[Print Cruise Plan]

Submitted on **May 08, 2007**

| | |
|---|---|
| **1.** HEALY Cruise: | **HLY-07-02/Grebmeier/16May07-18Jun07** |
| **2.** Cruise dates: (Determined by the Cruise Number) | **Start:** May 16, 2007 **End:**June 18, 2007 |

| | |
|---|---|
| **3.** Your Name: | **Jackie Grebmeier** |
| **4.** Affiliation: | **University of Tennessee** |
| **5.** Funding Agency: | **National Science Foundation** |
| **6.** Grant Number: | **OPP-ARC-0454454** |
| **7.** Full Address: | **10515 Research Dr., Bldg A, Suite 100, University of Tennessee, Knoxville, TN 37932** |
| **8.** Phone Number: | **+1.865.974.2592** |
| **9.** Email Address: | jgrebmei at utk dot edu |
| **10.** Fax Number: | **+1.865.974.7896** |

| | |
|---|---|
| **11** Date and Time to Start Loading: | **March 19, 2007** |
| **12.** Estimated Time Needed: | **1-2 days (depends on pending collaborators)** |
| **13.** Special Requirements for Loading or in-port logistics: | **Yes** |
| **13b.** If yes, Please list point of contact for in port logistics: | **Andy Heiberg/Chris Craig cell ph. 253-318-6469** |
| **14.** Estimated cargo size and weight to be loaded in Seattle: | **6000 lbs** |
| **15.** Estimated cargo to be loaded during underway port calls: | **200 lbs** |

**15b.** Cargo List:

**multi-Haps benthic corer (1)**
**single Haps benthic corer (1)**
**0.1m2 van Veen grabs (2)**
**multi-hole sieve stand and boxes (1)**
**beam and otter trawls (2)**
**zooplankton ring and net (2)**
**-see individual US scientist cargo list via USCG icefloe site**
**Separate cargo sent: China**
**Separate cargo sent: Korea**

**Additional File(s) Uploaded for Cargo List:** 0

**|Filename|** **|File Size|**

**16.** Give a brief description of the area of operations and type of work to be done and science objective:

**The primary study area is located between St. Lawrence Island and St. Matthew Island (61-64 deg. N, 170 to 180 deg. W. The secondary area is located between St. Lawrence Island and Little Diomede Island in Bering Strait. The overall sampling objectives are:**

**1.Collect data needed to model the total impact of predators on their main benthic prey in the north-central Bering Sea. These predators include**

**spectacled eiders (SPEI), groundfish, snow crabs, sea stars, and gastropods. This effort will require benthic trawling,and benthic sampling with grabs and cores.**

**2. Simulate impacts on the energy balance of the main endotherm predator (SPEI) of variations in crab and groundfish populations expected with changes in ice cover and resulting temperature of bottom water. This effort will require access to satellite ice information real-time, CTD/rosettee sampling, and benthic sampling with equipment outlined above.**

**3. Continue a long-term (1950-2005) record of benthic communities in this area, which are essential to analyses in this project. These data will also indicate whether declines in organic matter supply to sediments at monitoring stations have occurred throughout the area, and whether these declines have resulted from decrease in direct precipitation of phytoplankton during and after the ice-edge spring bloom. This effort will require collection of a suite of oceanographic data including 1) CTD/rosettee for T/S and water samples, 2) zooplankton net deployment, benthic equipment deployment, including cores, grabs and trawls.**

**4. Collaborative scientists Dr. Jinping Zhao and Zeng Yinxin (China), alpong with Dr. Marjorie Brooks will undertake optical measurements and collect water samples for particulate and organic carbon content.**

**5. Dr. Sang H. Lee (Korea) will collect water samples for primary production experiments using the stable carbon isotope technique.**

**6. In addition, opportunistic sampling off-ship via small boat operations are planned for ice seal taggging while on stations (PI: Boveng).**

