

## Healy & Polar Class cruise debrief, held via teleconference (Rev 01/10)

Date of post-cruise teleconference debrief: 23 June 2010

Chief Scientist: Lee Cooper

Name of Project: Bering Sea Ecosystem Study (BEST)

Name of Ship & Cruise Number: Polar Sea 10-01

Start and end dates of cruise: March 7, 2010 – April 7, 2010

*Please provide comments on the topics and questions that are appropriate for your cruise.  
NOTE: This form must be submitted as either a \*.doc or \*.docx file.*

**Attending this debrief: Jon Alberts (UNOLS), Robert Campbell (Univ. Rhode Island), Dale Chayes (LDEO/Columbia Univ.), Lee Cooper (Univ. Maryland), Renee Crain (OPP/NSF), David Forcucci (USCG), CDR Jason Hamilton (USCG), Jen Hom (USCG), LCDR Michael Krause (USCG), Jeremy Mathis (Univ. Alaska), Phil McGillivary (USCG), Robin Muench (Earth & Space Res.), LCDR Fred Seaton (USCG), LCDR Greg Somers (USCG), Capt. David Vaughn (USCG).**

### *1) Overall Success of Cruise:*

*a) What percentage of the planned science objectives was met during this cruise? 100%*

**Lee: This was an extremely successful cruise.**

*b) Please summarize positive and negative factors that impacted completion of the science objectives (for example, personnel issues, equipment performance, ice and weather conditions).  
Ship and crew performed well. Strong support from the science officer and MST team.*

**Lee: Support was strong from the top down.**

### *2) Pre-Cruise Planning*

*a) How beneficial and useful is the cruise planning form and the Icefloe web site?*

I think it is improving. There is still a one size fits all aspect to some of the web form, so that some portions of it are not relevant to every cruise, and portions of it will seem incomprehensible to a first-time chief scientist.

*b) Is it clear what is required to be provided to the ship and the schedule for receipt of that information (schedules, lists, plans, forms)?* Not always, but we managed. I think there is still some differences in terminology between the CG and scientists over terms such as operational plan descriptions versus what we as scientists might consider a cruise plans. The “operational

plan” is what the Coast Guard needs to know to plan for the cruise, but it is a subset of the information we need to incorporate into a cruise plan.

*c) Were the questions on the pre-cruise questionnaire appropriate and easy to respond to? More than in the past*

*d) Were you able to submit the questionnaire fairly early in the planning process? Yes*

*e) Did an operations (cruise?) plan get submitted in a timely manner? Was it useful for you and the ship before and during the cruise? Yes, I see it mainly of benefit to the ship in terms of letting them know what to expect.*

*f) Do you have suggestions for how the website and questionnaire might be improved? I think it could be improved and streamlined. Terminology issues, and the web interface is rather last century, doesn't update reliably. You have to fill in each page, save the page, and then move on to the next page. You have to print or look at the .pdf version to make sure it updated. Maybe it should be done in a more questionnaire mode, where the chief scientist answers a series of questions, some could be multiple choice or click all options that apply, attaches a station map, and then the cruise planning form would develop from that. I'm thinking of the web-based software model used for doing income taxes, e.g. TurboTax or TaxAct. Not fun to do necessarily, but you don't have to be a tax expert (or an icebreaker expert for a first time chief scientist); you just answer questions, refer to web-linked background information if you don't understand the ramifications of how you are answering a question, and a cruise planning form gets generated out of how you answer the questions. Then after you see that, you should have the option to go in and edit the document created if your answers need clarification.*

**Lee: Comments are intended to be constructive. Make form more transparent: perhaps some examples as links.**

**Robin: The planning forms on IceFloe are a perennial concern and an AICC Action Item.**

**Phil: Maybe look at how this is dealt with by other UNOLS institutions.**

**Fred: Find the forms useful as a baseline, but follow-on interactions via email are very helpful in clarifying needs and expectations.**

**Dave: Feedback suggests that these planning forms may be setting a standard for online forms.**

**Lee: They aren't bad, but they do not substitute for face-to-face interactions.**

**Jon: all UNOLS operators have planning forms, so perhaps we should look at them for possible models. UNOLS will work with Dave on this. The process needs to be incremental, with feedback from scientists. Things will change over time, as well, so continued documentation and comms are important. Point is to keep all information in one place where it can be seen by everyone.**

**Dale: Planning form is the way to get issues on table before a detailed planning meeting and to update following it. Need to keep the level of complication down, as we may be dealing with some people working from remote sites and/or with limited connectivity.**

**Renee: Will follow up on this with Dave and Jon and will investigate the possibility of using NSF resources.**

### **3) Pre-Cruise Communications**

*How were pre-cruise communications between the Coast Guard and the Science Party, especially the Chief Scientist? Were points of responsibility easily identified? Were responses to questions and concerns received in a timely manner? How were communications within the science party and did that impact communications between the Chief Scientist and the CG?*  
Excellent communication. Particularly appreciated efforts of the science officer to make everything work.

