

**USCGC *Healy* Bering Ecosystem Study (BEST)/Bering Sea Integrated Ecosystem
Research Program (BSIERP) Principal Investigators Meeting
Rainier Room, Building 4
U.S. Coast Guard Base at Pier 36
Seattle, WA**

Thursday, November 29, 2007

Meeting summary by Alison York, ARCUS (york@arcus.org)

Presentations and the participant list are available on the ARCUS web site:

<http://www.arcus.org/Bering/meetings/index.html>

Introductions and Overview

Carin Ashjian, HLY 0802 chief scientist, called the meeting to order, welcomed participants, and introduced Captain Ted Lindstrom, *Healy's* commanding officer.

Capt Lindstrom welcomed participants and emphasized how valuable these meetings are for both scientists and USCG personnel to advance planning and communication, which were critical to successful missions. He was proud and excited that *Healy* will be supporting more science days in 2008 than in any previous year.

Renee Crain of the NSF Office of Polar Programs seconded Capt Lindstrom's remarks and reminded participants that she was available to answer questions.

Participants introduced themselves and their role in the program.

Dave Forcucci, USCG science liaison, reminded participants that detailed logistics topics would be covered at the 30 November 2008 meeting.

Dave also reviewed the schedule for the planned BEST cruises, all of which begin and end in Dutch Harbor:

- A short early spring cruise concentrating on the benthic environment south of St. Lawrence Island, 13-26 March 2008 (HLY0801).
- A longer spring cruise on the eastern Bering Sea shelf, 29 March-6 May 2008 (HLY0802).
- A summer cruise on the eastern Bering Sea shelf, 20 June-18 July 2008 (HLY0803).
- Loading for the first two cruises will be 26-28 February in Seattle.

(Note: Additional meetings were held on Wednesday, 28 November, and Friday, 30 November, to discuss specific logistical and cruise planning issues in detail. Information about those sessions is available from [Lee Cooper](#), HLY0801 chief scientist, [Carin Ashjian](#), HLY 0802 chief scientist, or [Ray Sambrotto](#), HLY 0803 chief scientist.)

Carin reported briefly on relevant topics from the Arctic Icebreaker Coordinating Committee (AICC) meetings earlier in the week:

- To improve international coordination and collaboration, she recommended that the BEST cruises participate in the Arctic Ship Coordination during IPY (ASCI) initiative (<http://www.asci-ipy.de/>); and
- Healy will need to go into dry dock in 2010, so USCG needs to plan that around BEST investigators' needs for an early spring cruise. What is the earliest date BEST is likely to need the ship? After discussion, the group agreed on 1 April 2010 in Dutch Harbor.

Project presentations

The presentations are available on the ARCUS web site:
<http://www.arcus.org/Bering/meetings/index.html>

Discussions during project presentations included:

- Will a helicopter be available? Yes, if there is adequate justification. Lee Cooper, Ned Cokelet, and Rolf Gradinger all would like to use a helo. They will get together and develop a plan and justification.

Identification of scientific gaps

Microzooplankton survey and rates: NPRB has solicited and received proposals to fill this gap and anticipates announcing awards soon.

National Ice Center data will be available if requested.

Focused discussions

Chlorophyll methods and personnel: Mordy's group has a proposal about to go to NSF for this.

- Size fractions: $< 5 \mu$, $> 5 \mu$, and total
- Methods: will process some samples by both Welshmeyer and acidification to compare results. Will freeze some samples on board, compare with processed on board to calibrate effect of freezing.
- 3 groups are bringing fluorometers (Lomas, Sherr, Lessard)
- number of stations remains undecided

Niskin bottles: preferred size remains undecided

Incubators: we expect 9 incubators on board, will need 15 taps supplying a total of 300+ l/min running seawater. Drainage should be carefully planned. Deck space will be at a premium. Put incubators on van roofs if possible.

BREAK for LUNCH

During lunch, the zooplankton group met to discuss combining efforts. We decided that Iken and Prokopenko could team up with Campbell/Ashjian to collect zooplankton using the same net (and at the same time), thereby saving time and effort.

Use of hoods was discussed and allocated:

- Chlorophyll van hood: All groups using acetone, ethanol, methanol
- Stable Isotope van hood: Ammonium
- Wet lab hood: Organics (Sambrotto)
- Biochem lab hood: Calvin Mordy and Ev Lessard
- Main Lab Hood: Fixatives (formaldehyde, glutaraldehyde)

Underway Sensors:

Lisa Eisner will supply an ac-s and an Isus nitrate sensor that will be incorporated into the underway seawater sampling system. Masha Prokopenko also will incorporate her MIMS into the sampling system. Moran also hopes to get a SAMI pCO₂ sensor to incorporate into the seawater flow.

Environmental Chambers:

The use of the chambers was discussed and it appears that we should all fit. Sherr et al. and Lessard et al. will primarily share one with overflow into the other one. Gradinger and Pinchuk will primarily share the other one.

Walk in Fridge: This will be shared by Devol/Shull, Gradinger, and Sherr

Walk in Freezer; Shared use by many, especially Wu (ice cores) and people extracting chl.

Extra Freezers: Both Lessard and Sherr thought that they could bring small fridge/freezer (if we can find room for them). Some large chest freezers in the hold would be good for backup. Request from NSF and CG.

Extra berths: possible uses for extra berths include: teachers, media, local representatives. No firm decisions were reached. Various PIs will investigate possibilities. PolarTREC plans to supply a teacher, probably for the summer cruise.