**7. We also anticipate helipcopter surveys for the NMML component (Boveng.Cameron) on an opportunistic basis. The three main research methods (satellite tagging, shipboard surveys, and aerial surveys) can be selected and tailored to fit a variety of scenarios for numbers of berths, availability of helicopters, etc.**

**8. USFWS and NMML personnel will undertake marine mammal and seabird surveys from the bridge.**

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**17.** Total Number of People in Your Party: **40**

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**18.** If your cruise involves any of the following, please check below:
(Items marked * Require advance approval.)

| Items | Check |
|---|---|
| Multiple PI or Institution Cruise: | **Yes** |
| 24 hour science operations (Night Work?): | **Yes** |
| Personnel Deployed on Ice: | **Yes** |
| Hazardous Materials: | **Yes** |
| Radioactive Materials: | **Yes** * |
| Gasoline to run science equipment: | **Yes** |
| Explosive Devices: | **No** |
| Flammable Gases: | **No** |
| Portable air compressors: | **No** |

**19. Diving Operations: No**

| | |
|---|---|
| Number of Dives: | |
| Purpose: | |
| Will members of the science party be diving: | |
| Are you requesting USCG diver support: | |

| | |
|---|---|
| **20. Small Boat Operations:** | **Yes** |
| Number of deployments expected: | **10-20** |
| Purpose: | **There are two operations requiring small boats: 1. Multiple small boat operations for off-ship ice seal sampling when animals are in the area. This is the NOAA NMML tagging team. 2. Collection of ice algae 1-2 times during the cruise.** |
| Range in miles from the ship: | **5 miles** |
| Payload size and weight: | **200 lb** |
| Gasoline for Equipment: | **no** |

| | |
|---|---|
| **21. Helicopter Operations:** | **Yes** |
| Passenger Transports: | **Yes** |
| Cargo Transports: | **Yes** |
| Payload size and weight: | **200-300 lbs** |
| Maximum hours/flight: | **1.5 hr** |
| Average hours/day: | **3 hr** |
| Number of flights: | **40** |
| Total flight hours: | **60** |
| Installation of sensors on Helicopter: | **Yes** |
| Describe flight operations: | **We will use the helo for media flights, local and USCG personnel transfers, as well as some cargo transfer off Little Diomede Island.**<br><br>**We estimate NMML (Peter Boveng) group will use up to 40 hrs flight time during HLY0702 cruise, based on HLY0701 use. These flights will depend on NMML and core oceanographic science needs.** |
| Range in miles from the ship: | **50 mi** |
| Max distance from the ship: | **100 mi** |

| | |
|---|---|
| **22. Deployment or Recovery of Moorings:** | **No** |
| Provide the Lat/Long/Depth of each mooring and a description: | |
| Number of Moorings to deploy: | |
| Number of Moorings to recover: | |
| Min Depth: | |
| Max Depth: | |

**23.** Operational plan: Cruise Tracks and Station Locations. Please provide as complete a description as possible. Include with this plan, or separately, a complete list of stations with ID, Latitude, Longitude, depth and other information such as type of sampling/operations as appropriate. Use the text box below or upload separate documents as needed.

**23a.** Upload a cruise track file (jpeg, pdf, gif, etc) here (required):
**Cruise Track Uploaded:** HLY0702StnMap_dates.jpg

**23b.** Upload additional files as needed:
**Additional File(s) Uploaded for Operational Plan:** 4

| |Filename| | |File Size| |
|---|---|
| HLY0702May7Cruise_Plan.doc | 953344 bytes |
| FPIMHLY0702.xls | 30208 bytes |
| revNMMLHLY0702boatops.doc | 37888 bytes |
| A1-HLY0702CTDwaterbudget.xls | 16384 bytes |

## Operational Plan Description

**See operation plan within the attached HLY0702 cruise plan as well as the CTD /rosette water budget. Also attached is the draft NMML small boat operation plan. NMML will deploy small boats once the Healy is on station.**

Will the vessel be operating within 200 miles of a foreign country? **Yes**
If yes, Please list them here:
**Russia-but staying on the US side of the border**

