BSIERP-BEST Project Management Plan

Purpose

The National Science Foundation (NSF) and North Pacific Research Board (NPRB) are supporting a comprehensive vertically integrated investigation of the Bering Sea ecosystem during 2007-2012. The scientific foundations for this partnership are the 2005 Bering Ecosystem Study (BEST) Program science and implementation plans and the Bering Sea Integrated Ecosystem Research Program (BSIERP) which is based on the NPRB 2005 Science Plan. Both programs seek to support meritorious scientific research that will improve understanding of how the highly productive marine ecosystem of the Bering Sea may respond to climate change, particularly as mediated through changes in seasonal sea ice cover.

In October 2006, both organizations approved the *NPRB-NSF Management Plan for a Study of the Bering Sea Ecosystem*, which serves as a guideline to building a successful partnership. The plan identifies the responsibilities and intentions of each organization regarding key program elements including funding commitments, geographic scope, division of effort on ecosystem components, review and selection of proposals, scientific team building and maintenance, planning and coordination of field and modeling activities, data collection, sharing and archival activities, and analysis, synthesis and reporting.

The funding agencies consider as critical elements of the plan the need for principal investigators to agree on binding provisions and protocols that will promote development of a seamless team effort for the scientific research. The purpose of this project management plan is to identify those binding provisions and protocols that are, in effect, the expectations of NPRB and NSF for their funded principal investigators. Many of these provisions were presented as part of the initial principal investigators meeting on September 18-19, 2007. The document was revised by a small team of principal investigators with opportunity for review provided to all principal investigators.

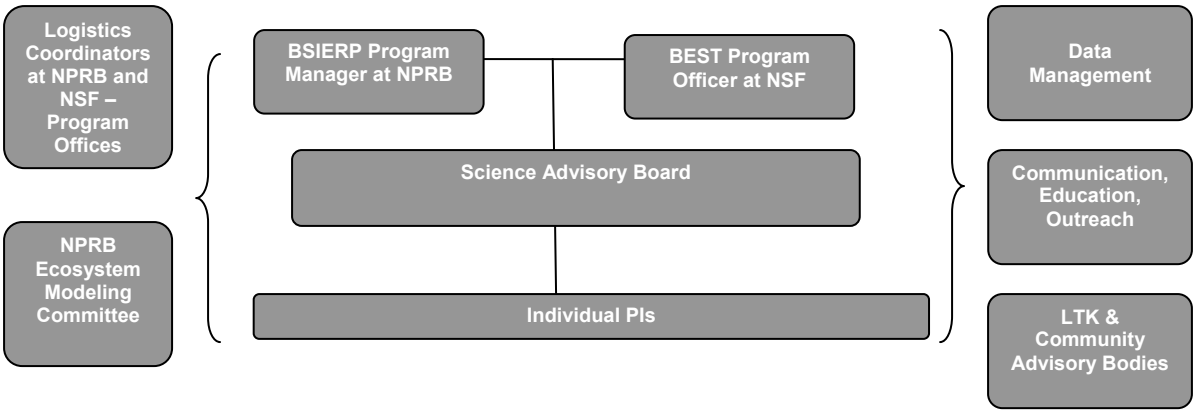
Concurrence of the principal investigators, co-principal investigators and key sub-contractors (hereafter all are referred to as principal investigators) in this consultative process is indicated by signature in Attachment A, which will be revised from time to time as individuals join or depart the program.

Requirements and Responsibilities

1. Project leadership and program responsibilities

As shown in the program organizational chart below, the following components will provide for program leadership and identify individual program responsibilities.

Program Offices. A program office has been established for the NPRB program. This office is responsible, among other activities, for program coordination and communication, planning, web site development and maintenance, meeting planning and logistics, symposia and synthesis and reporting. The BSIERP program office will be co-located with and administered by the NPRB staff. NSF will consider establishment of a BEST project office. Coordination with international research programs will be administered through the respective program offices as appropriate. The program offices may retain advisors as needed to enhance program understanding and direction.