**Lee: Chris Verlinden was an excellent Science Officer.**

### **4) Communications and Coordination During the Cruise**

*How were communications and coordination during the cruise? Were lines of responsibility clear? Were the evening planning meetings effective for communicating information between the Coast Guard and the Science Party?*

Yes, there was good on-going communication among the chief scientist, operations officer, and science officer. Talking with either of them was all that was required to put things in motion.

### **5) Environmental Permitting**

*a) Was any environmental permitting required?*

The spectacled eider collections permits that were planned were not approved.

*b) If so, were these requirements identified at an early date and were there clear means to accomplishing those needs? In other words, how well did it go?*

The permitting need was known well in advance, and was handled by the lead scientist for that work. The reasons the permit were declined was not a consequence of any Coast Guard action.

**Lee: Lack of this permit did not detract from the success of the cruise The permit application was submitted by the PI as in the past, however, however, the estimated disturbance associated with specimen collection might have undershot the "take" in the view of Fish and Wildlife.**

### **6) Communications with Local Alaskan Native Communities**

*How well did communications between the CG and science and local Alaska Native communities go during the cruise? (Examples: notifications to local communication centers, communications between Chief Scientists and/or CG and entities such as village tribal governments (e.g. IRAs), village corporations, the Alaska Eskimo Whaling Commission and other appropriate wildlife co-management organizations, village whaling captains' associations, and other locally based interest groups.)*

Chief scientist and co-chief scientist had a pre-cruise opportunity to share information with both Gambell and Savoonga during a visit in January 2010. We also communicated during the cruise by phone and provided both villages with information on the availability of the cruise report. We took care to stay away from Southwest Cape, where initial subsistence hunting activity was being staged, and contacted both villages for guidance before sending the helicopter in. I found the Iridium phone to work very poorly for communications with Saint Lawrence Island, probably because their own phone system is at the end of the telegraph line. I would recommend making INMARSAT readily available for short calls to local villages. It took a little work to figure out what the right code was to access the INMARSAT system. Sometimes these communities also make requests for faxed maps, communications, etc. Although email attachments can serve the same function and are much less expensive, I would recommend keeping a simple fax communication capability available for those occasional needs. We should also get weekend and evening contact phone numbers in villages of interest because sometimes events moved faster than could be handled by Monday-Friday calls to village IRA offices.

**Lee: They seem content with our communication efforts, and they appreciate visits prior to cruises. Inmarsat works better than Iridium near the more remote villages, so need to make sure this is readily online though not used as frequently as Iridium. Ship notes that there is no problem with this. Villages prefer phone or fax communications rather than email during day to day operations.**

#### *7) Cargo/Hazmat/Materials Handling*

*a) How did any and all aspects (scheduling, communication, etc.) of the cruise onload and offload go?* I think this went reasonably well. During the off-load, there were tight time constraints because of the need to get the ship ready to go to the shipyard, so we ended up with an optimal mismatch between when the Polar SEA needed to be off-loaded and when the Thompson could handle their on-load for the second BEST cruise. (Thompson was late returning to Seattle due to Chilean earthquake affecting their receipt of spare parts). Some late changing developments such as when a crane to off-load vans would be present and blocking the dock were not communicated as well as they could have been, but I think these were rather minor issues. Also paperwork to transfer the new and refurbished incubators off the ship and to the Thompson was not filled out prior to the needed transfer. The responsibility lines for initiating this paperwork were not clear. Everything got worked out OK though.

To end on a positive note, a transfer of some gear in Victoria BC to the Canadian Coast Guard base at Ogden Point was very much appreciated and saved us a significant amount of time, effort and funds .