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**24.** Will you be contacting Native communities to inform them of your intended icebreaker research activities? **Yes**
If yes, please list the native communities and contacts:
**We have contacts in Nome, Gambell, Savoonga and Little Diomede and continue our contacts with them from the last cruise (HLY0601) and prior cruises. We have three local participants from Gambell and Savoonga, St. Lawrence Island (SLI), as participants in our cruise. The Chief Scientist will also send weekly updates on the science operations to the local SLI communities and make email contract with regards to best flight operations for personnel pickups in Gambell.**

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**25.** Will Marine Mammal Protection Act, NEPA or Endangered Species Act consultation or permitting be required? **Yes**
If yes, please provide documentation.:
**File Uploaded:** Letter from Balogh.pdf

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**26a.** Cruise Plan and Description of Operations:
Provide as much detail as possible about the type of operations and sampling to be conducted, daily schedule and hours of operation, type of equipment to be used and any other information that will help us prepare for this cruise. Use additional pages or send corrected drafts as necessary. If this is a multi-investigator cruise, please include a list of Co-PI's who will be submitting operational science plans:

**see HLY0702 cruise plan attached**

**26b.** Upload additional files as needed:

**Additional File(s) Uploaded for Description of Operation:** 2

| |Filename| | |File Size| |
|---|---|
| Permit No 782-1676 (D#8864C.pdf | 4851412 bytes |
| Permit No 782-1765-00.pdf | 4212998 bytes |

## 27. Current Crew List

| | Name | Institution | Position | Phone/Email | Sex | Date On | Date Off | Foreign Nat. | Nationality |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Jackie Grebmeier | University of Tennessee | Scientist | 865-974-2592 jgrebmei at utk dot edu | F | 13-May-07 | 18-Jun-07 | No | USA |
| 2 | Lee Cooper | University of Tennessee | Scientist | 865-974-2990 lcooper1 at utk dot edu | M | 13-May-07 | 18-Jun-07 | No | USA |
| 3 | James Lovvorn | University of Wyoming | Scientist | 307-766-6100 lovvorn at uwyo dot edu | M | 13-May-07 | 18-Jun-07 | No | USA |
| 4 | Rebecca Pirtle-Levy | University of Tennessee | Technician | 865-986-1851 rpirtlel at utk dot edu | F | 14-May-07 | 27-Jun-07 | No | USA |
| 5 | Xuehua (Sherry) Cui | University of Tennessee | Graduate student | 865-974-6160 xcui1 at utk dot edu | F | 14-May-07 | 27-Jun-07 | Yes | China |
| 6 | Adam Humphrey | University of Tennessee | Graduate student | 865-974-6160 adamhumphrey at gmail dot com | M | 14-May-07 | 27-Jun-07 | No | USA |
| 7 | Ed Davis | University of Tennessee | Technician | 865-974-6160 edavis8 at utk dot edu | M | 14-May-07 | 27-Jun-07 | No | USA |
| 8 | Markus Janout | University of Alaska | Graduate student | 907-474-5184 janout at sfos dot uaf dot edu | M | 14-May-07 | 18-Jun-07 | Yes | Germany |
| 9 | Karen Frey | Viriginia Institute of Marine Science | Scientist | 760-855-5971 kefrey at wm dot edu | F | 14-May-07 | 19-Jun-07 | No | USA |
| 10 | Laura Belicka | University of Maryland | Graduate student | 410-326-7261 belicka at cbl dot umces dot edu | F | 14-May-07 | 27-Jun-07 | No | USA |
| 11 | Marjorie Brooks | University of Wyoming | Scientist | 307-399-0576 brook at uwyo dot edu | F | 14-May-07 | 18-Jun-07 | No | USA |
| 12 | Jason Kolts | University of Wyoming | Graduate student | 307-766-2832 jkolts at uwyo dot edu | M | 14-May-07 | 29-Jun-07 | No | USA |
| 13 | Christopher North | University of Wyoming | Graduate student | 307-766-2832 cnorth at uwyo dot edu | M | 14-May-07 | 29-Jun-07 | No | USA |
| 14 | Eric Anderson | University of Wyoming | Technician | 307-742-3642 emander at uwyo dot ede | M | 14-May-07 | 18-Jun-07 | No | USA |
| 15 | Heather Julien | University of Wyoming | Graduate Student | 307-761-0589 julienh at uwyo dot edu | F | 14-May-07 | 29-Jun-07 | No | USA |
| 16 | Michele Foster | University of Wyoming | Graduate student | 307-399-3491 mafoster at uwyo dot edu | F | 14-May-07 | 29-Jun-07 | No | USA |
| 17 | Amanda Roe | University of Wyoming | Graduate student | 605-484-5269 kroakie at msn dot com | F | 14-May-07 | 27-Jun-07 | No | USA |
| 18 | Beth Caissie | University of Massachusetts | Graduate student | 413-256-4809 beth at geo dot umass dot edu | F | 14-May-07 | 18-Jun-07 | No | USA |
| 19 | Kenna Wilkie | University of Massachusetts | Graduate student | 413-246-4809 kwilkie at geo dot umass dot edu | F | 14-May-07 | 18-Jun-07 | Yes | Canada |
| 20 | Perry Pungowiyi | Savoonga, Alaska | Observer | 907-984-6311/984-6414 | M | 26-May-07 | 30-May-07 | No | USA |
| 21 | Bobby Ungwiluk | Gambell, Alaska | Observer | 907- bobbyjay_1988 at yahoo dot com | M | 25-May-07 | 29-May-07 | No | USA |
| 22 | Michael Cameron | National Marine Mammal Laboratory | Scientist | 206-526-6396 michael dot cameron at noaa dot gov | M | 12-May-07 | 18-Jun-07 | No | USA |
| 23 | Shawn Dahle | NMML | Technician | 206-526-4035 shawn dot dahle at noaa dot gov | M | 14-May-07 | 18-Jun-07 | No | USA |
| 24 | Gavin Brady | NMML | Technician | 206-526-4035 gavin dot brady at noaa dot gov | M | 12-May-07 | 18-Jun-07 | No | USA |
| 25 | Erin Moreland | NMML | Technician | 206-526-6615 erin dot moreland at noaa dot gov | F | 13-May-07 | 18-Jun-07 | No | USA |
| 26 | Mike Apatiki | Gambell, Alaska | Technician | 907- peter dot boveng at noaa dot | M | 14-May-07 | 18-Jun-07 | No | USA |

