

Healy 08-01

March 13-26 2008
Northern Bering Sea
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“Walrus-prey” Patch Dynamics Study (BSIERP and BEST)

Objectives

- field/retrospective evaluation of benthic infauna, sediments, and oceanographic conditions in context of walrus feeding sites, both historical and tagged
- grid of benthic infauna in walrus feeding area at various spatial scales (<5-20 nautical miles) to evaluate variable prey patches and food quality; videographic evaluation of epifauna
- helo survey and tagging of walruses
- predator/prey caloric content, stable isotopes, and pilot predator/prey DNA studies

PIs: Chad Jay (Alaska Science Center, US), Jackie Grebmeier and Lee Cooper, University of Maryland Center for Environmental and Estuarine Science

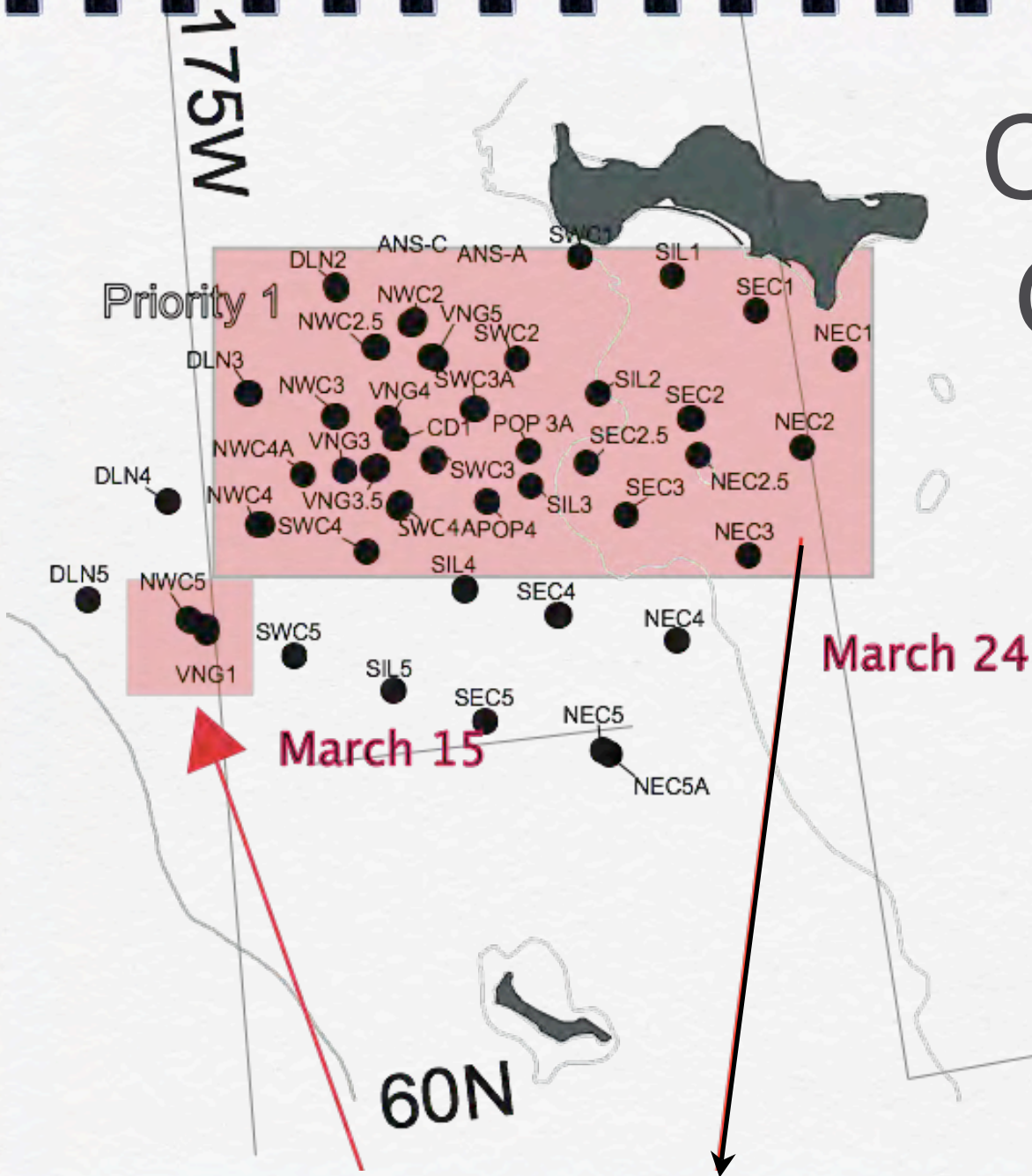


[Grebmeier and Du]