BSIERP-BEST Program Organization

Science Advisory Board. The Science Advisory Board (SAB) is composed of six members, three each from BSIERP and BEST, elected by the respective principal investigators. In addition, one person each from NPRB and NSF serve as observers (NPRB and NSF Program Managers or their designees). SAB members will serve staggered two-year terms (initially 3 members with one-year terms and 3 members with two-year terms, and thereafter, all members with two-year terms) and may be re-elected. Principal investigators will nominate potential SAB members, who also may be self-nominated. NPRB will administer an election by e-mail or web-based form. Each principal investigator will select three nominees from their funding source. The nominees obtaining the three highest vote counts from each funding source will be elected. Three of the six total SAB members will serve initial two-year terms and three will serve one-year terms, with at least one member from each funding source starting with a two-year term, to be determined as follows: First there will be a random draw to determine which 3-member group, BSIERP or BEST, has two one-year initial terms. Then there will be a random draw within each group of three to determine which members receive one- or two-year initial terms. Board membership will be identified on the program website and updated as required.

All SAB decisions will be made by consensus. The NPRB and NSF representatives are observers that participate in discussions and provide for two-way communication between the SAB and the funding organizations. The SAB will be co-chaired by one representative each from BSIERP and BEST and are elected by the SAB members. The co-chairpersons serve for one-year terms and may be re-elected for one additional term.

The SAB is responsible for scientific leadership, encouragement and oversight in program integration, data exchange and synthesis, and for providing scientific input to the respective program offices, as well as dispute resolution. Any recommendations for program revisions will be sent to the NPRB and NSF program officers who will meet following the annual review meetings to assess the status and success of the program and take action as appropriate.

2. Schedule of meetings and other activities

The program offices and SAB will establish (and publish on the joint program website), a schedule of meetings, that will be subject to revision depending on program needs. Representation by each project is expected at annual PI meetings. It is envisioned that the following meetings (or e-meetings) will be needed in the coming years:

October 2007-February 2010:	Cruise and project planning meetings as necessary
Early December (2007-2009):	Healy cruise planning meeting facilitated by USCG in Seattle, preceded by a PI meeting
January 2008:	Project planning meetings at Alaska Marine Science Symposium (AMSS)
January 2009:	First annual PI meeting at the AMSS. Subsequent meetings may be held throughout US coincident with national meetings, to be decided by group consensus at the first PI meeting.
January-March 2010 and beyond:	Special sessions at nationally recognized ocean and fisheries meetings (e.g., 2010 Ocean Sciences meeting in Florida; PICES). These might coincide with annual PI meetings at the same locale.

Principal investigators (including field investigators, modelers, and LTK investigators) are encouraged to organize meetings within themes common to both programs to allow maximal benefit. BSIERP themes of ocean habitat, productivity and broad scale/patch dynamics (location matters) should be considered in tandem with BEST themes linking physical variability to ecosystem processes and structure, the identification of external forcing functions for climate, and ecosystem sustainability to ensure communication between program elements and establish synergies among investigators. Both BSIERP and BEST thematic groups are encouraged to invite local and traditional knowledge (LTK) investigators to attend and participate in these focused meetings. In addition, LTK principal investigators will meet annually in conjunction with the annual PI meeting and will invite other investigators as appropriate. NPRB and NSF will provide support for these thematic meetings dependent on funding availability and whether the meetings were specifically funded within each organization's contract or grant with the attending individuals.

3. Planning field seasons and selection of chief scientists

An NPRB-funded scientist will be Chief Scientist on any cruises that NPRB mainly funds and an NSF-funded scientist will be Chief Scientist on any cruises mainly funded by NSF. For these cruises, Chief Scientists will be selected based upon a consensus of principal investigators utilizing the platform. Chief scientists for in-kind cruises donated by NOAA will be decided by NOAA, as these cruises must meet stock assessment objectives, as well as BSIERP and BEST objectives supported by the in-kind donation. Members of the NPRB research team will have priority for uncommitted berths on NSF-sponsored cruises and vice-versa. Next priority for open berth spaces will be equal weighting for teachers participating in outreach programs, representatives of the mass media and local community representatives. Chief Scientists of specific cruises together with the SAB will help decide open berth assignments. In cruise planning, individual principal investigators will strive to share equipment and work space and to coordinate activities for efficient, cost-effective fieldwork that benefits the combined goals for BEST and BSIERP.

4. Communications protocols among field programs and with modelers

A list of lead principal investigators and all collaborating investigators for each component of the overall program, along with their full statements of work, contact information and pictures, will be posted on a special website established for this program. All meeting and conference summaries will be posted on the website as well to ensure open communication among scientific participants, agency representatives and interested communities. Discussion forums also may be established. The website will serve as a communications nexus for program participants and eventually will be word searchable.

A Listserv has been established to create a forum for researchers to query and share information with the BEST/BSIERP community: best_bsierp@list.arcus.org. The NPRB and NSF Program Managers will arbitrate the forum if used inappropriately.

An on-line questionnaire was established for modelers and field researchers to communicate the following information.

- **Indicate what they need from others and what data they will provide to others**, including units, spatial/temporal resolution, frequency, currency, maps, etc.
- **Provide accurate estimates when different data sets will become available** and how and at which point they can be used in the modeling effort
- **Indicate what model outputs will be available to inform field researchers' fieldwork.** Participants will agree on common units, variables, and formats.
- **Identify derived products** such as rates and functional relationships
- **Identify expectations from other components**, using a table based on a template provided by NPRB. This table will be provided to all principal investigators via web access. While this is not intended to supercede the statements of work embodied in the BSIERP and BEST award agreements, participants are encouraged to be as responsive as practical to other component needs.

This information will be posted on the BEST-BSIERP web site and links between projects mapped. Principal investigators should send information updates to the BSIERP Assistant Program Manager at NPRB.

Additionally:

- Field researchers will write **brief summaries** to describe results that are of potential relevance to the modelers and vice versa, modelers will write brief summaries that are of potential relevance to field researchers. These will be included in standard NSF and NPRB annual and semi-annual reports. These reports will be collated by the NPRB Assistant Program Manager and then distributed.

5. Implementation and monitoring of required data sharing protocols

NPRB and NSF require data sharing in their respective agreements with principal investigators. Principal investigators will submit all data to their respective data managers (NPRB or NSF) as soon as practical but within one year of collection unless the respective program managers grant special permission regarding time or content (e.g., human subject protocols indicate otherwise) or extensive post-collection processing (e.g., zooplankton identification, laboratory analyses).

Consideration also will be made to adjust time requirements in submitting data as part of a graduate student program with respective program manager approval.

These data may be shared among principal investigators in the BEST-BSIERP program, so long as individual and community intellectual property rights are protected. Principal investigators will strive to assign important preliminary data, which may be of great interest to other researchers, a high priority for availability. Intellectual ownership and authorship will be protected under any data sharing protocol. For the first two-year period following data collection and post-collection processing, data usage and authorship are fully protected. Following this two-year period, permission and the right of authorship should be fully recognized until the end of the program.

Data managers will communicate with field researchers about their needs in terms of common standards, units and formats, and will endeavor to keep metadata requirements simple and provide templates where possible. Data managers will facilitate development of a unified data table with common units and formats. Data Managers will publish metadata on public web pages to facilitate collaboration with scientists outside BEST/BSIERP.

6. Coordination of education and outreach to achieve maximum synergies

Both funding agencies will cooperate during field activities, education and outreach programs. The audiences for research efforts are multiple and include, among others: the scientific research community, management agencies, policy makers and congressional representatives and staff, commercial and subsistence users, teachers and students, the general public, media and non-governmental organizations. The NPRB Outreach Manager will lead this effort, will work with Outreach and Education staff at NSF, and will strive to involve communities, teachers and students to determine the best ways to promote information exchange. College students may be included in the scientific teams, if appropriate, and high school students may be included as community residents.

As detailed in Section 3, berth space on scientific cruises will be made available to community residents, teachers and students and media representatives to interact with the science objectives and provide insight on environmental changes occurring in the Bering Sea, assuming that applicable medical and training requirements have been met. The Local and Tradition Knowledge projects of BEST and BSIERP will involve community representatives. Both funding agencies will create opportunities for community representatives and scientists to exchange views and knowledge. Principal investigators will be expected to be responsive to needs of journalists and other communicators, and to involve science team members in communication within the bounds of completing research tasks. The NPRB Outreach Manager will provide principal investigators with talking points and general guidance on working with the media.

7. Coordination with other programs

The BEST/BSIERP program will coordinate with other scientific programs in the Arctic Ocean, Bering Sea and other subarctic seas including NOAA North Pacific Climate Regimes and Ecosystem Productivity (NPCREP), Loss of Sea Ice (LOSI), Northeast Pacific Global Ocean Ecosystem Dynamics (GLOBEC) and Bering Aleutian Island Salmon International Survey (BASIS) and the Arctic, Yukon, and Kuskokwim Sustainable Salmon Initiative (AYK SSI) and International Polar Year-Ecosystem Studies of Subarctic Seas (IPY-ESSAS) as well as other programs and projects supported by NSF and NPRB.

Principal investigators will be expected to coordinate with the NPRB Outreach Manager to provide suitable outreach products. If principal investigators have their own websites, they will recognize NPRB and NSF and link their website to the BSIERP-BEST website.

Principal investigators or their project representatives will be expected to visit at least one of the five communities involved in the LTK study at least once during the five-year study, coordinated through the LTK principal investigators and Communities Advisory Boards and the BSIERP Outreach Manager. These visits will be coordinated with cruises or community events as available including topic-specific conferences in the communities. NPRB and NSF will provide support for these visits dependent on funding availability and whether the meetings were specifically funded within each organization's contract or grant with the attending individuals.

Possible interactions of principal investigators with local community residents include:

- Information about research efforts
- Gather local insights and collaborate on specific projects
- Record observations
- Collaborate in analysis of results from the LTK and other components
- Assisting in K-12 learning opportunities
- Training and mentoring of residents and students
- Communicating BSIERP-BEST program findings at communities events

Principal investigators will be expected to contribute to newsletters, brochures and other media describing the BSIERP-BEST program for the wider public. They will also contribute information to the annotated directory with key contacts and links to relevant websites that will be posted on the BSIERP-BEST website.

8. Annual reviews and progress reports

Annual reviews, progress reports, data analysis, synthesis and reporting must be responsive to individual program requirements. NPRB requires semiannual reports in January and July. They must be submitted on time or the investigator may lose access to additional funds and data.

NSF requires annual reports due 90 days before the award anniversary. These reports must be submitted on time or the investigator may lose the next fiscal year increment. NSF will encourage its principal investigators to develop interim reports or extended abstracts before the annual principal investigator meeting. A common template for these reports (which may be extended abstracts) will be developed by the agencies for PI use.

BSIERP and BEST Program Managers will meet after the annual review meetings to assess the status and success of the program to date. BSIERP and BEST Program Managers will review their findings with the SAB. If corrective action is deemed advisable for any specific research components, the Program Managers will take the following escalating steps as they deem necessary and appropriate:

(1) Negotiate corrective action with the principal investigator(s) and receive a signed acknowledgement from that investigator that the action will be taken; and
(2) If no corrective action is taken, consider releasing no additional funds for that investigator's work until the problem is resolved.

In addition to the annual review, in-season and between-season reviews of operations will be convened as necessary to assess how field seasons went and identify possible improvements. Assessment of the operational success of the NSF funded spring ice breaker expeditions will be provided by the Arctic Icebreaker Coordinating Committee during post-cruise assessment interviews. Suggestions of any external advisory panel brought in to review progress will be forwarded to the SAB for consideration and action. The SAB will be responsible for responding to the suggestions with input from all interested investigators.

9. Reporting of research results and synthesis

The SAB will organize a schedule for reporting research results, publishing a special volume of preliminary results, and one or more syntheses of the major findings. Publishing of research results in primary peer-reviewed literature is critical for the success of the combined programs. Scientists may publish in journals of their choice or special issues organized by the SAB. The special volume of preliminary results and syntheses will be organized by the SAB and interested principal investigators. Principal investigators may serve as guest editors and the SAB will encourage a multidisciplinary editorial membership. Results also may be disseminated to local Bering Sea communities and at scientific and management meetings (e.g., the North Pacific Fishery Management Council (particularly through incorporation in the stock assessment and fishery evaluation (SAFE) documents as determined appropriate by the relevant council plan teams), American Fisheries Society, PICES, etc.). Principal investigators will forward titles and publication information for accepted manuscripts to the BSIERP Assistant Program Manager, who will maintain a web-based list of BSIERP/BEST publications.

10. Dispute resolution

Participants in this program are strongly encouraged to resolve disputes at the lowest level possible. Disputes that cannot be resolved through negotiation and compromise will be elevated for consideration by the SAB for resolution. If resolution is not practical, respective agencies and organizations involved will be consulted. NPRB and NSF may withhold funds as necessary and allowable until disputes are resolved.

Attachment A: Signature Pages

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