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|---|---|---|---|---|---|---|---|---|---|
| | | | | gov | | | | | |
| **27** | Elizabeth Labunski | USFWS Anchorage, AK | Technician | 907-786-3453 Elizabeth_Labunski at fws dot gov | F | 12-May-07 | 18-Jun-07 | No | USA |
| **28** | Kathy Kuletz | USFWS Anchorage, AK | Scientist | 907-786-3453 kathy_kuletz at fws dot gov | F | 28-May-07 | 8-Jun-07 | No | USA |
| **29** | Jinping Zhao | Ocean University of China | Scientist | jpzhao at ouc dot edu dot cn | M | 14-May-07 | 18-Jun-07 | Yes | China |
| **30** | Yutian Jiao | Ocean University of China | Technician | jpzhao at ouc dot edu dot cn | M | 14-May-07 | 18-Jun-07 | Yes | Chna |
| **31** | Zeng Yinxin | Polar Research Institute of China | Scientist | +86-21-58711026, zengyinxin at pric dot gov dot cn | M | 14-May-07 | 18-Jun-07 | Yes | China |
| **32** | Sang H. Lee | Korean Polar Research Institute | Scientist | 82-32-260-6251 sanglee at kopri dot re dot kr | M | 14-May-07 | 18-Jun-07 | Yes | S. Korea |
| **33** | Steve Roberts | NCAR/EOL | Technician | 303-497-2637 sroberts at ucar dot edu | M | 14-May-07 | 18-Jun-07 | No | USA |
| **34** | Tom Bolmer | WHOI | Technician | 508-289-2628 tbolmer at whoi dot edu | M | 14-May-07 | 18-Jun-07 | No | USA |
| **35** | Scott Hiller | Scripps Institution of Oceanography | Technician | 858-534-1907 scott at odf dot ucsd dot edu | M | 14-May-07 | 18-Jun-07 | No | USA |
| **36** | Susan Becker | Scripps Institution of Oceanography | Technician | 858-534-9831 susan at odf dot ucsd dot edu | F | 14-May-07 | 18-Jun-07 | No | USA |
| **37** | Art Howard | POLAR-PALOOZA | Observer | 919-971-3930 art at artworkhd dot com | M | 25-May-07 | 4-Jun-07 | No | USA |
| **38** | Kathy Turco | POLAR-PALOOZA | Observer | 907-455-4286 Kath at alaskas-spirit dot com | F | 25-May-07 | 4-Jun-07 | No | USA |
| **39** | Gay Sheffield | ADFG | Scientist | 907-459-7248 gay_sheffield at fishgame dot state dot ak dot us | F | 25-May-07 | 3-Jun-07 | No | USA |
| **40** | Janet Warburton | ARCUS | Observer | 907-474-1600, x612 warburton at arcus dot org | F | 25-May-07 | 30-May-07 | No | USA |