**Lee: This generally went pretty well, although late arrival of the *Thompson* tightened timelines. The gear was transferred for later use during a cruise on the *CGC Laurier*.**

**Jen: The transfer went very easily, no customs involvement, just simply put materials onto the dock to be picked up later by the Canadians.**

*b) How did materials handling, including hazmat, go during onload/offload and during the cruise?* The Coast Guard handled some hazmat waste (empty vials used for chlorophyll extractions) for us. Thank you. There were a few mystery chemicals that were left onboard that I think were from a previous cruise (nitric acid). The leftover chemical problem seems to be a minor irritant at the end of every cruise, and we do have some scientists on occasion who think it is the chief scientist's job to clean up and or get rid of their unused chemicals.

**Robin: How does the CG normally deal with this sort of material?**

**Lee: This material was likely left from last year, and I removed it from the ship and dealt with it. During the SBI program the UW officially supported this sort of activity, but this is no longer the case. The present informal method needs sorting out.**

**Robin: The *Polarstern* requires each space to be cleaned by its user and carries out an inspection before putting into port. Could we do something like this?**

**Dave: we are trying at present to enforce a cleanup of lab spaces by the marine science officer on *Healy*.**

**Phil: the UW is not interested in assisting with these issues.**

**Dale: notes that the UW would be interested if they were funded and this were one of their specific tasks.**

#### ***8) Laboratory and Other Vans***

*a) Did you use vans from the UNOLS van pool or from another source (specify)?*

We used a low temperature van as well as the rad van for mixing and incubating stable isotopes.

**Lee: A low level contamination issue was taken care of by Phil before cruise departure. We are grateful to the NSF and to the OSU Van Pool for leaving the van aboard ship from the previous season, as the vans were in good condition and warm enough to use.**

*b) How did the procurement go?*

Excellent, very little effort on my part and thanks to NSF, the Coast Guard and the UNOLS shared equipment office at Oregon State for their help.

*c) Were lines of responsibility clear for obtaining appropriate vans and for setting up and maintaining the vans on board?*

Yes. A contamination issue in the Rad Van was handled by Coast Guard Science Liaison. I double-checked the clean-up with a portable Geiger-Muller meter after getting onboard in Kodiak and was not able to find above background radioactivity.

*d) Was adequate time available to obtain the vans?*

Yes

*e) How well did the vans perform?*

Great

f) *Were they appropriately equipped with ship connections?*

Yes

g) *How well did load and offload go?*

A few problems I think on the Coast Guard end in getting them on and off the ship (crane issues).

**PSEA: The ship was nearing her yard period, and there were some issues with managing challenges associated with the offload. These issues were not however considered significant.**

### ***9) Lab and Your Science Equipment Setup/Installation***

a) *How well did set-up of the labs and science equipment go? For example, were you able to have the lab counters and unistrut adjusted appropriately to fit your needs? Coast Guard deck and MST team did an excellent job making the lab space work for us.*

b) *Did installation of science equipment outside of the ship's equipment go well? Were there any unexpected surprises in terms of needs or ability to support such scientific equipment? How clearly were special requirements for science equipment defined prior to the cruise? No major problems, but the pre-cruise planning meeting was critical for identifying some needs such as freezer space. We did have a failure of one of the -80 C freezers right at the end of the cruise and it compromised some samples. The problem was simple, a tripped circuit breaker but no one was watching the freezers and the alarm was not on. I think all of the freezers should be put on a regular checklist to make sure they are on and functioning with checks once or twice daily.*

**Lee: A breaker tripped because of insufficient power in the hold, and the alarm was not enabled.**

**Phil: The alarm had apparently been disarmed.**

**Robert: The -80 freezers are crucial for many programs, and need regular maintenance to make sure to prevent failures. Have had a number of freezer failures on other cruises. Is a service contract possible? Can they be defrosted?**

**Renee: These freezers need to be added to the science support MOU between NSF and CG.**

**Robert: if the freezers fail during the January cruise, the cruise will be a bust.**

**Dave: Agrees and will check on maintenance schedule . Unsure if there's anything in the service contract.**

**Dale: It requires more than a service contract. They are monitored by the MSTs during their rounds on Healy. Automated monitoring should not be viewed as a substitute for having "ownership".**

c) *Was anything identified during your cruise that should be recommended as a permanent addition to the ship's science equipment? Improvement in the within-lab freezer and low temperature storage---this acquisition of a frost-free model is underway from what I understand.*

### ***10) Information Technology On Board and On Shore***

*a) Communications (Local and remote E-mail, account set-up, internet access, data transfer on/off and within ship or between ships, Inmarsat and Iridium, radio). Were you satisfied with the capabilities? Were there computing resources or communications enhancements that you could have used but that were not available on board?*

Yes and no. Critical email via Iridium worked well. The web-based internet off the ship really doesn't work that well, even poorer than on Healy although with enough patience or maybe in the middle of the night, it was sometimes near acceptable. The IT support from Mike Merchant and the EOL lab was great.

