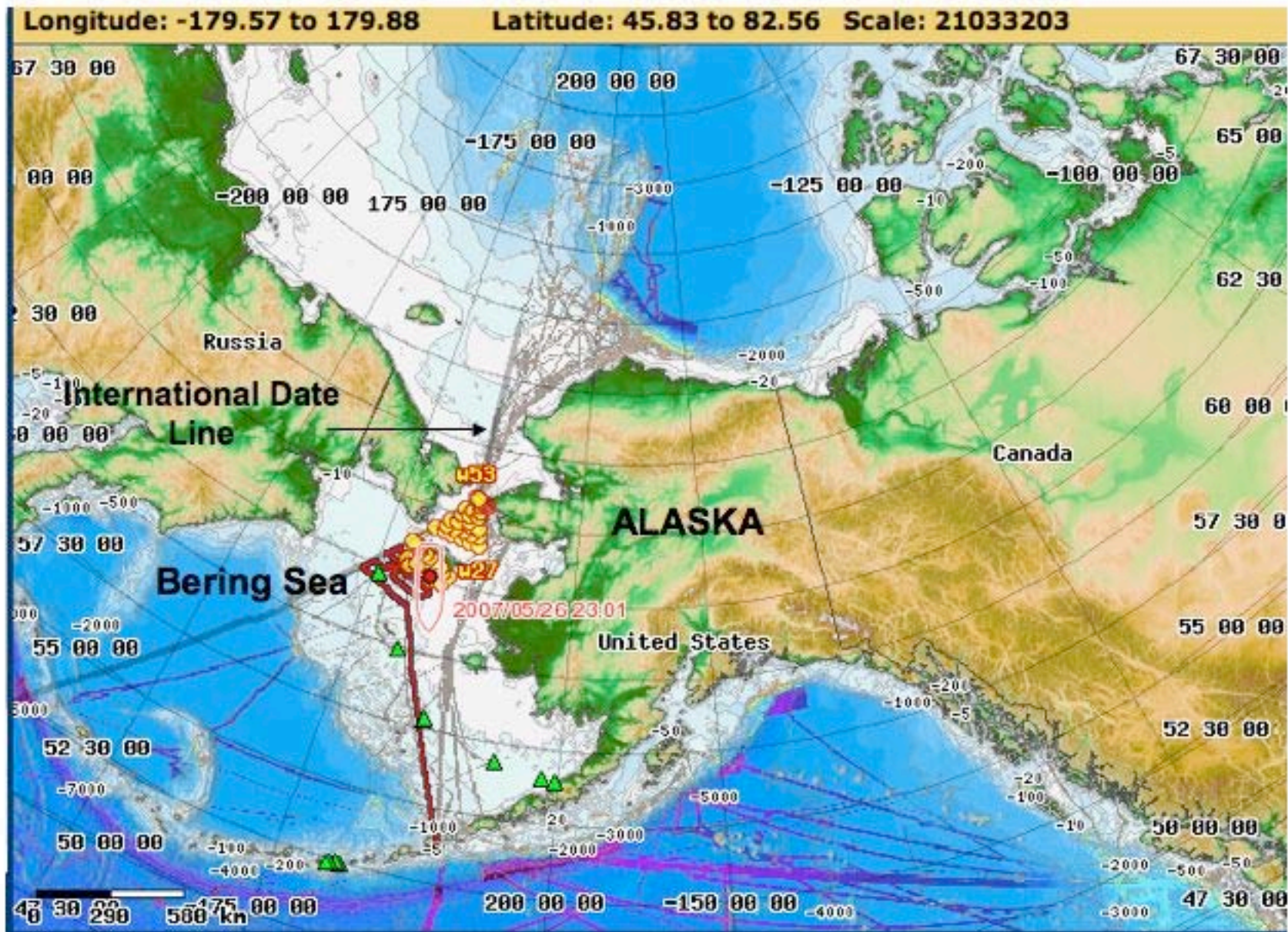
# *Where is the Bering Sea?*



# *Area of Study: Northern Bering Sea*

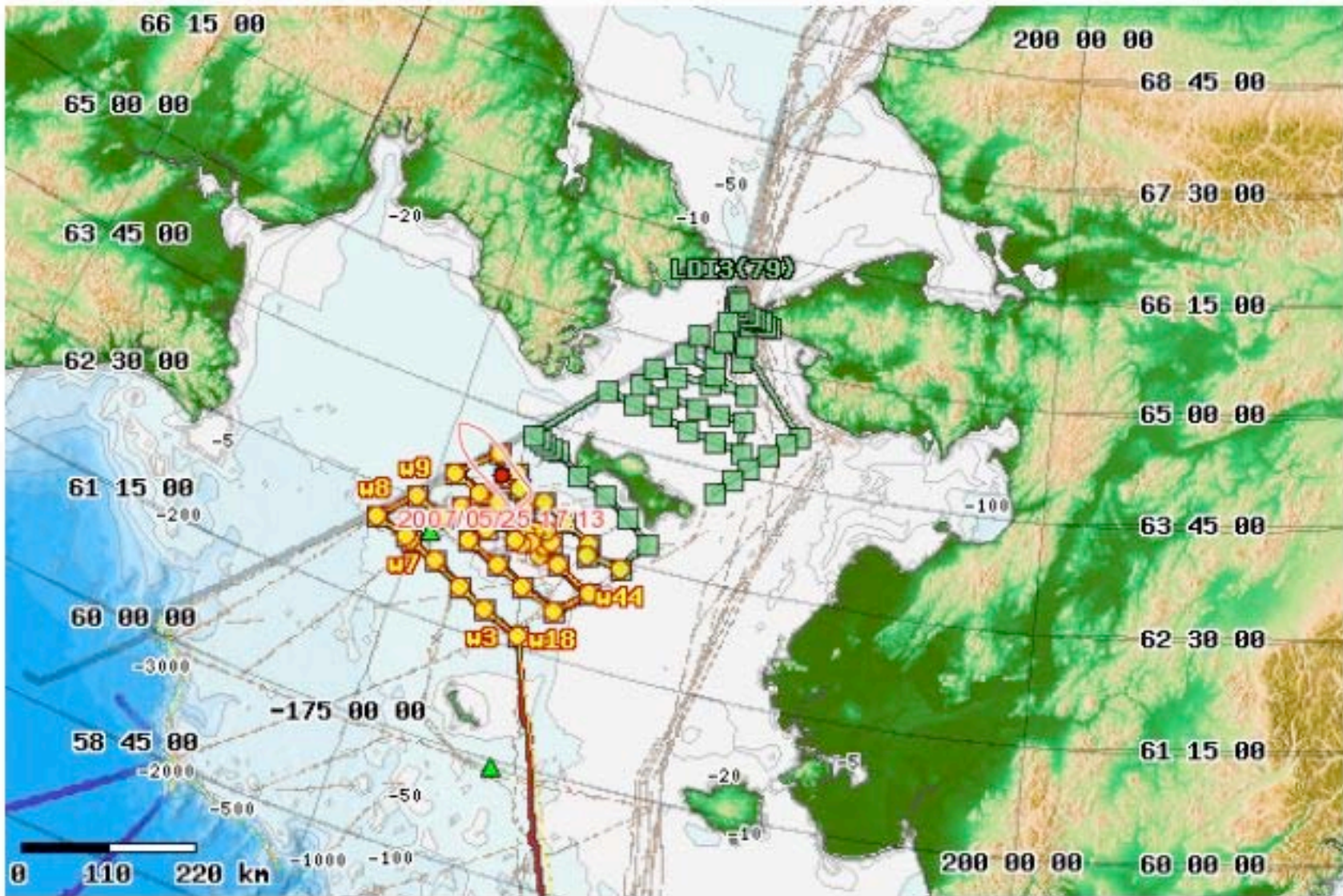






Ship Position at 2007/05/26 23:01:28 - Longitude: 170 55.057 W    Latitude: 62 36.711 N  
 "Sandwell & Smith" depth: 43 m    Multibeam depths(Archive/Current/Centerbeam): NA / NA / NA m  
 SOG: 4.3 COG: 163.3 Heading: 162.97 Water Temp: NA Sal: NA Fluor: NA Wireout1: NA  
 Wireout2: NA



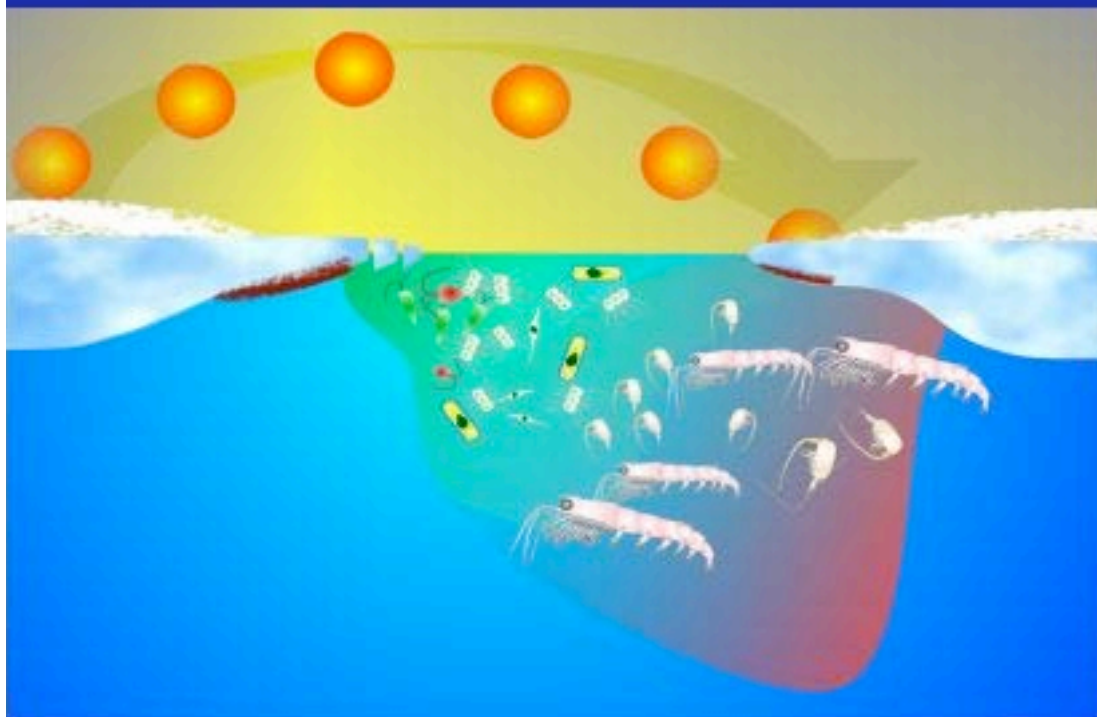


Healy ship location HLY0702-May 25, 2007



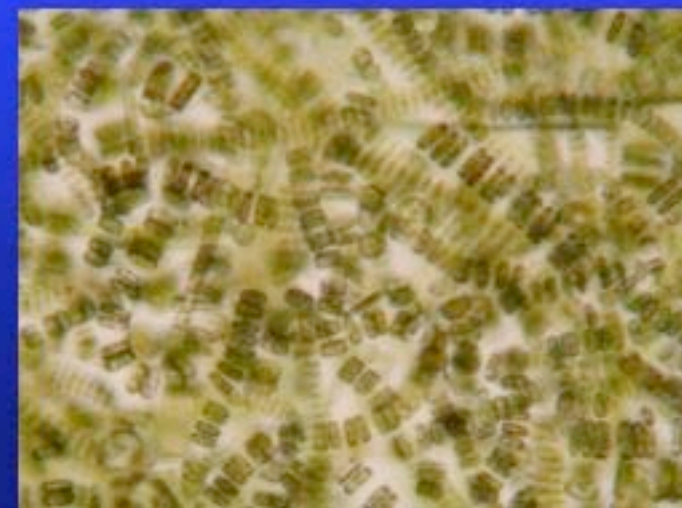
# Ice algae important in spring vs water column production in summer

4



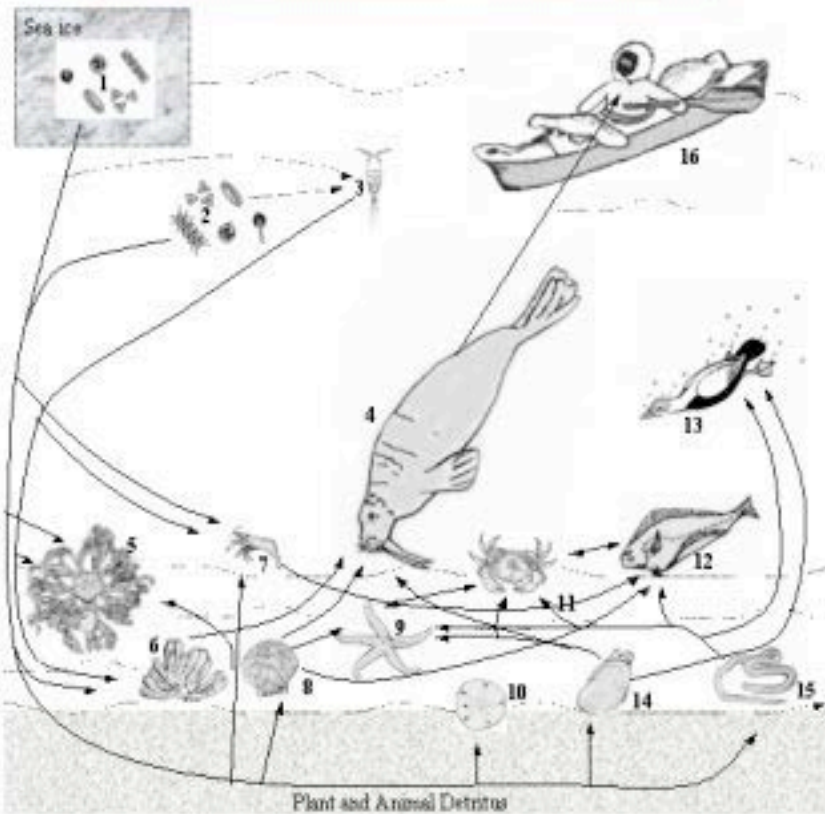
[Wassman et al. 2004]

Ice algae slower rates of decay compared to temperate diatoms – allows more “labile” material to fuel benthic production in shelf regions; timing/location critical





# Walrus herd in the Chukchi Sea– June 2002



Clam food  
in walrus  
stomachs →



← Schematic of food web in  
the northern Bering and  
Chukchi Seas

[Grebmeier and Dunton 2000]



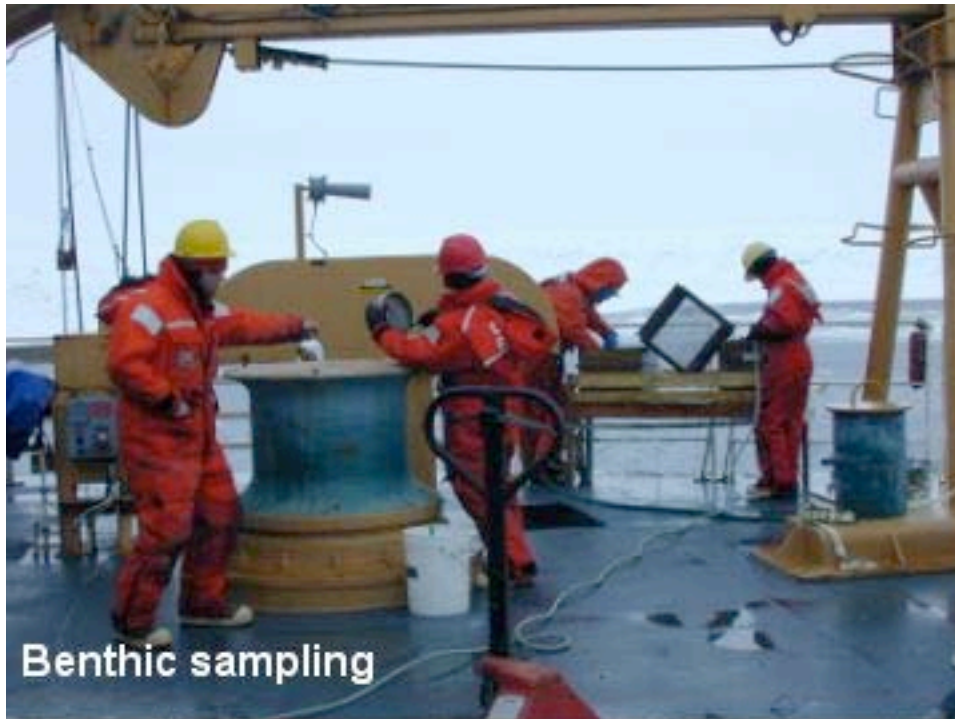


[photos by J. Loworn]



Spectacled Eider and  
benthic food supply  
(dominated by  
bivalves: *Nuculana  
radiata*, *Nucula belloti*,  
*Macoma calcaria*)





Benthic sampling



Sipunculid worm



Benthic worm



Benthic clams





Otter trawl with lots of brittle stars





lots of crabs





HAPS benthic corer for mud samples



**Mud cores from HAPS corer**



# NOAA/National Marine Mammal Laboratory - Arctic ice seal research 12





# NOAA/National Marine Mammal Laboratory - Arctic ice seal research 13

ABUNDANCE AND DISTRIBUTION SURVEYS

BEHAVIOR, GENETICS, PHYSIOLOGY

AERIAL



CAPTURES



SHIPBOARD



SATELLITE  
TELEMETRY





Combined counts of ice seals from helo and ship surveys Eastern Bering Sea April 14 - May 8, 2007

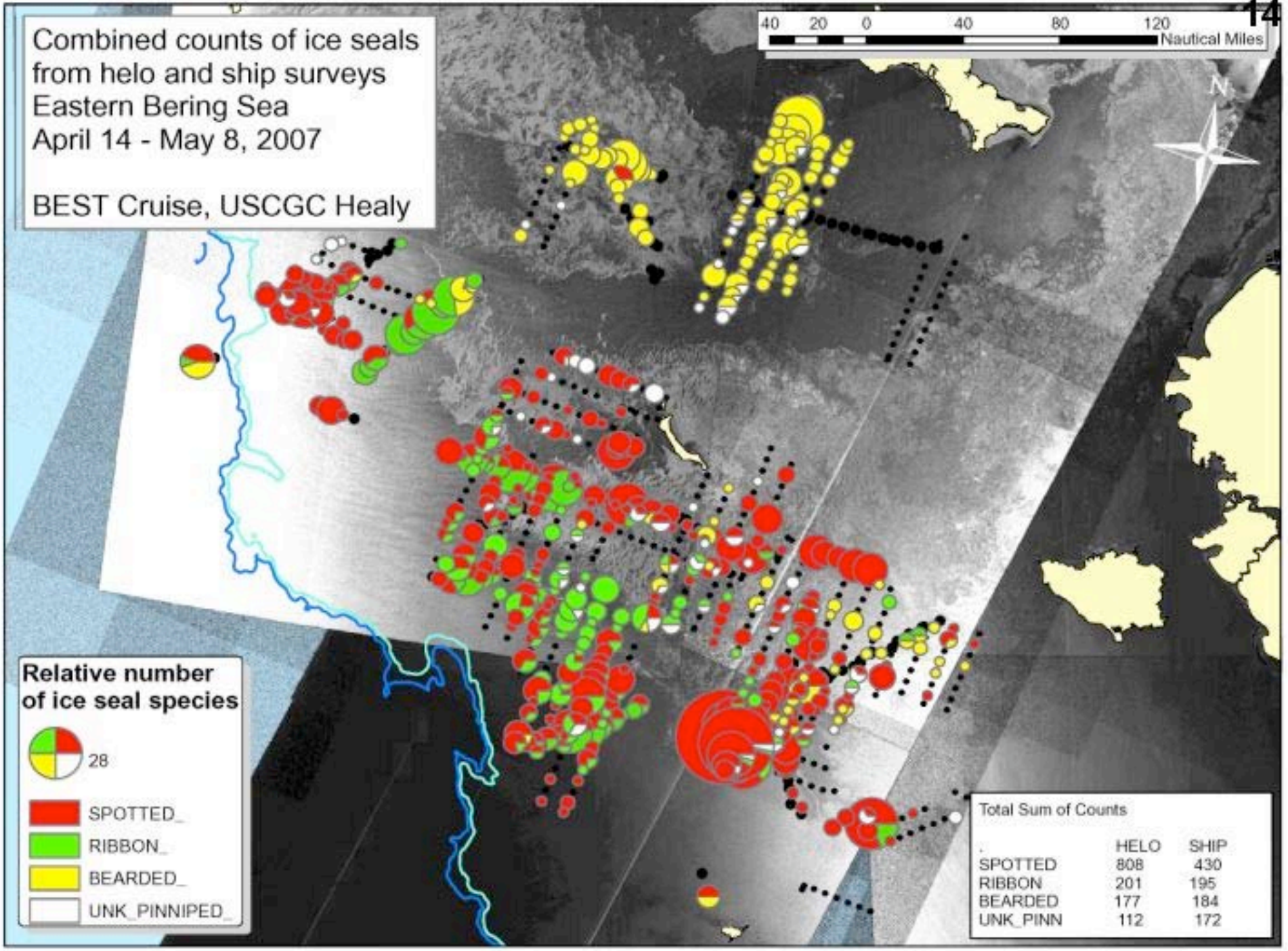
BEST Cruise, USCGC Healy



Relative number of ice seal species



Total Sum of Counts		
	HELO	SHIP
SPOTTED	808	430
RIBBON	201	195
BEARDED	177	184
UNK_PINN	112	172





# CAPTURES





## SATELLITE TELEMETRY

### SPOT tags

- Attached to flipper (**permanent**)
- transmits when seal is hauled out  
(**locations only on ice/land**)
- Location and haulout data

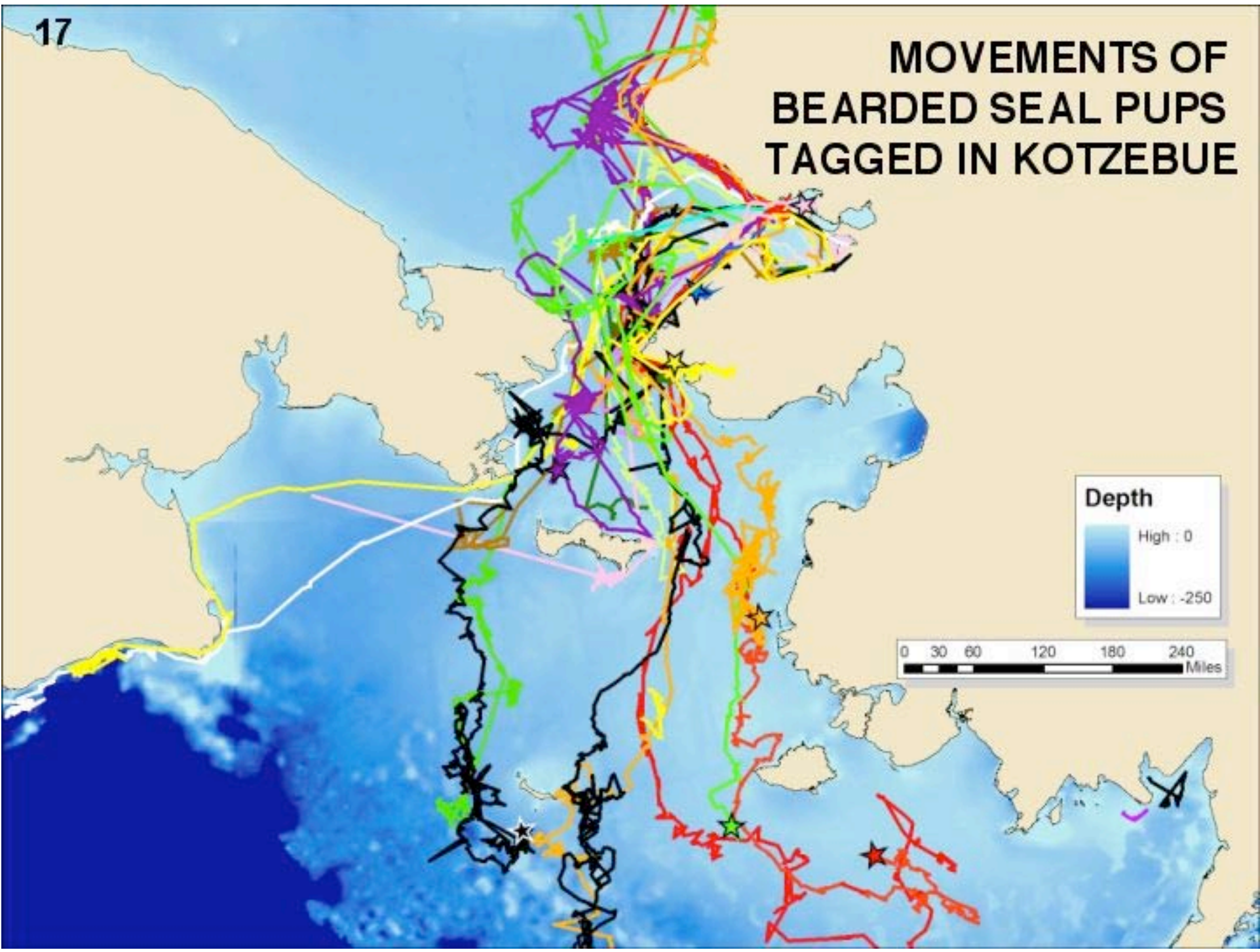


### SPLASH tags

- Glued to seal's fur (**temporary**)
- Transmits when seal's back is exposed  
(**provides locations at-sea**)
- Location, haulout and **dive data**



# MOVEMENTS OF BEARDED SEAL PUPS TAGGED IN KOTZEBUE





# Local Alaskan Communities have subsistence hunt and lifestyle associated with productive northern Bering Sea

Gay Sheffield, Alaska Dept of Fish & Game- BSEO lead marine mammal component, tissue collections for contaminants, genetics, prey tracking

Jellyfish in Bering Strait



Listening to bearded seals under ice at Little Diomede, Alaska



Subsistence hunting





Thank you. Any questions?