**28.** Please check (X) by equipment needed. If you have questions, or need assistance, please call or email the Marine Science Department or at 206-217-6300

| Cables | Instrument(s) | Instrument Wts | Max Depth | A Frame |
|---|---|---|---|---|
| **[x]** .322"conducting cable (12k meters) | CTD-rosettee | **No response** | 1000m | **[ ]**AFT **[x]** STBD |
| **[x]** 3/8" steel cable (10k meters) | van Veen grab, Haps corer, vertical zooplankton ne | van veen=150lb, single Haps corer (150 lb), multi- | **No response** | **[x]**AFT **[ ]** STBD |
| **[ ]** .680 coax conducting cable (12k meters) | | | | **[ ]**AFT **[ ]**STBD |
| **[x]** 9/16" steel cable (14k meters) | beam trawl, otter trawl | 300 lb | 100 m | **[x]**AFT **[ ]** STBD |
| **[x]** 1/4" steel cable (14k meters) | optical gear | 200 lb | 100m | **[ ]**AFT **[x]** STBD |
| **[ ]** Spare .322 conducting cable (12k meters on spare drum) | | | | **[ ]**AFT **[ ]**STBD |
| **[x]** SeaMac portable winch-Instrument | alternate for optical gear deployment | 200 lb | 100m | **[ ]**AFT **[x]** STBD |

Will you be bringing your own winch and wire? **No**
Describe use, size, and weight & power requirements below:

**29.** Crane requirements:

| | **Anticipated use** |
|---|---|
| **[x]** Port Side Fantail Crane (Safe Working Load: 5 tons) | moving multi-Haps corer on deck |
| **[x]** Starboard Side Fantail Crane (Safe Working Load: 15 tons) | **No response** |
| **[ ]** 04 Deck Cranes (Safe Working Load: 15 tons) | |
| **[ ]** Forecastle Crane (Safe Working Load: 3 tons) | |

Describe other lifting requirements here: (cranes have limited reach please consult the crane descriptions)

**30.** Deckspace Requirements:

| | **[ ]Vans** | **[x] Incubators** | **[ ] Storage** |
|---|---|---|---|
| **Type/Size** | | 4 ft x 2 ft | |
| **Location** | | **No response** | |
| **Water Req** | | **No response** | |
| **Seawater Req** | | **No response** | |
| **Power Req** | | **No response** | |

Describe all other Deckspace requirements here:
Dr. Sang Lee will set-up and use of seawater for deck incubations and will follow the standard protocol done with the Shelf-Basin Interaction cruises in 2002 and 2004. The current Healy flow-through arrangements are adequate. Also, Dr. Marjorie Brooks will set up deck incubators on the forecastle deck for experimental studies. Garden hoses are necessary for these connections.