Logistics needs:

- Helo: 3 groups (Cooper, Cokelet, and Gradinger) all would like to use a helo.
- Vans: Need 4 vans--rad, stable isotope, chlorophyll, storage
- Scripps CTD personnel will need 2 berths
- Navigational sonar: De Robertis

Miscellaneous:

- Identify likely watch schedule—useful for berth assignments and for kitchen planning (how much food will be needed in middle of night)
- Potable water in the lab has been unavailable. Dave will look into this.

Cruise tracks, station plans, lab space needs

- See Carin's maps and matrix, also Shull/Devol map.
- Many PIs would like to repeat some stations.
- Summer cruise will likely base its track on long spring cruise.
- Need to incorporate some flexibility in timing to allow about 6 stations as needed, depending on conditions encountered.
- May transfer participants at either St. Lawrence or Pribilofs, depending on timing.
- Hillgruber would like one more cross-shelf line south of Pribilofs if possible during the summer cruise. She will know more about this in May.

Adjourned 5:15 pm

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Agenda

Greetings and introductions; overview of meeting goals

Carin Ashjian, Woods Hole Oceanographic Institution, long spring cruise chief scientist

Topics to be discussed on Friday at *Healy* meeting

David Forcucci, U.S. Coast Guard science liaison

Brief project overviews

The impact of changes in sea ice extent on primary production, phytoplankton community structure, and export in the eastern Bering Sea

S. Bradley Moran, University of Rhode Island

Michael Lomas, Bermuda Biological Station for Research

Nitrogen supply for new production and its relation to climatic conditions on the eastern Bering Sea Shelf

Raymond Sambrotto, Columbia University

Daniel Sigman, Princeton University

Mesozooplankton-microbial food web interactions in a climatically changing sea ice environment

Evelyn Sherr, Oregon State University

Barry Sherr, Oregon State University

Robert Campbell, University of Rhode Island

Carin Ashjian, Woods Hole Oceanographic Institution

Fish and macrozooplankton acoustics

Alex De Robertis, National Oceanic and Atmospheric Administration

Ichthyoplankton surveys

Nicola Hillgruber, University of Alaska Fairbanks

Janet Duffy-Anderson, National Oceanic and Atmospheric Administration

Jeff Napp, National Oceanic and Atmospheric Administration

Ann Matarese, National Oceanic and Atmospheric Administration

Lisa Eisner, National Oceanic and Atmospheric Administration

The trophic role of euphausiids in the eastern Bering Sea: Ecosystem responses to changing sea-ice conditions

Evelyn Lessard, University of Washington

H. Harvey, University of Maryland Center for Environmental Sciences

Sea ice algae, a major food source for herbivorous plankton and benthos in the eastern Bering Sea

Rolf Gradinger, University of Alaska Fairbanks

Katrin Iken, University of Alaska Fairbanks

Bodil Bluhm, University of Alaska Fairbanks

The role of ice melting in providing available iron to the surface water of the eastern Bering Sea shelf

Jingfeng Wu, University of Alaska Fairbanks

Denitrification and global change in Bering Sea shelf sediments

Allan Devol, University of Washington

David Shull, Western Washington University

Benthic ecosystem response to changing ice cover in the Bering Sea

Jacqueline Grebmeier, University of Tennessee Knoxville

Lee Cooper, University of Tennessee Knoxville

Stratification on the Bering shelf and its consequences for nutrients and the ecosystem: The effects of ice and coastal water advection

Knut Aagaard, University of Washington

Thomas Weingartner, University of Alaska Fairbanks

The impacts of sea-ice on hydrographic structure and nutrients over the eastern Bering Sea shelf

Phyllis Stabeno, National Oceanic and Atmospheric Administration

Terry Whitledge, University of Alaska Fairbanks

Rolf Sonnerup, University of Washington

Ned Cokelet, National Oceanic and Atmospheric Administration

Calvin Mordy, National Oceanic and Atmospheric Administration

Nancy Kachel, National Oceanic and Atmospheric Administration

Walrus-prey patch dynamics

NO PRESENTATION

Chad Jay, U.S. Geological Survey

Discussion: Identification of scientific gaps and if filled

Cruise sampling priorities and approaches

Short spring cruise (March 13-26)

Lee Cooper, cruise chief scientist

Long spring cruise (March 29-May 6)
Carin Ashjian, cruise chief scientist

Summer cruise (June 20-July 18)
Ray Sambrotto, cruise chief scientist

Focused discussions

Chlorophyll methods and personnel

- size fractions
- Welshmeyer vs. acidification
- team
- analyze on board vs. freeze and take home

Zooplankton methods

- nets and mesh sizes
- coordination of sampling

Environmental chambers

On-deck incubators

- placement
- water volume needs

Underway sensors – those on ship and those people are bringing

Logistic support and equipment needed from the NSF

- Vans (Rad, Chl, Isotope, Storage)
- Helicopters
- Scripps CTD participants
- Logistic support in ports
- Permitting

Berths – how many extra and what to do with them (by cruise)

Niskin bottles – size and materials

Review and discussion

Station events and sequence

- Process stations – long spring and summer
- Process stations in ice – long spring
- Short/survey stations – long spring and summer
- Short/survey stations plus daily activities – long spring and summer

Water needs from CTD

- Long spring
- Summer

Cruise tracks

- Short spring
- Long spring
- Summer

Laboratory space needs

- Hoods
- Freezers
- Refrigeration
- Flow-through sea water
- Deionized water
- Room that can be dark
- Gear storage - aft staging area, CTD hanger, room by elevator, hold

Closing discussion

- What do we need the ship to provide? (e.g., lead weights for nets; tie down bolts on bow)
- Connections to NPRB projects on other ships