Current Onboard Projects

- ❑ BEST Benthic Ecosystem Response to Changing Ice Cover in the Bering Sea (National Science Foundation 0802290), Jackie Grebmeier and Lee Cooper, PIs
- ❑ BSIERP: Patch Dynamics (North Pacific Research Board project O4.62), Andrew Trites and Chad Jay, lead shipboard PIs
- ❑ BEST: Sea Ice Algae, a Major Food Source for Herbivorous Plankton and Benthos in the Eastern Bering Sea (NSF ARC-0732767) PIs: Rolf Gradinger, Bodil Bluhm, Katrin Iken
- ❑ BEST: Role of Ice Melting in Providing Available Iron to the Surface Water of the Eastern Bering Sea Shelf (NSF ARC-0612538) PI: Jingfeng Wu
- ❑ BSIERP Project: Epi-benthic survey (NPRB project) PIs: Jackie Grebmeier, Lee Cooper
- ❑ Impacts of Sea Ice Variability and Polynya Formation on Biological Productivity in the Northern Bering Sea (NSF ARC-0713939) PI: Karen Frey
- ❑ Climate-driven changes in impacts of benthic predators in the northern Bering Sea (NSF ARC-0454454) PI: Lovvorn, Jackie Grebmeier, Lee Cooper
- ❑ North Pacific Pelagic Seabird Observer Program (NPRB Project 637) PIs: Kathy Kuletz, David Irons
- ❑ Chinese International Polar Year Program PI: Jinping Zhao, Ocean University of China
- ❑ National Marine Mammal Lab: Sue Moore or surrogate; shipboard marine mammal observations

Cruise Station Grid



A nominal order of stations is provided in the Cruise Plan, but is subject to change depending upon ice conditions and walrus distributions.

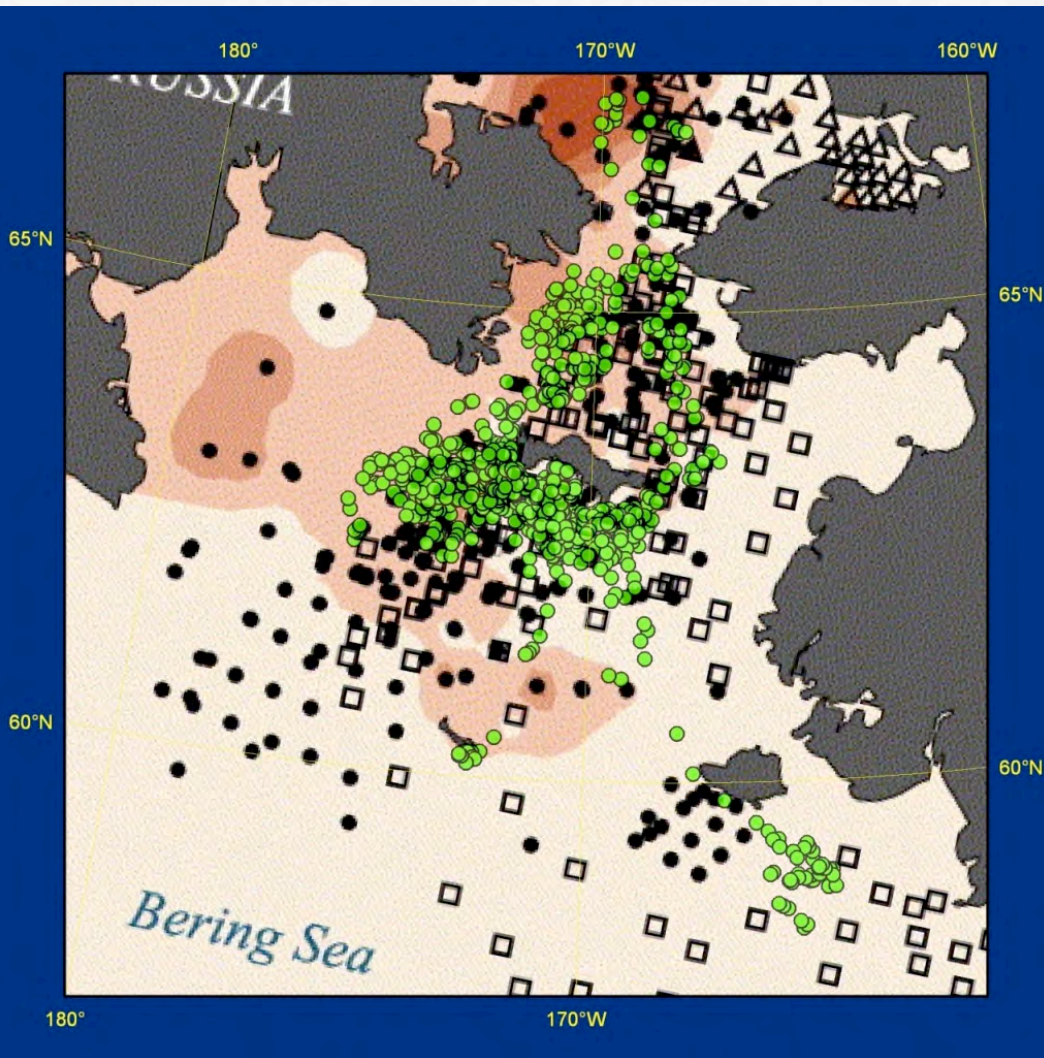
- bivalve prey for walrus



[courtesy Gay Sheffield, ADFG]

- 2006 tagged walrus locations (green dots, courtesy of Chad Jay, USGS) overlain on ~35 year composite of benthic infaunal biomass (Grebmeier et al. 2006)*
- different black symbols differentiate different collectors (Grebmeier et al. 2006)*
- note general location walrus in region of high benthic prey biomass

* Progress in Oceanography 71: 331.

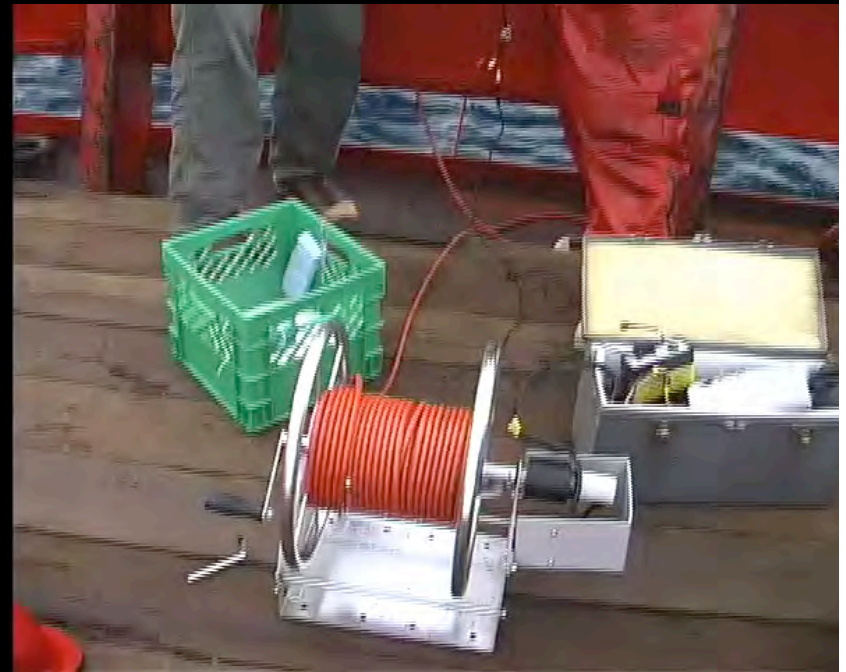


Fish/prey photos: Sherry Cui



Shorthorn sculpin: 352mm, 599g

Live ampharetid worm



**Video: Canada's 3 Oceans IP
Project July 2007 Bering Sea**



**Photo: Art Howard/
PolarRelease**

Cooper-Grebmeier video



Generic Station Plan

- ❑ **Position ship if possible to facilitate deployment of teams on ice from the port side of the ship (~once daily, daylight conditions; possibly more than once daily if requested)**
- ❑ **Starboard and aft shipboard operations underway while ice teams are deployed**
- ❑ **Helicopter operations interspersed, daylight hours**
- ❑ **CTD deployment from starboard winch (T/S, chlorophyll, nutrients, O-18, bottom water for respiration cores)**
- ❑ **Optics underway using Seamac winch; UV meter is hand-deployed; benthic camera system is also hand-deployed.**
- ❑ **Benthic collections (5 van Veen grabs, 2 HAPs multi-corer deployments)**
- ❑ **Recover ice teams from sea ice to ship**
- ❑ **Transit to next station**