**31.** Science Equipment and Lab Configuration:

## CTD

**Click here for Healy Station keeping limitations**

**[x]** SeaBird 911 + CTD/Rosette
Use:**Dedicated**
Depth - Min(m):**20** Max(m):**1500**
Approximate Number of casts planned: **120**

| | |
|---|---|
| **[x]** Redundant Temperature Sensors | **[x]** Redundant Conductivity Sensors |
| **[x]** O2 Sensor | **[x]** Wet Labs Transmissometer |
| **[x]** Chelsea Fluorometer | **[x]** Altimeter |
| **[ ]** 12 Liter external spring Niskin bottles | **[x]** 30 Liter external spring Niskin bottles |

### Expendable Oceanographic Probes (User supplied)

**[ ]** Hull mounted launcher **[ ]** Hand launcher
Number of Launches: **No response**
What probes will you be launching? (checked below)
**[ ]**XCTD **[ ]**XBT **[ ]**Other:

## Science Seawater

**Science Seawater**

**[x]** AutoSal Salinometer
Use:**Occasional**

**[x]** Seabird 21 Thermosalinograph
Use:**Occasional**

**[x]** Turner 10AU Fluorometer
Use:**Occasional**

**Incubator Seawater (HEALY does not have Ambient temp seawater at flow rates >5gpm)**

**[x]** Incubator ambient temperature seawater Flow rate:**<5 gpm**

Please indicate other seawater requirements:
**Deck-mounted seawater incubators for primary production experiments will be located on the forecastle deck, along with the radioisotope van.**

## Acoustics

**[ ]** Subbottom Profiler
Use:

**[x]** SEABEAM 2112 Bottom Mapping Sonar (Science Party supplies operator)
Use:**Occasional**

**[x]** RDI 150 kHz BB ADCP (Science Party supplies operator)
Use:**Occasional**

**[x]** RDI 75 kHz BB ADCP (Science Party supplies operator)
Use:**Occasional**

**[ ]** Knudsen 320B/R Echosounder
Use:

**[ ]** EPC 9802 20" Line Scan Recorder

**[x]** Benthos pingers
Use:**Occasional**

**31.** Science Equipment and Lab Configuration: (Cont.)

## Lab Equipment

**[x]** DI Water (18 Mega Ohm)
liters/day required:**10**

**[x]** -80 °C freezers (2 @ 12 cu ft each)
Use:**Dedicated**

**[x]** Fume Hood (3 available)
Use:**Dedicated**

**[x]** Climate Control Chambers (2)
Use:**Dedicated**

**[x]** Walk in Freezer
Use:**Dedicated**

**[x]** Clean/UPS Power (120v, 60Hz, Type 1)

**[x]** Walk in Refrigerator
Use:**Occasional**

## Meteorological

**[x]** RM Young Wind Sensors (Mech/Ultrasonic)

**[x]** RM Young Air Sensors(Temp, Baro, RH etc)

**[x]** Terascan Weather Satellite System

**[x]** 12 kHz pinger (Benthos/Datasonics)

## Communications

**[x]** Email
Bytes/Day
To Ship: **No response**From Ship: **No response**

**[x]** Iridium Phone
Mins per day:**No response**

**[x]** Data/FTP
Bytes/Day
To Ship: **No response**From Ship: **No response**

**[x]** INMARSAT Phone
Mins per day:**No response**

**[ ]** High latitude satellite connectivity (>73 N)
Bytes/Day from the ship:

Explain other communications concerns and requirements:

**We need the 2 hrs per day internet connectivitiy. Chief scientists require 24 hr/7 day access to military account for off-site contact, particularly with local Native communities for every few day contact related to ship location and sampling, per collaborative agreement. We need to send off these updates throughout the cruise.**

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## Coring

**[ ]** Jumbo Piston Coring
Use:

Number of cores using the 4k core head:
Number of cores using the 5k core head:

Minimum depth:
Maximum depth:

**[ ]** Gravity Core
Use:

Number of cores:

Minimum depth:
Maximum depth: