

[\[Print Cruise Plan\]](#)Submitted on **May 03, 2006****PAGE 1****1. HEALY Cruise:** **HLY-06-01/Grebmeier/07May06-05Jun06****2. Cruise dates:** **Start:** May 07, 2006 **End:** June 05, 2006  
(Determined by the Cruise Number)

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**3. Your Name:** **Jackie Grebmeier**  
**4. Affiliation:** **University of Tennessee Knoxville**  
**5. Funding Agency:** **National Science Foundation**  
**6. Grant Number:** **OPP-ARC-0454454**  
**7. Full Address:** **10515 Research Dr., Bldg A, Suite 100, The 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**

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**11 Date and Time to Start Loading:** **April 19, 2006**  
**12. Estimated Time Needed:** **3 days**  
**13. Special Requirements for Loading or in-port logistics:** **No**  
**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)**  
**otter trawls (2)**  
**zooplankton ring and net (2)**  
**(see individual scientist cargo list to be attached at later date)**  
**Set cargo current in storage at the U of Washington**  
**set cargo to be shipped from Tennessee**  
**-also pending need for radioisotope van for C-14 primary production measurements (on reserve through OSU)**

**Additional File(s) Uploaded for Cargo List: 3**

<b> Filename </b>	<b> File Size </b>
<a href="#">Packing inventory HLY0601.doc</a>	34304 bytes
<a href="#">#1UW to HLY0601.doc</a>	21504 bytes
<a href="#">#2APLtoHLY0601cargo.doc</a>	19456 bytes

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**PAGE 2****16. Give a brief description of the area of operations and type of work to be done and science objective:**

The study area is located between St. Lawrence Island and St. Matthew Island (61-64 deg. N), and between 170 to 180 deg. W.

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 helicopter surveys for SPEI periodically during the cruise, benthic trawling, and benthic sampling with grabs and cores. Also, PI Lovvorn will bring a shotgun and ammunition onboard and will need to store it in secure locker.
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/rosette 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/rosette for T/S and water samples, 2) zooplankton net deployment, benthic equipment deployment, including cores, grabs and trawls.

In addition, opportunistic sampling off-ship for ice seal tagging as well as helicopter surveys for seabirds and marine mammals south during the cruise and north of St. Lawrence at the end of the cruise are planned. The work north of the island, with, time permitting, is to determine where the overwintering spectacled eiders go before arriving on the breeding grounds. We are also interested on the location of walrus with respect to the ice edge. In addition, we will have participants doing marine mammal and seabird surveys from the bridge and opportunistically from the helicopter surveys.

**17. Total Number of People in Your Party: 31**

**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:	No *
Gasoline to run science equipment:	Yes
Explosive Devices:	No
Flammable Gases:	No
Portable air compressors:	No

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**19. Diving Operations: No**

Number of Dives:

Purpose:

Will members of the science party be diving:  
Are you requesting USCG diver support:

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**20. Small Boat Operations: Yes**

Number of deployments expected: **10**

Purpose: **We will have small boat operations for seabird sample collections and ice seal sampling periodically during the cruise.**

Range in miles from the ship: **5 miles**

Payload size and weight: **100 lb**

Gasoline for Equipment: **no**

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**21. Helicopter Operations: Yes**

Passenger Transports: **Yes**

Cargo Transports: **No**

Payload size and weight: **300 lb**

Maximum hours/flight: **1.5 hr**

Average hours/day: **3 hr**

Number of flights: **20**

Total flight hours: **30**

Installation of sensors on Helicopter: **No**

Describe flight operations: **We anticipate a maximum of 5 days helicopter time is necessary to search for spectacled eiders (SPEI) south of St. Lawrence Island and for sea ice and walrus observations. If time permits, we will take the ship north of SLI and search for SPEI for 5 days of helo use, in addition to ship operations. If we find SPEI and ice, we will need to set up on the ice and collect eiders by shotgun.**

Range in miles from the ship: **75**

Max distance from the ship: **75**

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**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:

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**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:** [HLY0601cruisetrack.pdf](#)

**23b.** Upload additional files as needed:

**Additional File(s) Uploaded for Operational Plan: 2**

<u>Filename</u>	<u>File Size</u>
<a href="#">updHLY0601Cruise Plan.doc</a>	481792 bytes
<a href="#">A1-HLY0601Samplebudget.xls</a>	13312 bytes

**Operational Plan Description**

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**C. GENERAL APPROACH (further detail in attached cruise plan)**

The overall approach in this study will be as follows:

- 1. We will continue time-series benthic measurements with multiple van Veen and HAPS benthic corer deployments. We will provide sediment subsamples for paleoclimate studies to U Massachusetts participants and infauna subsamples to U Virginia scientists.**
- 2. We will measure the densities (by size class) of clams, predatory gastropods, sea stars (asteroids), snow crabs, and groundfish in the wintering area of (SPEI) collected via trawling.**
- 3. Profiles of salinity and temperature, macronutrients, del-18O values, and chlorophyll a in the water column will be measured at each station from CTD rosette samples. These data will provide an oceanographic water mass context for our study, including data to analyze contributions of nutrients, sea ice melt, brine and runoff contributions. In addition, we will hand deploy a UV vertical measuring meter in the water column to 100 m depth after retrieval of the CTD.**
- 4. We will investigate the diets of predators in item 1 through analyses of gut contents, stable isotopes, and fatty acids to determine the diets of predators in item 1. We will measure prey size class of both predators and prey when possible. Based on the literature, we develop estimates of the food intake per individual per day of the predators in item 1, considering the size classes of each predator.**
- 5. We will mount a methane detector on the upper forecastle deck, upwind of the stacks.**
- 6. Satellite observations of ice will be evaluated via normal bridge obtained imagery and free web accessed products during course of the cruise.**
- 7. We will have shipboard and helicopter observations of marine mammals and seabirds through cooperative programs of the University of Virginia, US Fish and Wildlife Service, and Alaska Dept. of Fish and Game. We will also periodically deploy people to the ice or via small boat for ice seal tagging operations.**
- 8. We will have a middle school teacher (Samantha Barlow) and an Editor from Scholastic, Inc (Patricia Janes) participating for the full length of the cruise as part of the TREC (Teachers and Researchers Experiencing the Arctic), with PI Cooper as the lead organizer.**
- 9. We also are working with NSF to include two media representatives on the ship the last week of May, with pick-up as we round the corner past Gambell, Alaska. Offload will either be in Gambell or Savoonga for commercial fixed plane access to Nome, Alaska before the ship heads back to Dutch Harbor.**