

Live from IPY! “Marine Mammals”

with Maggie Prevenas, Robyn Staup, and many special guests!



10 May 2007

Aboard the USCGC Healy in the 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

A screenshot of the HorizonWimba software interface. On the left is a chat window with a scrollable list of messages: "Connecting to server...", "You have connected successfully!", "You have entered the lobby.", "You have entered 'Arctic Research Consortium of the United States (ARCUS)'.", and "Your media format is Third-party Conference Call.". Below the messages is a text input field with "ALL" selected. In the center is a participant list with a header "Name" and a sub-header "Heleen_Wiggins". To the right of the list are icons for "Yes", "No", and a hand icon with a question mark. On the far right is a menu with "Exit", "Lobby", and "Help" options. A red oval highlights the hand icon with a question mark, and another red oval highlights the "Exit Lobby - Help" menu. Arrows point from the external text labels to these elements.



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)



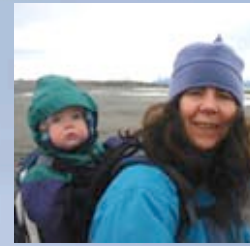
The PolarTREC Team



Wendy Warnick
PolarTREC PI
Executive Director



Helen Wiggins
Program Coordinator



Janet Warburton
PolarTREC
Project Manager



Katie Breen
PolarTREC
Project Manager



Kristin Fischer
PolarTREC
Project Assistant



Ronnie Owens
Web Developer



Ben Wade
Web Developer



Tina Buxbaum
Electronic Media
Project Manager

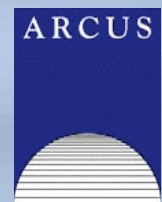


Zeb Polly
Systems Administrator



Joed Polly
Video Production

...with help from
the entire staff
at ARCUS





Who are we talking with today?

**PolarTREC & NOAA
Teacher at Sea Teacher**

Maggie Prevenas

Kalama Intermediate School
Hawaii



**PolarTREC Science
Educator**

Robyn Staup

Boonshoft Museum of Discovery
Ohio



Researcher

Mike Cameron



Researcher

Lee Harris



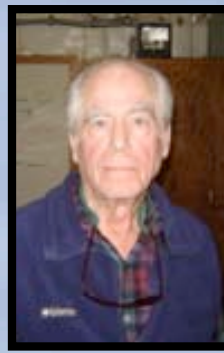
Researcher

Gavin Brady



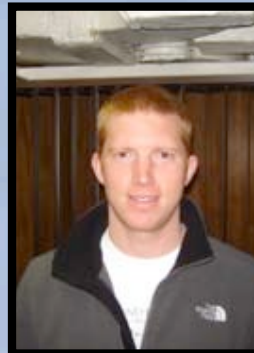
Researcher

Dave Withrow



Researcher

Carleton Ray



Researcher

Lee Harris



Grad. Student

Emily Davenport

Robyn Staup

2007 PolarTREC Teacher



Maggie Prevenas

*2007 PolarTREC Teacher
& NOAA Teacher at Sea*



Emily Davenport

Graduate Student





BEST- Bering Ecosystem Study



Ray Sambrotto

Phytoplankton from the Bering Sea.

Goal of the project:

Conduct transects over the eastern Bering Sea to measure the productivity and health of the marine ecosystem.

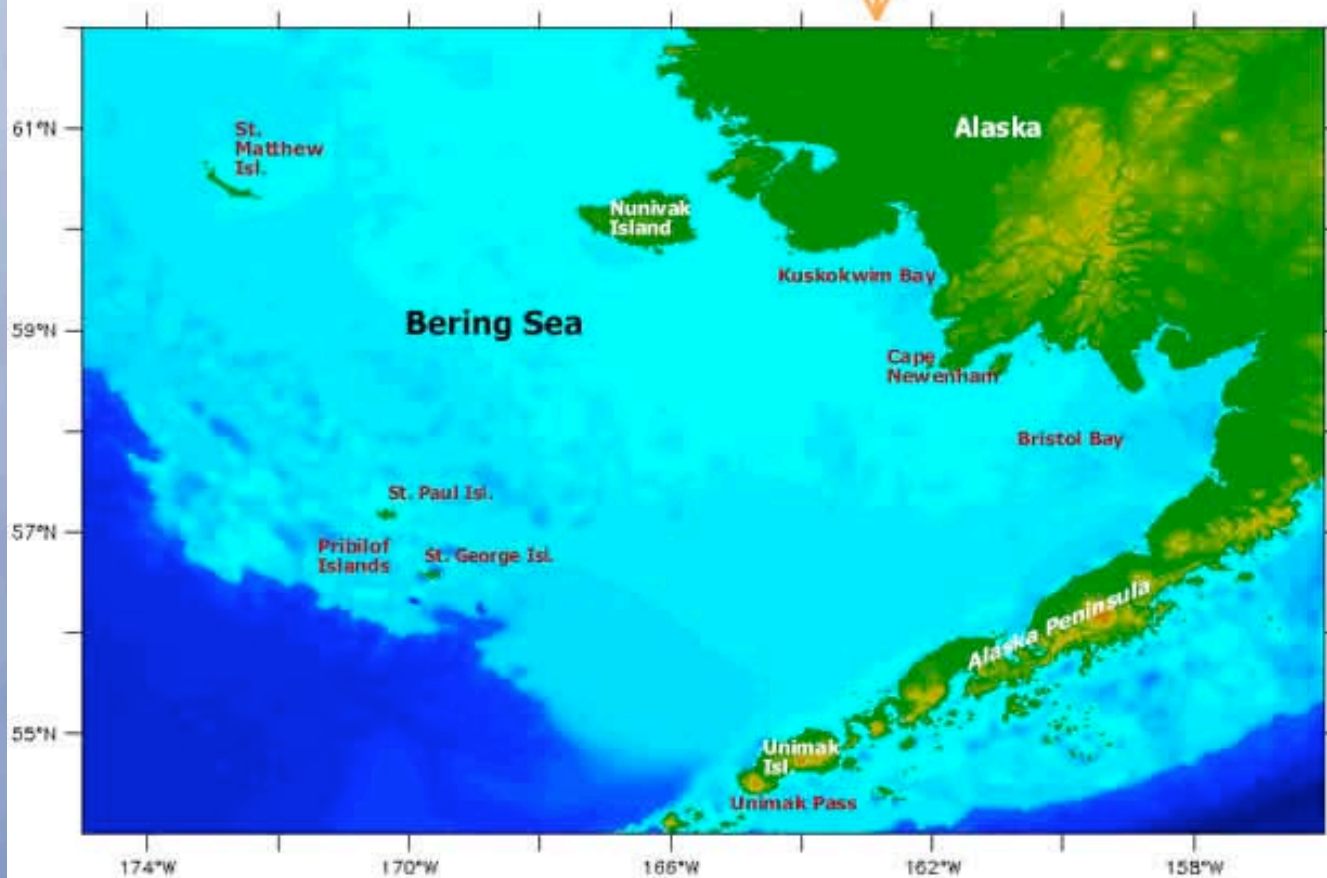
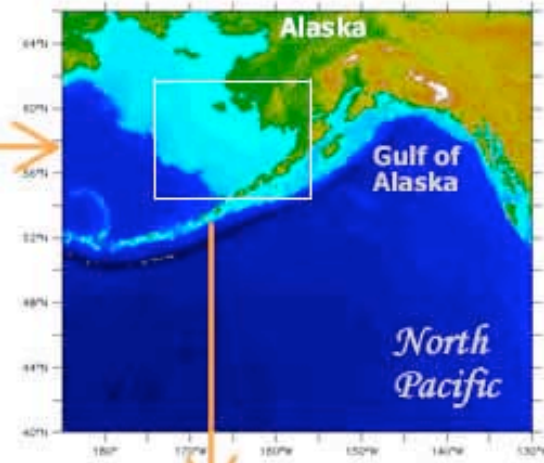
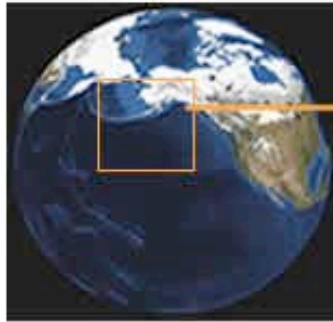
Dates:

7 April - 14 May 2007

Location:

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

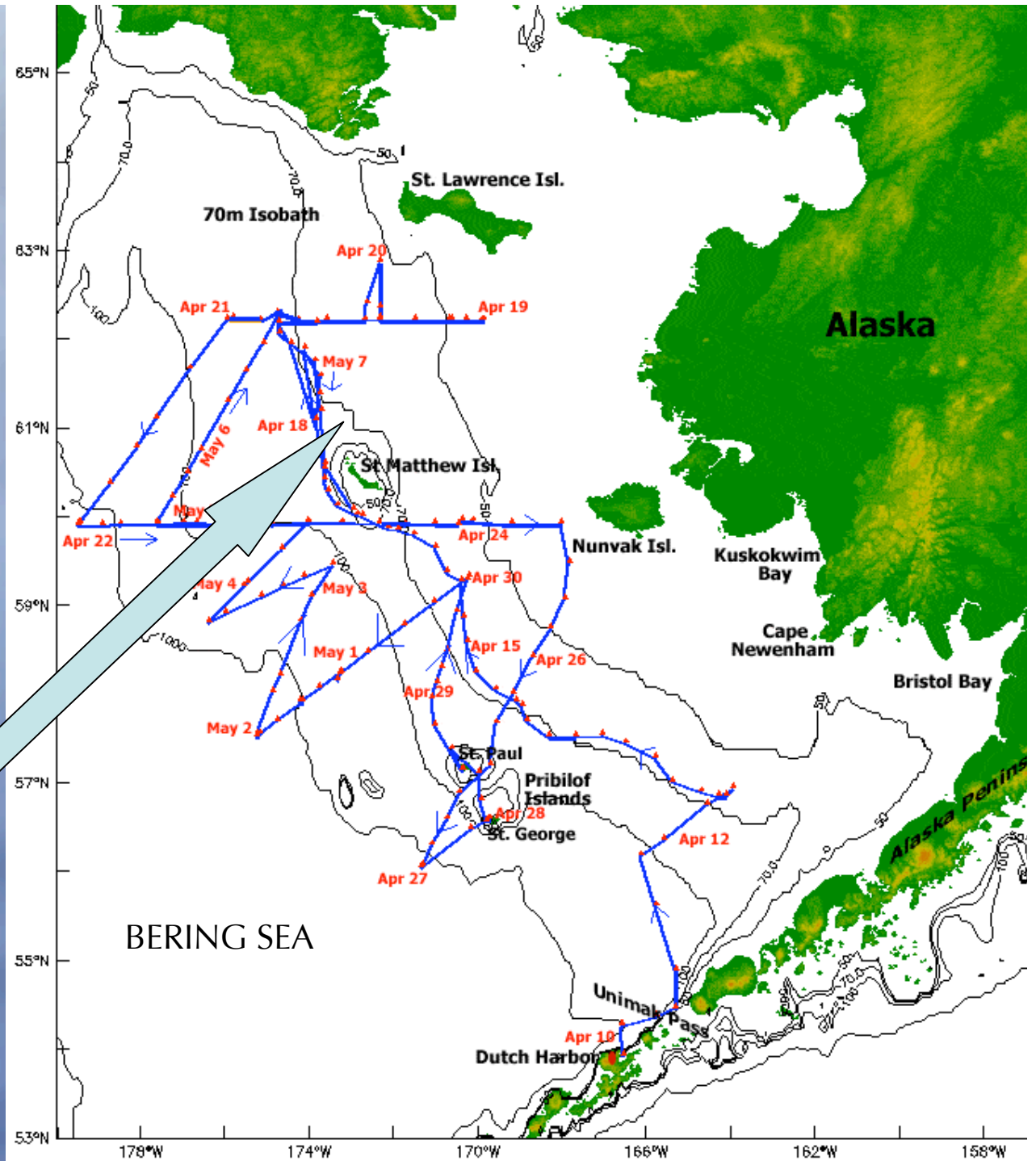
Where is the Bering Sea?



Where is the *USCGC Healy*?



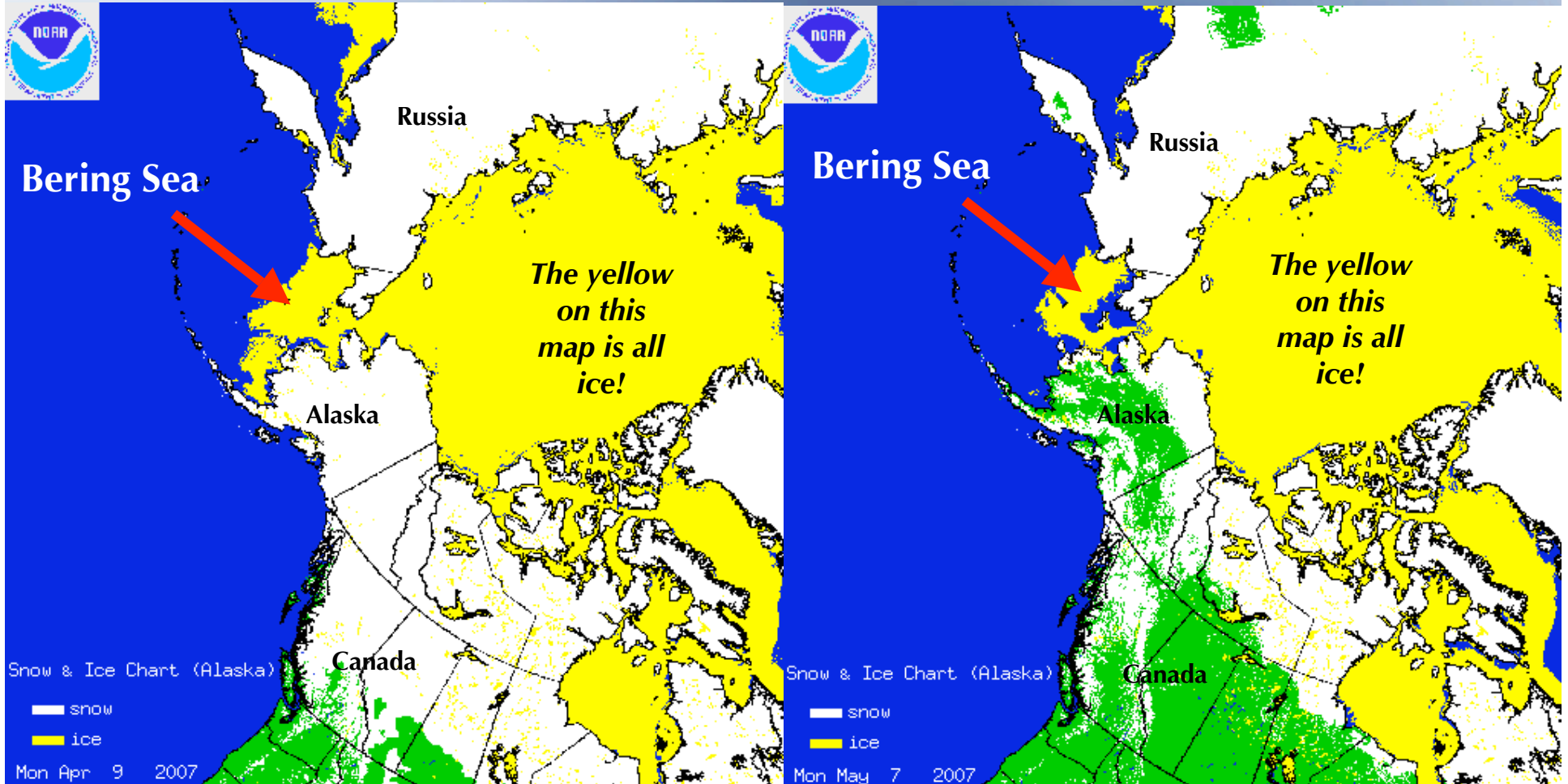
*Approximate
Location of the
USCGC Healy*



Can you see the seasonal changes in sea-ice cover?

Start of Expedition

Present



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!



USCGC Healy Breaking Ice





Life onboard the USCGC Healy

Robyn, Maggie, and the scientists cook a delicious meal for the crew.



Steep Stairs!



Berth (bedroom)



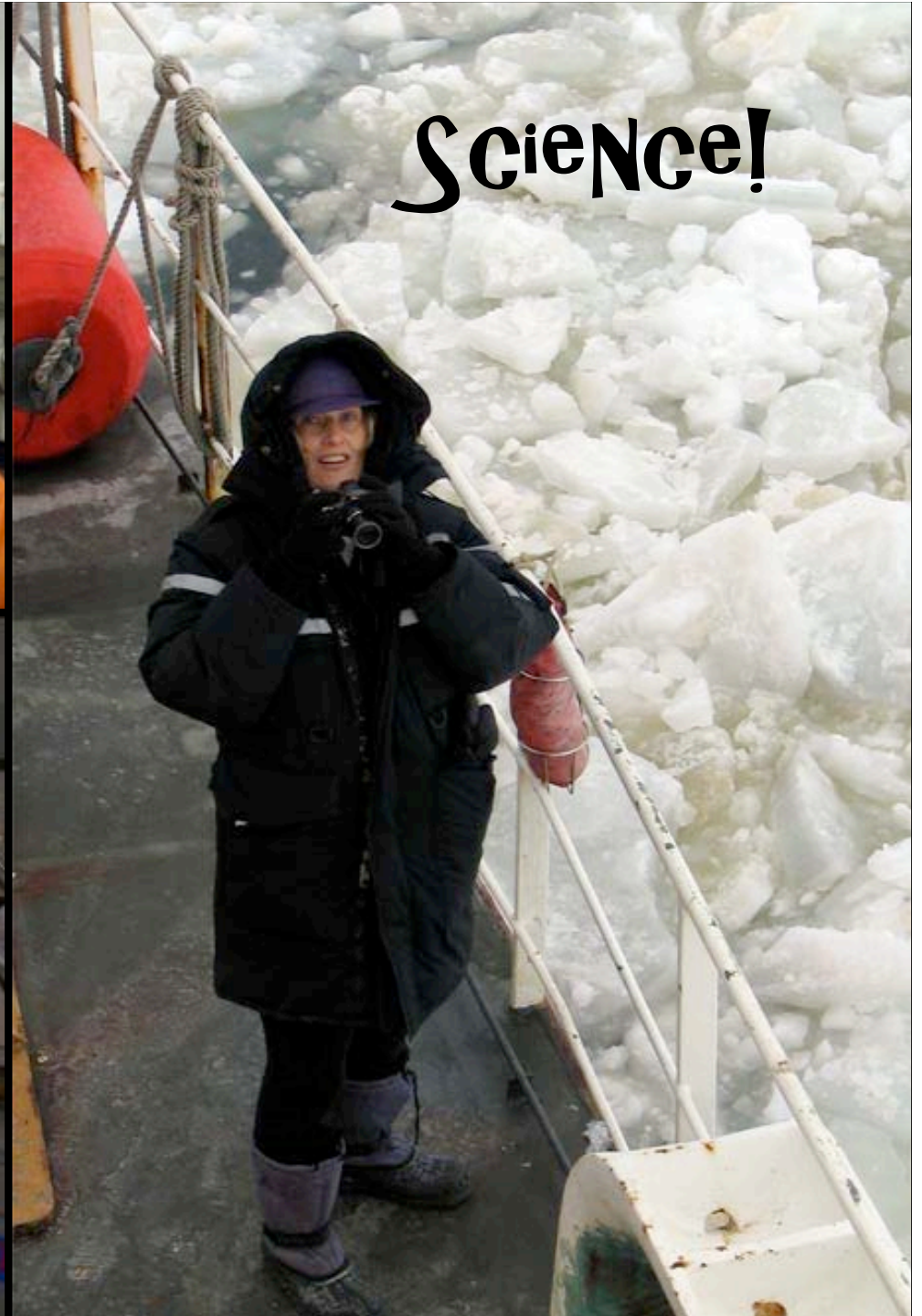
Movie Nights!



SaFety





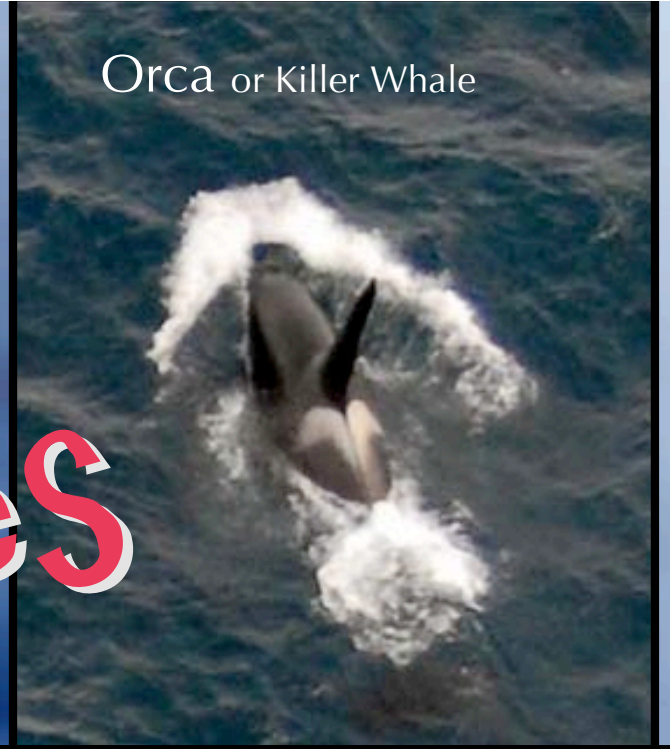


Beluga Whale



Brian J. Sherry

Orca or Killer Whale



Whales



View of beluga whales from the helicopter.



Sea World

WHALeS



Reef Teach

Minke Whale



Humpback Whale

NOAA

Seals

Bearded Seal



NOAA

Ringed Seal



Univ. of Alaska

Spotted Seal



Univ. of Alaska

Ribbon Seal



NOAA

Healy Cruise - ANIMAL COUNT

- 125 Bearded seals
- 7 ribbon seals
- 37 ringed seals
- 113 spotted seals
- 226 walrus

**MrS. P'S
Seal PUP
iMPerSONation**



Walrus



Univ. of Oregon

POLAR BEARS

Can you find the
Polar Bear?



Common Murre



USFWS

Sea Birds



Clavin Brady

Laysan Albatross

Spectacled Eider



USFWS



USFWS

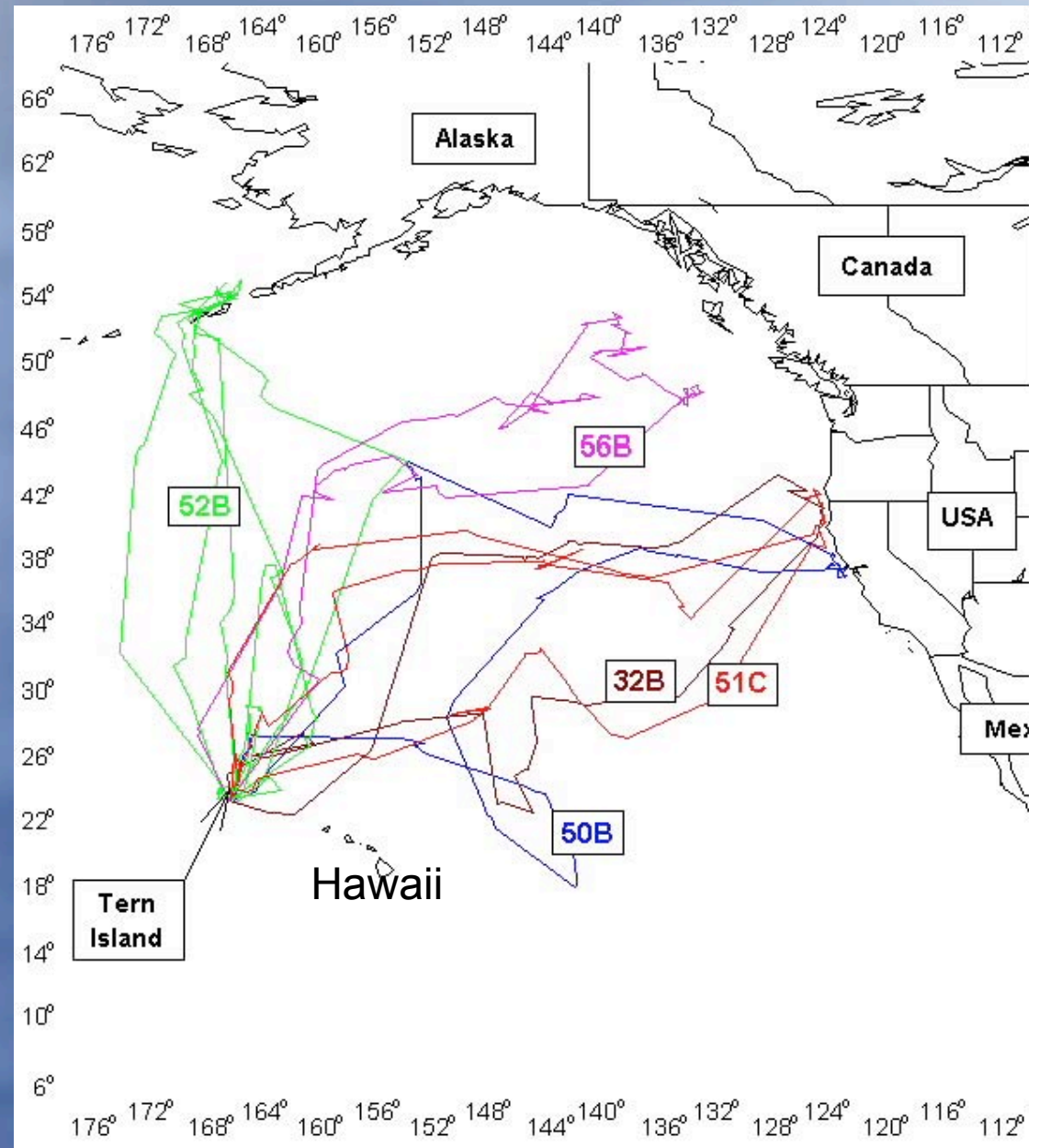
Northern Fulmar

Herring Gull



USFWS

Laysan ALBATROSS



FISH



Pollock



Pacific Salmon

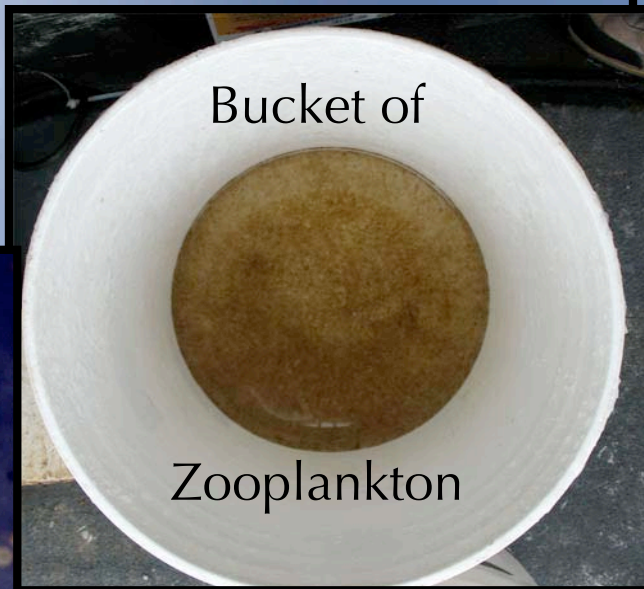


Cod

ZOOPLANKTON

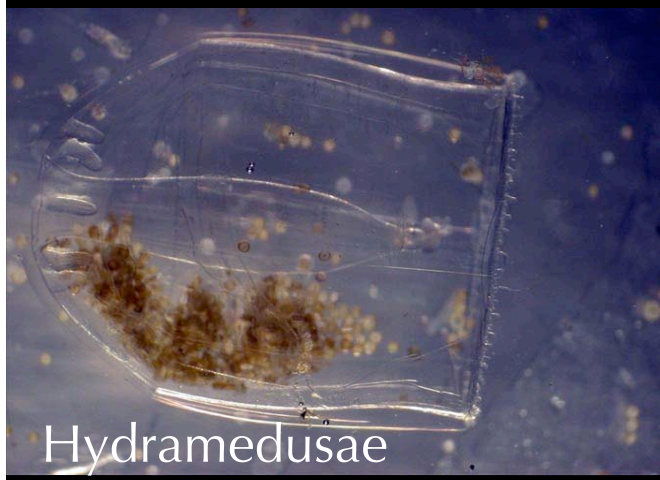


Megalops



Bucket of

Zooplankton



Hydramedusae



Calanus



Arrow Worm



Pteropod



Krill

Preparations & SaFety



CamouFLage



Get to the Ice



Make a PLAN!





SNEAK UP ON THEM...



Test



Weigh



Watch



More Seal Research

Seal



Monitor

Blood
Test



Success!

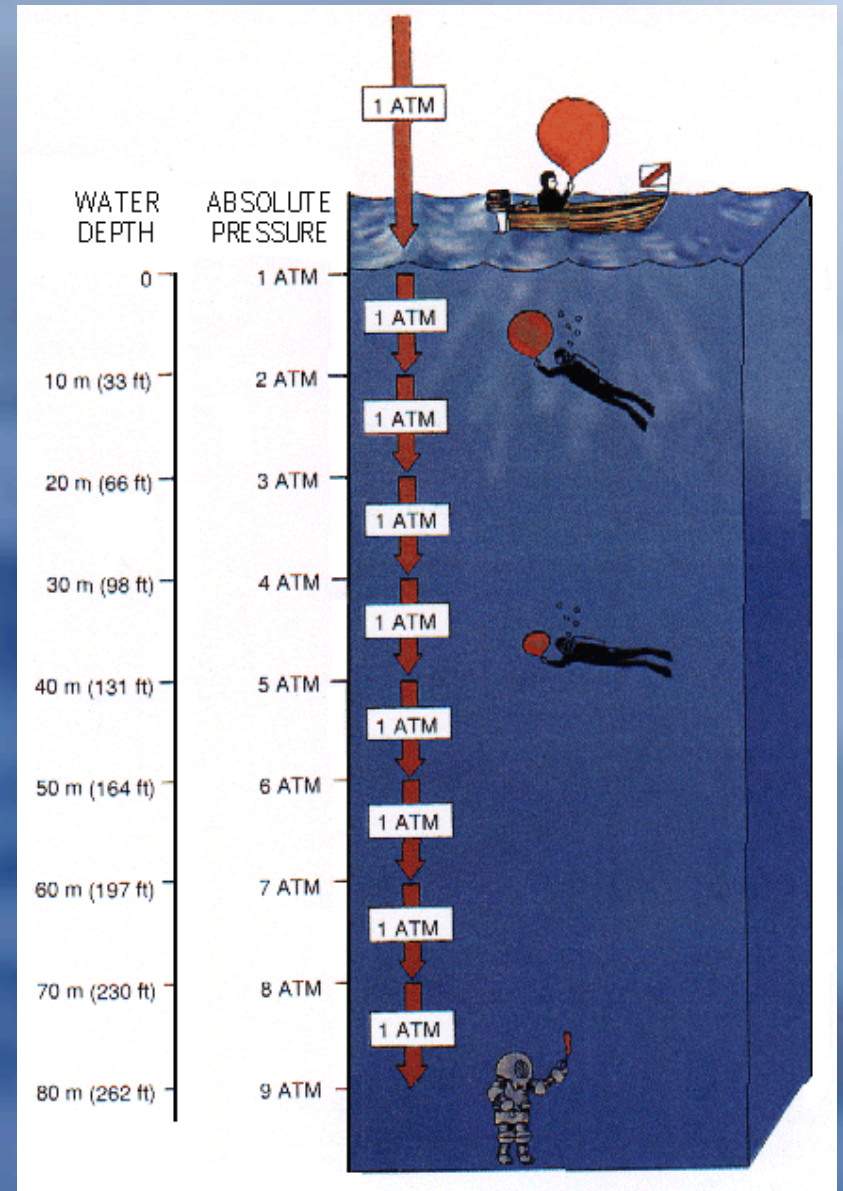


StyroFoam EXperiment



After being 2700 meters deep in the
Bering Sea!





Look at
HOW deep
they Went!



BIG 2-TON BULL WALRUSES



ABOUT 100 WALRUSES: 20 APRIL 2007



UGLIT
WHERE THE WALRUSES USED TO BE



WALRUS

“Toothwalking Seahorse”

Odobenus rosmarus

Oh-do-been-us rose-mar-us

Odo- = for “tooth” (Greek)

-benus = for walker (Greek)

rosmarus = for “horse” (Norwegian)

Important things to know

BEHAVIOR

HABITAT

NICHE

Female walrus anchored in ice

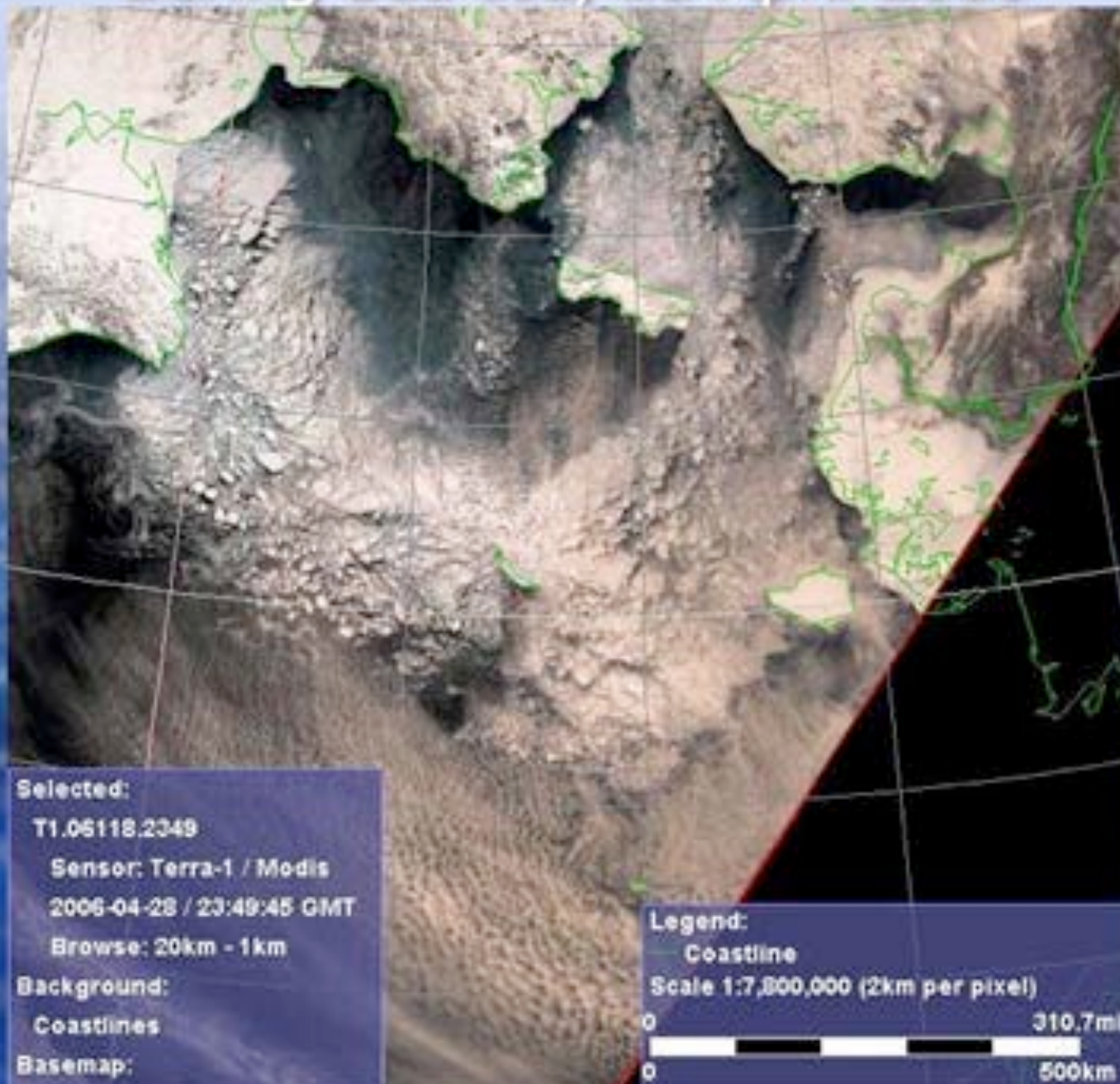


HABITAT

Beringia, the "land bridge"



Bering Sea Ice, 28 April 2006



NICHE: Walrus natural history

(Painting by Robert Hynes, from Ray and Curtsinger 1979)



Atlantic Walrus (*Odobenus rosmarus*) rooting and jetting
Young Sund (Daneborg), Northeast Greenland, 5 August 2005