[photo courtesy Karen Frey]



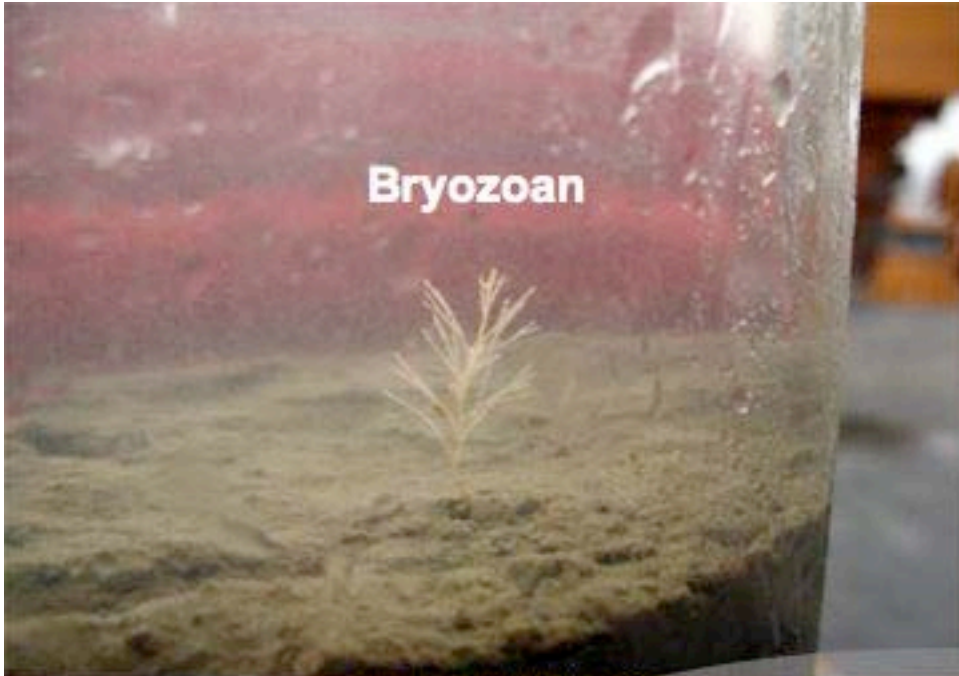


**Gambell, Alaska**

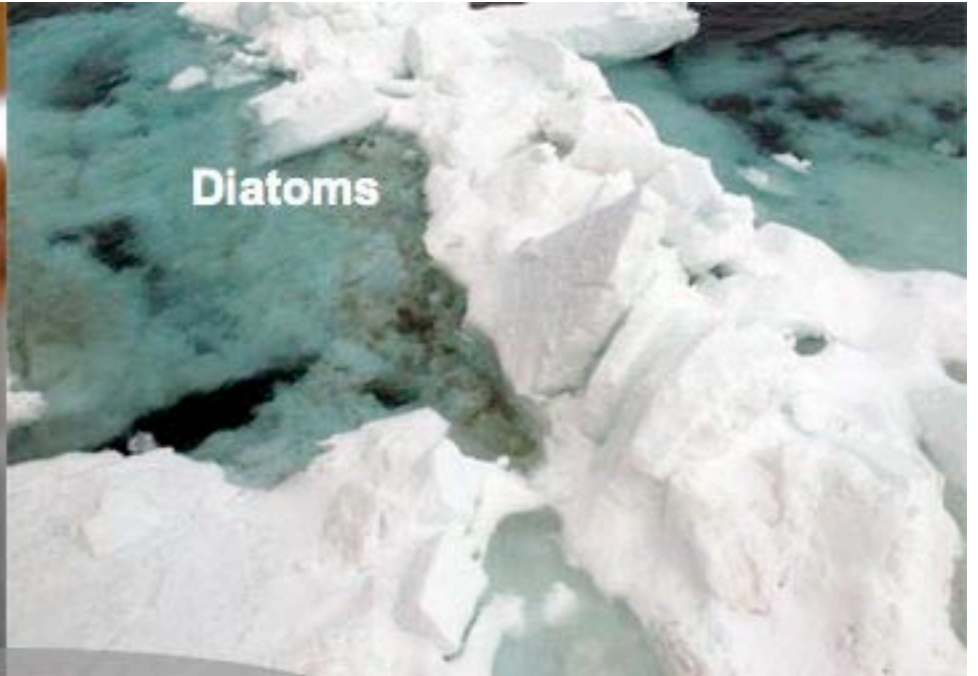


*Photos by Jahet Warburton*





**Bryozoan**



**Diatoms**



**Sea Urchin**



**Barnacles & Snails**

**Ocean Life**

*Photos by Beth Cassie*





**Polar Bear!**

*Photos by Liz Labunski & Shawn Dahle*



*Check out and register for upcoming events!*



***Live from IPY!***

[www.polarrec.com](http://www.polarrec.com)



*Thank  
You!*

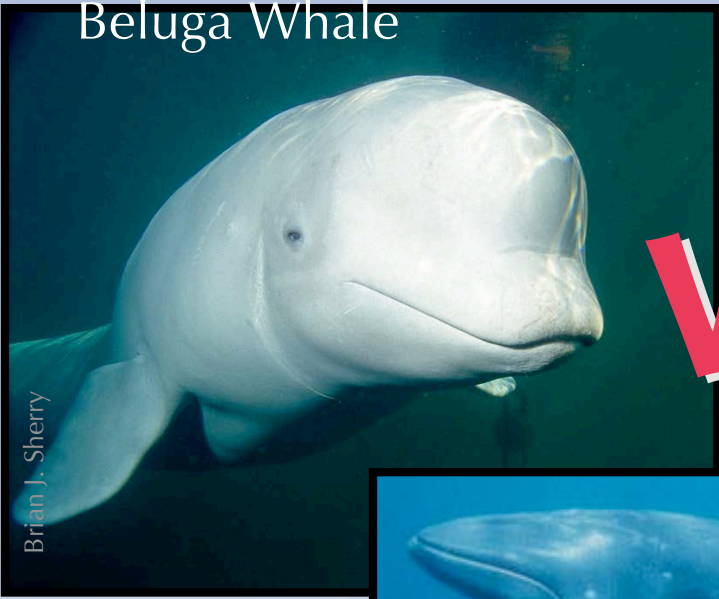


*If you have further questions,  
please contact us at  
[info@polartrec.com](mailto:info@polartrec.com) or call  
1-907-474-1600*



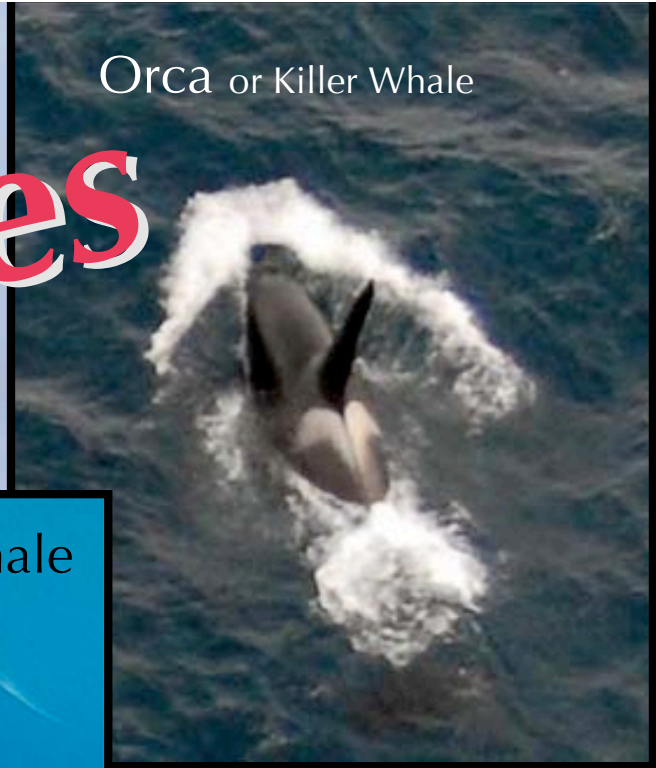


Beluga Whale



Brian J. Sherry

Orca or Killer Whale



# Whales

Minke Whale



Reef Teach

Humpback Whale



NOAA



Sea World



# Seals

Bearded Seal



NOAA

Ringed Seal



Univ. of Alaska

Spotted Seal



Univ. of Alaska

Ribbon Seal



NOAA



# Walrus



Univ. of Oregon



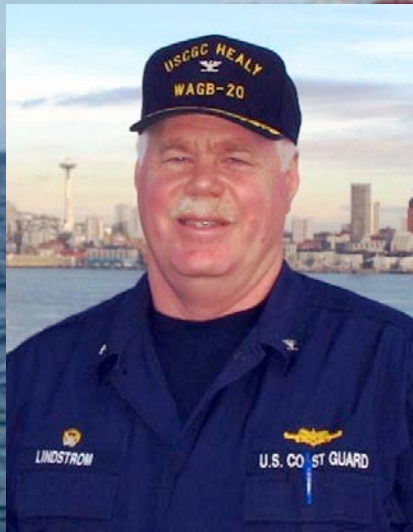
# *Polar Bears*

Can you find the  
Polar Bear?



# *The US Coast Guard Cutter Healy*

- 420 Feet long, longer than a football field!
- Home port: Seattle, WA
- Can break through ice up to 7 feet thick!
- Captain Ted Lindström





# *Breaking Ice*