**Robin: Was the problem with email, or only with larger files?**

**Lee: Emails sent from PSEA use the Iridium system and worked fine. Interactive internet access was difficult. Access should be better, given the expenditure for the system. The Healy system works very well, in comparison.**

**Phil: The system needs to work to some degree in the event of a need to access the internet to deal with an urgent issue.**

The chief scientist stateroom is a dead zone. No science network access, and the ship pagers also didn't work within that space. I think this made use of the pagers less common than on Healy by comparison. This is not a good situation for someone trying to manage science operations on the ship. The room itself is OK for the chief scientist, but I am not positive the chief scientist could also not be berthed in some way or another in the main science berthing area. It is true that this room is much closer to officer staterooms, and it is also a nice quiet room with a porthole, but most communication with OPS and the science officer is face-to-face in the lab, on the bridge, in the Captain's cabin or via phone.

**Robin: How hard would it be to run a comms line into that stateroom?**

**Phil: We will talk to ESU ... the ship should be able to run comms into the CS stateroom. Pagers might be more difficult, and it's uncertain whether this is a glitch in the specific pager or a system issue. Phil was not, up until now, aware of this problem. There are a few other "dead zones" on the ship, as well.**

*b) How did the shipboard data collection, management, and archiving go? Were these services provided efficiently and made available in ways that promote rapid transfer of data to users?* The mapserver that was put together worked very well and data from the ship server was efficiently transferred.

*c) How well did operational technology work? (Map Server, board of lies, web cameras on board, monitors for changing among closed-circuit cameras, functionality of the closed-circuit cameras on board, winch display on back deck)* Excellent improvements have been put in place, including the board of lies, web cam and in lab map server.

**Lee: Ice data provided from NIC was helpful and accurate.**

**Robin: How were the images from NIC.**

**Lee:** Others have commented adversely on using the ice information for navigation purposes, but this information met our needs for science planning, and there were even markers for locating the spectacled eiders.

**Robin:** Perhaps the ice algorithms are better during winter than in summer.

**Campbell:** experience on the *Thompson* cruise suggested that ice data were overoptimistic: there were places where the ship could not go, despite the data prediction of no ice. Keep in mind that algorithms are imperfect.

### *11) Shipboard Science Systems*

*a) How well did these perform? This includes deionized water, multibeam, winches, environmental chambers, freezers, refrigeration, science seawater, underway data acquisition systems, ADCPs, depth sounders, etc.)*

Appreciate the new deionized water system, and the move to acquire new in-lab freezer and refrigerator storage has already been noted.

*b) Do you think anything needs to be upgraded?*

**Lee:** Responses to this item are cruise dependent.

**Robert:** Notes that planning for the winter cruise was aided by upgrades that had already been suggested by Lee.

### *12) Deck Operations and Deployment/Recovery of Science Gear*

*a) How well did the planning, understanding of responsibilities and approaches, and implementation go for both science and crew? We appreciated the excellent support we received during deck operations. The on-ice deployments were as efficient as any I have ever seen from an icebreaker platform.*

*b) Was appropriate and appropriately sized safety equipment available? Yes*

*c) Were operations safe? Did everyone comply with safety requirements? Were any unexpected safety issues identified and were they dealt with? Yes, by and large. We had one or two deck deployments where people had been working for long hours under cold and difficult conditions, and wires got wrapped or a shackle went through a block. Nothing was lost or damaged and no one was hurt, but fatigue-related scenarios still need to be anticipated by everyone involved.*

**Ship:** Issues of fatigue and the impact of working under very severe environmental conditions are covered in the safety briefing.

*d) Was there enough assistance as needed and/or requested with deployments and recoveries? Yes, we appreciated all the excellent help we received from the MST and deck force team.*

*e) Were communications effective with the bridge and winch control during deployments?*



Yes by and large. There were some differences in skill levels in getting the ship into position for sampling, but I can appreciate that under common circumstances it is not an easy ship to park against an ice floe.

**Lee: notes that there are always going to be differences of opinion on this point.**

*g) Other*

We had some problems with clogging of the drain pipes under the CTD room with mud washed off the deck from the sieve area. I think the low temperatures may also have been a factor in causing these pipes to freeze up. We did not have this problem on Polar Sea in 1999 under similar circumstances, so I am not sure if this is a recurring problem, but this potential problem needs to be anticipated. Fortunately, the problem didn't become a real problem (with water leaking from burst pipes into staterooms) until the very end of the cruise. The CTD rosette bottles drain into this same area, so hopefully this problem will be looked at in the shipyard.

**Lee: There was some flooding in the staterooms below, and perhaps this can be addressed in the yard.**

**Ship: is considering the issue, but no suggestions at present for a fix.**

### ***13) Ice Conditions***

*How well was information about the ice conditions in the area of operations provided to the ship and to the scientific party? We had access to excellent and accurate information*

### ***14) Small Boat Operations***

Not used.

*If appropriate, please comment on:*

*a) Adequacy of boat briefs*

*b) Provision and availability of appropriate safety equipment*

*c) Identification of science needs and requirements*

*d) How well the operations went*

*e) Other*

### ***15) Helicopter Operations***

*If appropriate, please comment on:*

*a) Adequacy of flight briefs. No problems*

*b) Provision and availability of appropriate safety equipment*  
Good

*c) Identification of science needs and requirements*

A great asset in addition to the science missions accomplished from the ship.

**Lee: We did some new things, such as bird observations from low altitudes where we identified some murrelets, about which little is known, and located spectacled eiders and associated ice. These operations all went very well.**

*d) Other*

### **16) Food Service**

*a) How well were special dietary requirements (vegetarian, vegan, low-fat, etc.) identified and met?* I am not aware of anyone being displeased with the food that was available. My own observations were that there wasn't always a vegetarian main dish available, but I think the meal service has improved a great deal over the years and the efforts to meet individual needs and to provide healthier options are much appreciated. This is not an area where 100% satisfaction by everyone onboard all the time can be achieved, so overall I think the food prep team really did a very good job of meeting our needs and those of everyone else onboard.

*b) How was the quality of service and food, including outside of the three main meals of the day (e.g., (quality and availability of food/experience for those working overnight)?* There wasn't too much available, but again, I did not hear a lot of concern about this.

*c) Other*

### **17) Berthing and shared spaces (science conference room, gyms, laundry)**

*How did all aspects of housekeeping go?* My impression was that at least some rooms were not particularly clean before being occupied. For example, the chief scientist cabin had some leftover clothes in it and some of the dust accumulations looked like it went back years.

**Lee: This may have been a result, at least in part, of late breaking changes before Kodiak, and other minor glitches.**

*b) How did the berth assignments go?*

*c) How were the check-in/check-out processes?* Late changes in personnel resulted in some minor problems with getting the right names on the right lists, e.g. upon check-in at the pier, room assignments, lifeboat assignments.

*d) Other Information about the laundry facilities and detergent requirements (e.g. liquid, not powdered and bring your own) were not provided ahead of time. The need for everyone to bring their own approved detergent seems less than an ideal arrangement, given the need to pack a*

container in luggage and hope it doesn't break open or to purchase in Kodiak. Some remote port embarkations might be very expensive places to buy detergent, but at least there is a Wal-Mart in Kodiak.

**Lee:** The laundry detergent requirement needs to be made more obvious before the cruise, particularly since *Healy* provides detergent and it's unclear why *Polar Sea* is different?

**Ship:** This is the first time it's come to their attention, and they'll look into implementing a system identical to that used on *Healy*.

**18) Medical**

a) Were needs, if any, met?  
Yes

b) Medical history questionnaires

i) Could the forms be improved? No doubt

**Lee:** The forms are improving with time.

**Robin:** These forms are one of our ongoing Action Items.

ii) How did the submission process go? (timing, acknowledgement of receipt, etc.)  
Seems better than in previous years. In addition to efficiency, I think *Polar Sea* was also more flexible than some of my dealings with *Healy* on getting these forms in.

**19) Other comments (if any)**

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**Appendix – Additional Questions for Specific Activities or Instruments. Answer only if appropriate for your cruise.**

**1) Multibeam**

a) How much real-time watchstander effort was required?

b) How much onboard ping editing was done in the post-processing?

c) In both cases, who provided the people? Who was responsible for training the people?

d) Other Multi-Beam issues?

**2) Diving**

If you conducted scientific diving on your cruise, how did it go?