Photograph by Gören Ehlme

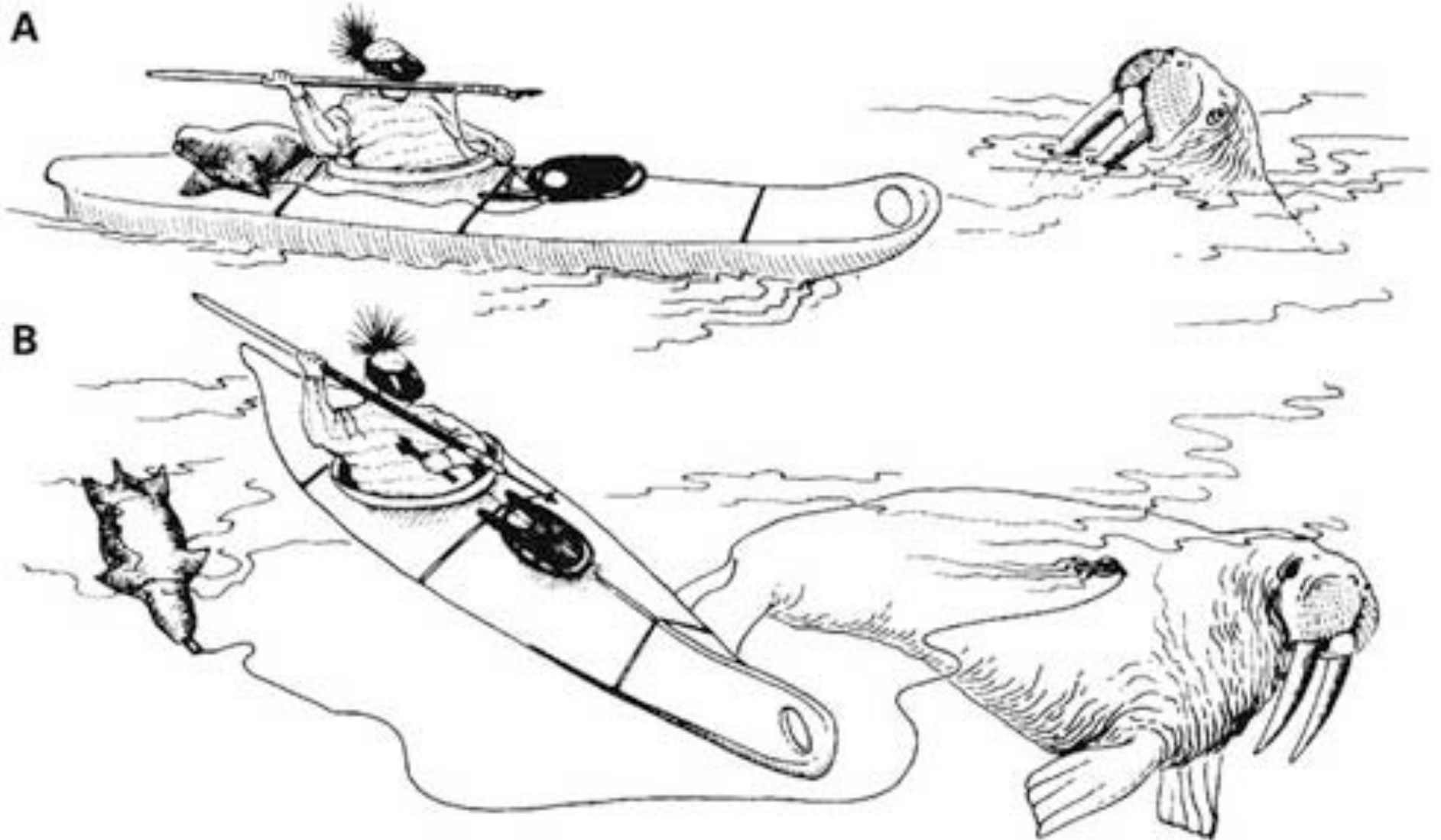




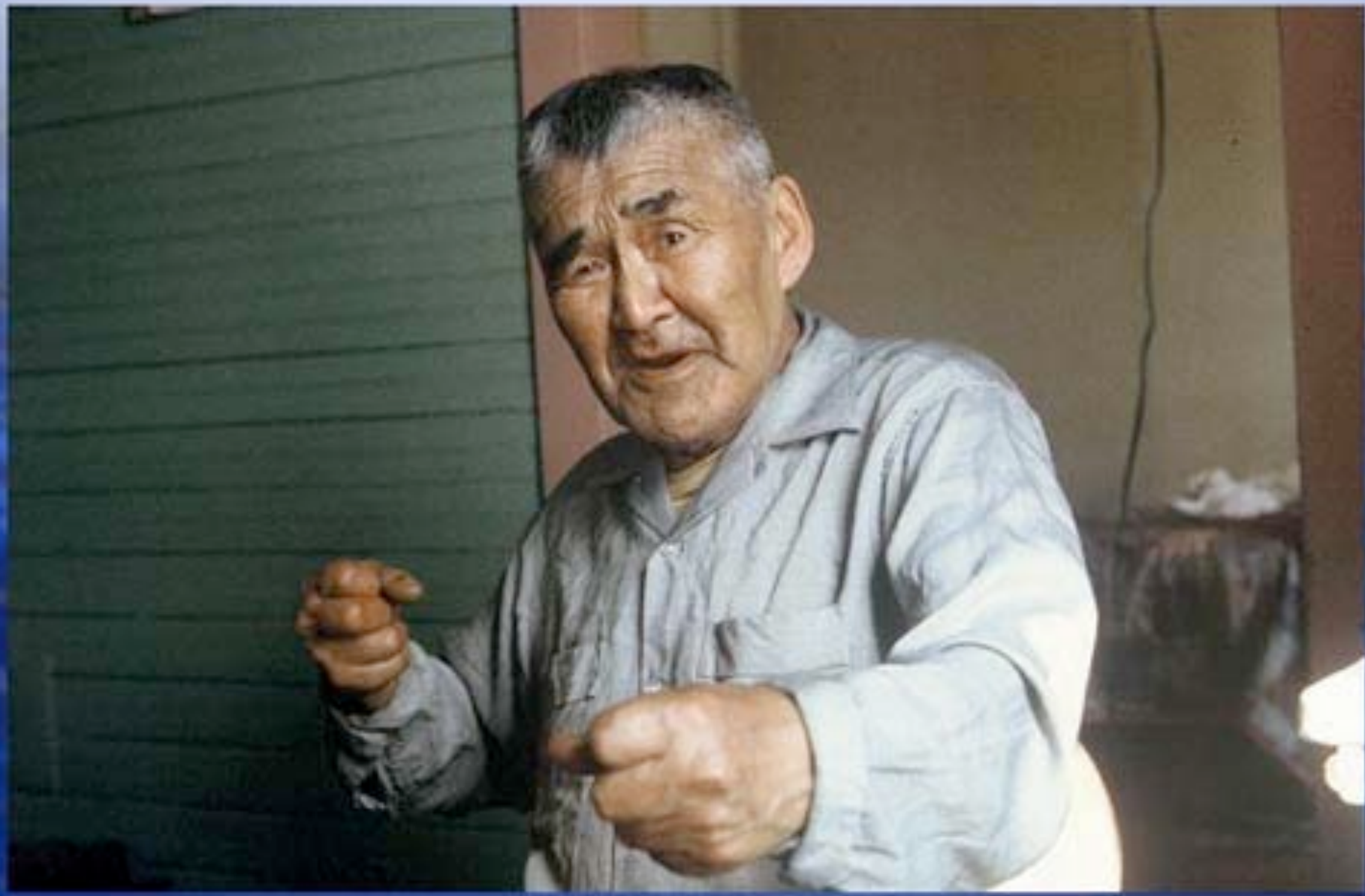
JUVENILE WALRUS



Yupik Eskimo Subsistence



Lawrence Kulukhon tells his story



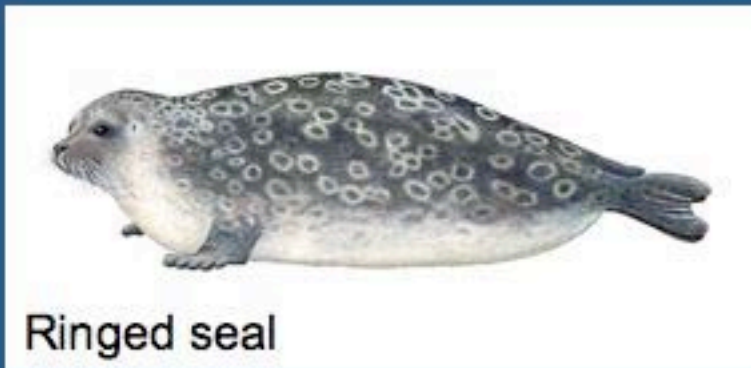
Yupik Dance about the hunt



National Marine Mammal Laboratory

Polar Ecosystems Program

Arctic ice seals



Ringed seal



Spotted seal



Bearded seal



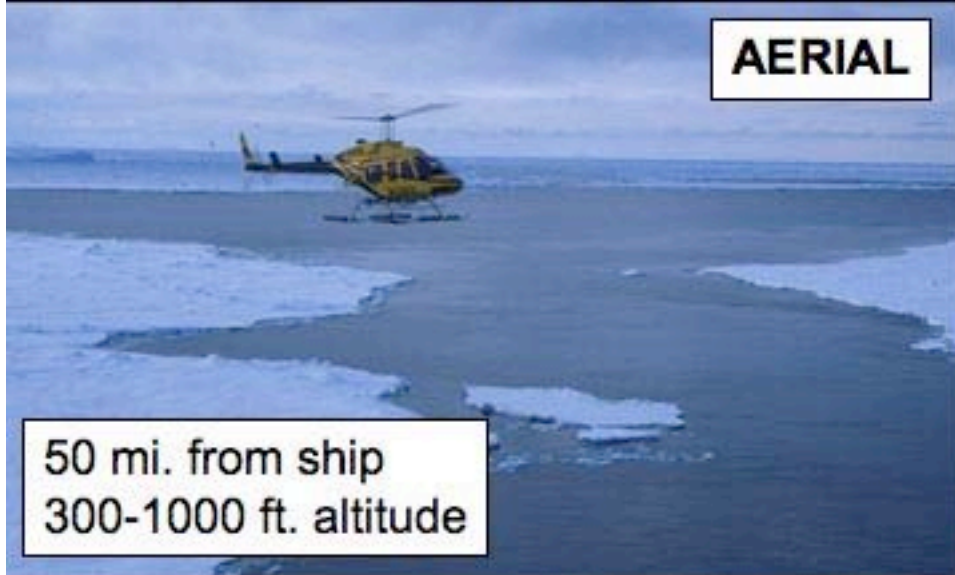
Ribbon seal

NOAA/National Marine Mammal Laboratory - Arctic ice seal research

ABUNDANCE AND DISTRIBUTION SURVEYS

BEHAVIOR, GENETICS, PHYSIOLOGY

AERIAL



50 mi. from ship
300-1000 ft. altitude

CAPTURES



SHIPBOARD



SATELLITE TELEMETRY



Why study Ribbon (and spotted) seals?

- Ribbon seals are among the least known mammals in North America (they have never been intentionally live captured or instrumented with SDRs)
- Their movements, foraging behavior, diet, etc. are unknown for most of the year (for example where do they go after the molt?)
- They are a part of the subsistence harvest of some Alaska Native communities
- As top level predators and ice breeding mammals they are an important indicator species for the effects of global warming

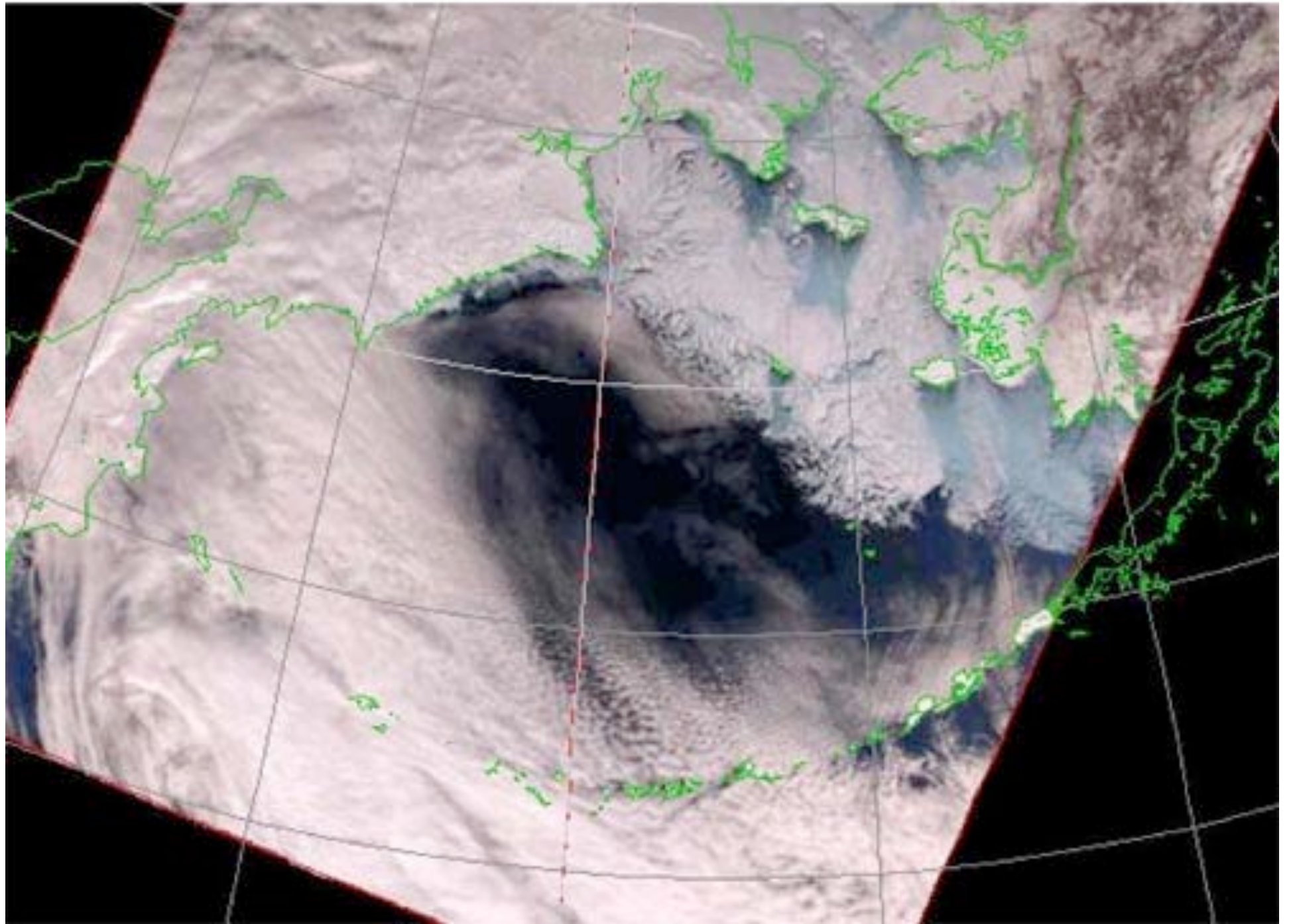


Are ice seals associated with sea ice during the non-pupping/molting seasons?

What are their preferred foraging zones -- shelf, slope, basin?



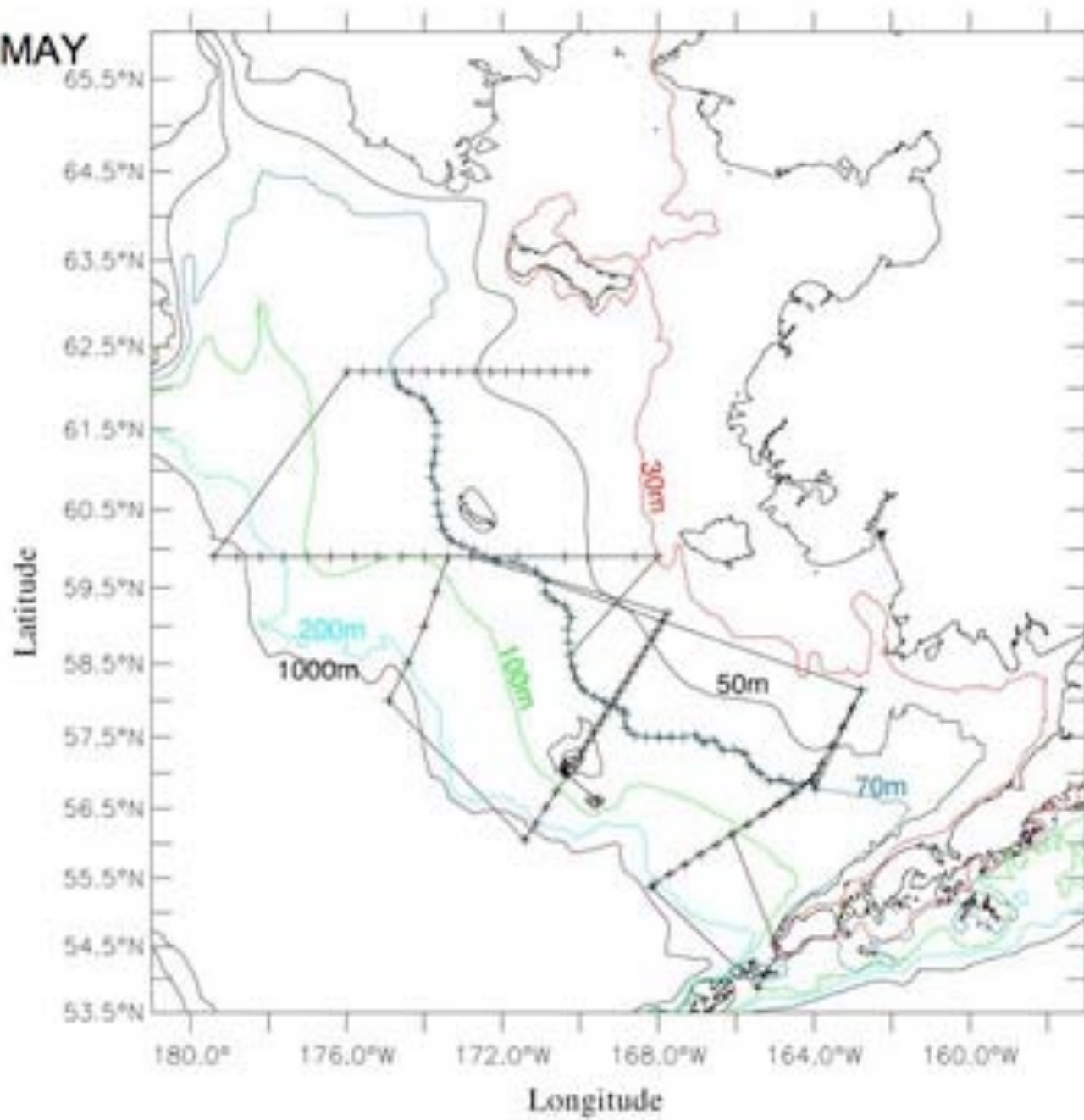
How might climate change and diminishing sea ice affect ice seals?



USCGC HEALY



HEALY 0701
10 APR - 12 MAY



HEALY 0702
16 MAY – 18 JUNE

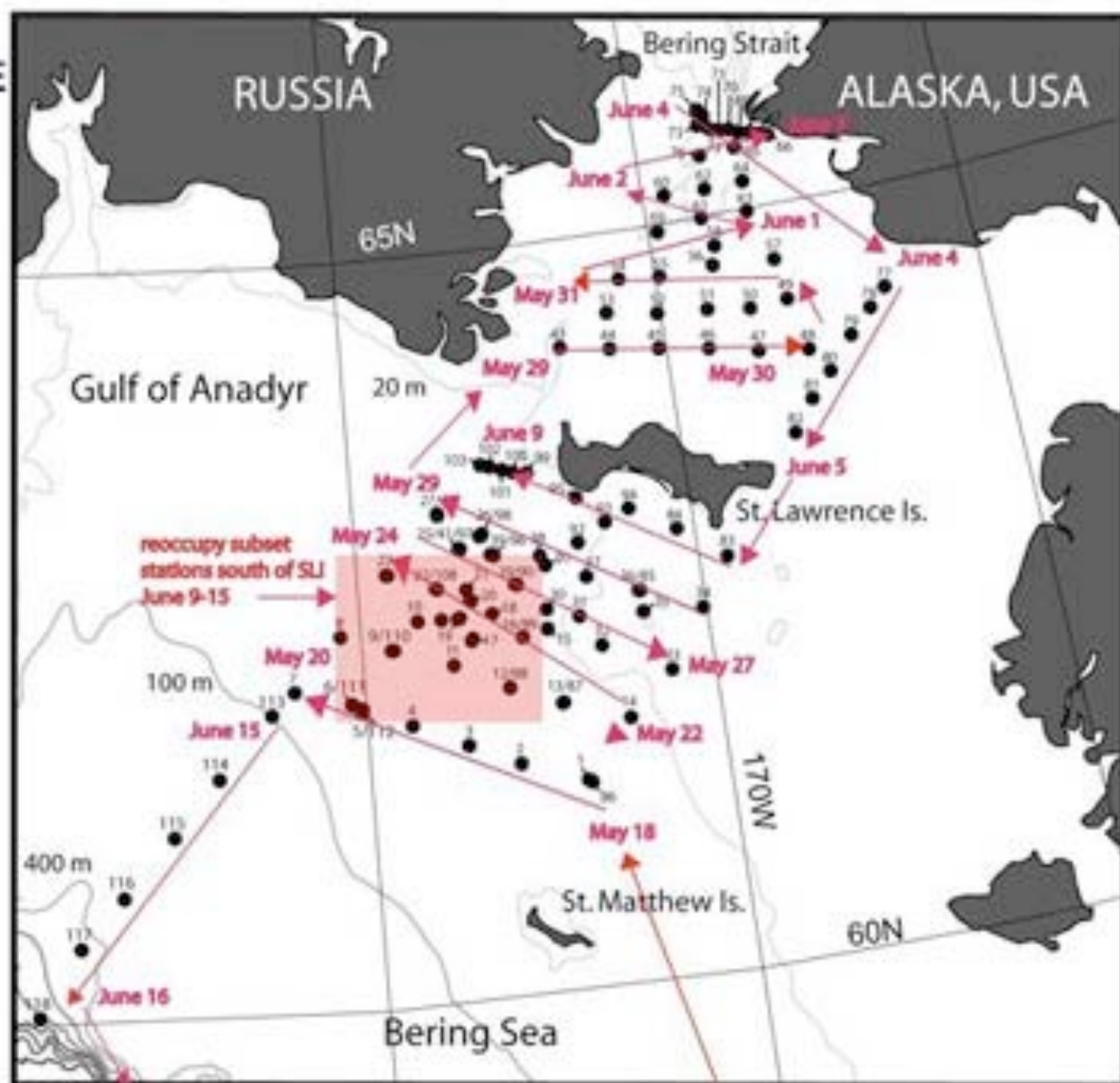
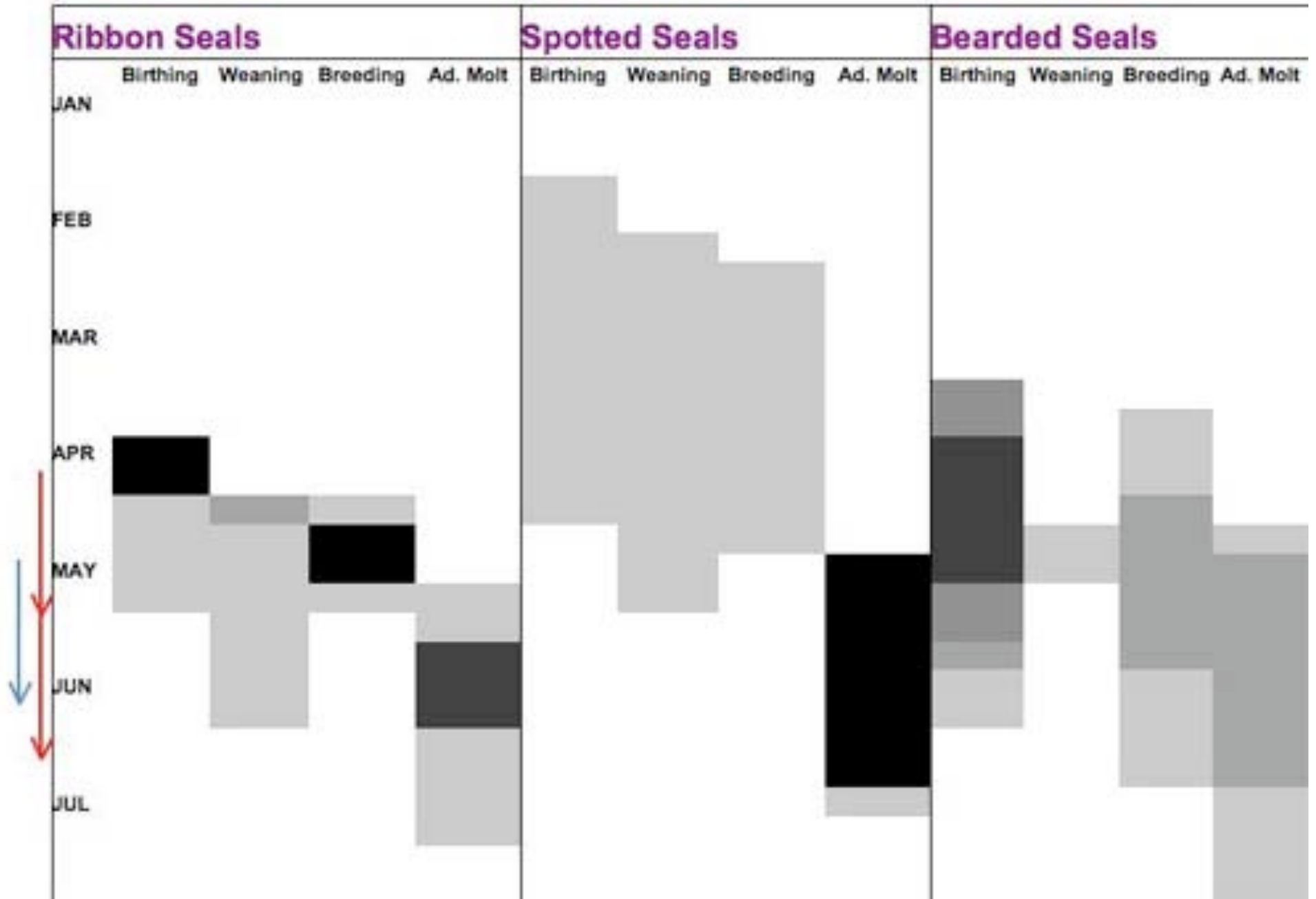


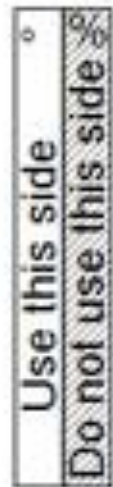
Figure 1. HLY0702 station map by cruise number and estimated dates of station occupation (red).

LIFE HISTORY TIMELINE



Shipboard surveys

- Within 300m of sea ice
- When the ship is moving from 09:00 to 21:00
- 845 Nmi (115 hrs.) surveyed so far!



Inclinometer



Reticle Binoculars



Helicopter surveys

- 2-3 observers
- We record distance to seal
- A camera records what is under the helicopter.
- 5650 Nmi (71 hrs.) so far!



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

BEST Cruise, USCGC Healy

30 15 0 30 60 90
Nautical Miles



Relative number
of ice seal species



SPOTTED_

RIBBON_

BEARDED_

UNK_PINNIPED_

Total Sum of Counts

	HELO	SHIP
SPOTTED	472	303
RIBBON	157	46
BEARDED	168	146
UNK_PINN	89	111

Species identification:

When a seal is too far away to safely identify based on color and shape, movement can be helpful, but DO NOT record a species if you are not positive of its identification; instead use "UNK.P".



SPOTTED SEAL: Dark gray to light gray and silver, occasionally brown to yellow (w/ spots). Tail is raised when head is up (banana shaped).



F. A. Tubano

BEARDED SEAL: Gray to light brown to dark brown. Long tubular body (longest of these seals), head slowly raised and lowered.



F. A. Tubano

RIBBON: Same size as spotted seal. Black to grey and dark brown to light (stripes on adults) Long telescoping neck.



F. A. Tubano

RINGED SEAL: small, light to dark gray, small football shaped (smallest of these seals, head quickly raised and lowered)



F. A. Tubano



Procedures for a Capture
1-Spotting on Bridge

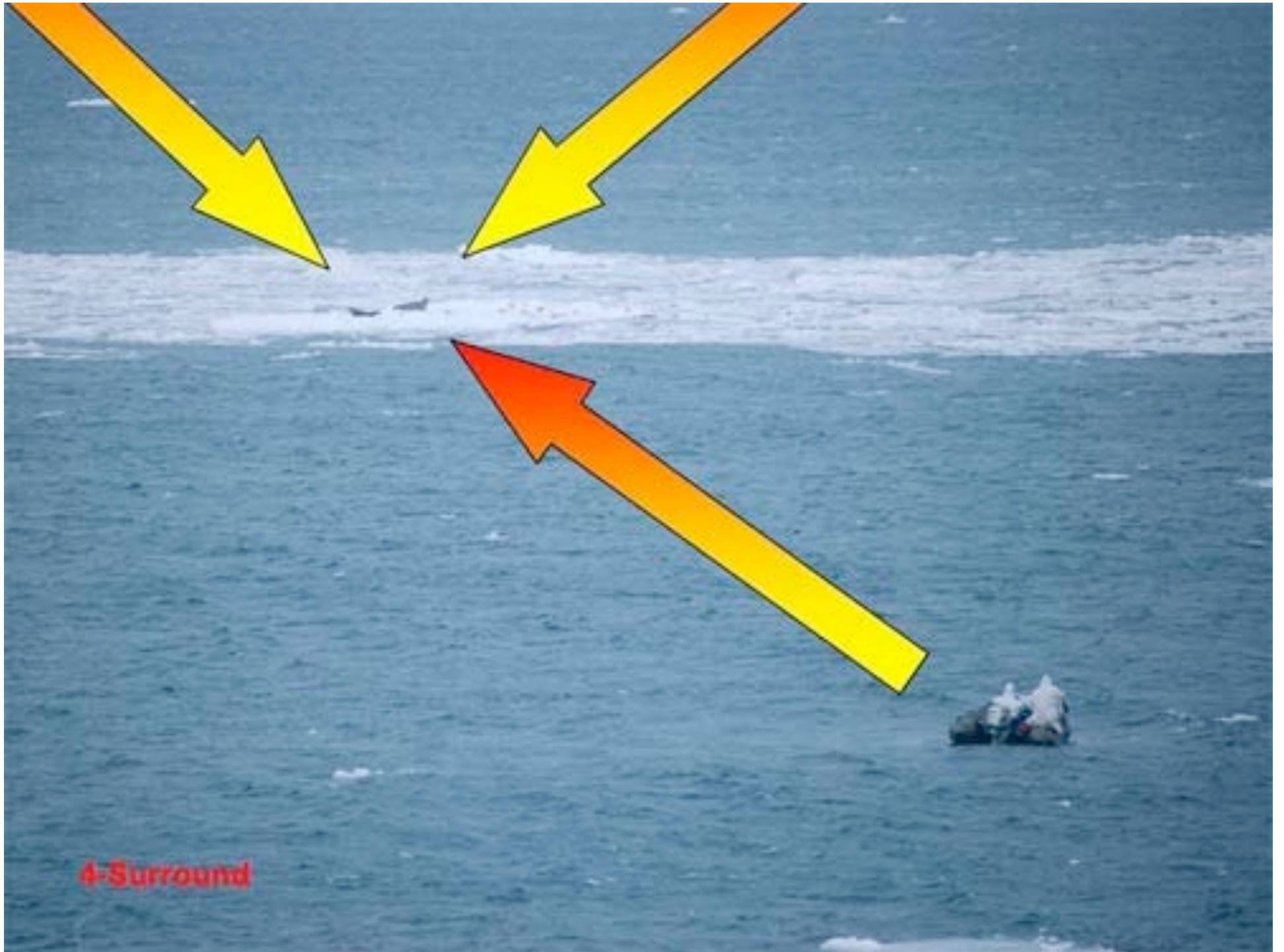


2- Launch Boats



3-moving into position





A-Surround





5-Capture

5b-Capture





6-Work up on ice



SPENO GSYYYY_####

Specimen Type: Capture Other _____

Species: EB HF PH PL PV Other _____

Secondary ID/Event # _____ Relative ID _____

Age: PUP YRLNG SUB ADULT UNK Sex: M F UNK

Molt: Pre 1/3 1/3-2/3 2/3 Post NA Preg: Y N UNK

_____ Gross Mass	Std Length (cm) _____
_____ Brailer	Curv Length (cm) _____
_____ Net	Axial Girth (cm) _____
_____ Final Mass	Max Girth (cm) _____
	Hip Girth (cm) _____

Flipper Tag Number L _____ R _____ Color _____

Tag Type Allflex Allflex-Wide Super Tag

Photo Filename(s) _____

TISSUE/BLOOD SAMPLING		DRUG DOSAGE	
Type	Amount	Time	Drug/Amnt/Method
[] Red/Tiger Top	_____	_____	_____
[] Lavender Top	_____	_____	_____
[] Green Top	_____	_____	_____
[] _____	_____	_____	_____
[] DNA tissue	_____	_____	_____
[] Rubber Biopsy	_____	_____	_____
[] Whisker	_____	_____	_____
[] Hair	_____	_____	_____
[] Fecal Swab	_____	_____	_____
[] Fecal Tissue/Scat	_____	_____	_____
[] Lavage / Diema	_____	_____	_____
[] Tooth	_____	_____	_____
[] Other	_____	_____	_____

PROJECT ID _____

GROUP ID _____

CAPTURE DATE-TIME

YYYY - MM - DD HH : MM GMT AST ADT

RELEASE DATE-TIME

YYYY - MM - DD HH : MM GMT AST ADT

LOCATION

Site Name: _____

Latitude: -/+DDD.DDDD

Longitude: -/+DDD.DDDD

INSTRUMENTATION			
Tag Type	PTT/Freq	Serial #	Location
DLADK OPS SPOT TOR CTD VHF _____	_____	_____	HEAD BACK FLIPPER NECK
DLADK OPS SPOT TOR CTD VHF _____	_____	_____	HEAD BACK FLIPPER NECK
DLADK OPS SPOT TOR CTD VHF _____	_____	_____	HEAD BACK FLIPPER NECK
DLADK OPS SPOT TOR CTD VHF _____	_____	_____	HEAD BACK FLIPPER NECK

SPOT tags

- Attached to seal's flipper
(permanent)
- Only transmits when seal is completely hauled out
(locations only on ice/land)
- Provides location and haulout data

SPLASH tags

7-Tag

- Glued to seal's fur
(temporary)
- Transmits when seal's back is out of the water
(provides locations at-sea)
- Provides location, haulout and
dive data



Mk 10 tags

- Glued to seal's fur (temporary)
- Transmits when seal's back is out of the water (provides locations at-sea)
- Provides **high resolution location data**, as well as haulout and dive



SMRU CTD tag

- Glued to seal's fur (temporary)
- Transmits when seal's back is out of the water (provides locations at-sea)
- Provides location, haulout and dive data, as well as **salinity and temperature data**



- UNWEANED PUPS WILL NOT BE HANDLED
- ALL OTHER ANIMALS WILL RECEIVE A SPOT TAG



Ribbon seal



Spotted seal

Mk10 on **head**

SPLASH "2xAA" on **head**

SPLASH "C" on **back**

Mk10 on **back**

SPLASH "C" on **back**

SPLASH "2xAA" on **ba**



8-Release on ice



Stay tuned!

Upcoming Live From IPY events
From expeditions around the world!

Live from Summit, Greenland:

22 May - 8:00 a.m. ADT

(9:00 a.m. PDT; 10:00 a.m. MDT; 11:00 a.m. CDT; 12:00 p.m. EDT).

1 June - 8:00 a.m. ADT

(9:00 a.m. PDT; 10:00 a.m. MDT; 11:00 a.m. CDT; 12:00 p.m. EDT).

Thank You!

*Check out www.polartrec.com
to see more pictures and keep
posted on upcoming events!*



POLAR
TREC

The logo features the words "POLAR" and "TREC" in a bold, sans-serif font. "POLAR" is in a dark blue color, and "TREC" is in a lighter blue color. A large, stylized silhouette of a bird in flight is positioned behind the text, with its wings spread wide. The background of the entire slide is a gradient of blue, with a faint, larger-scale version of the bird silhouette.

*If you have further questions,
please contact us at
info@polartrec.com or call
1-907-474-1600*

