

North Pacific Research Board: 2010 Request for Proposals**INTRODUCTION**

The North Pacific Research Board (NPRB) was created by Congress in 1997 to recommend marine research activities to the Secretary of Commerce, funded through a competitive grant program using part of the interest earned from the Environmental Improvement and Restoration Fund. These funds must be used to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean (including any lesser related bodies of water). NPRB must strive to avoid duplicating other research activities and must place priority on research designed to address pressing fishery management or marine ecosystem information needs. The Board's longterm vision is to build a clear understanding of the marine ecosystems off Alaska that enables effective management and sustainable use of marine resources.

The Board, guided by its [Science Plan](#), has funded 228 projects totaling \$37.3 million as a result of eight requests for proposals released since early 2002. Descriptions of the projects can be found at <http://project.nprb.org/> and fall into seven broad categories as shown in Table 1.

Table 1. NPRB-supported research initiated in 2002-2009.

<u>Categories of Research</u>	<u>Projects</u>	<u>Total Funding</u>	<u>Percent</u>
Lower Trophic Level Productivity	38	\$6,039,320	16
Fish and Invertebrates	87	\$15,356,508	41
Fish Habitat	16	\$3,781,642	10
Marine Mammals	37	\$5,833,647	16
Seabirds	21	\$3,786,061	10
Humans	18	\$1,444,656	4
Other Prominent Issues	11	\$1,039,179	3

In addition, the Board in 2007 funded a \$16 million Bering Sea Integrated Ecosystem Research Program (BSIERP), which, in collaboration with NSF (Bering Ecosystem Study - BEST), started in late 2007 (see <http://bsierp.nprb.org/>), and has also initiated an \$8 million IERP for the Gulf of Alaska (see <http://goaierp.nprb.org/>).

This current notice constitutes the regular 2010 Request for Proposals (RFP) for projects commencing in 2010. It is similar in form and content to past NPRB requests for proposals, with research priorities structured around the 2005 Science Plan. It calls for **full proposals due December 4, 2009**. The table below summarizes the priorities and funding targets in this year's RFP. Explanation of the research priorities begins on page 4. NPRB strongly encourages support for graduate students in its funded research.

2010 Request for Proposals: Research Priorities (Total: \$3.8 million)

PLEASE CAREFULLY READ THE EXPLANATORY PARAGRAPHS (starting on p.4) FOR THE RESEARCH PRIORITIES SUMMARIZED BELOW AND BE AWARE THAT ALL SECTIONS HAVE FIRM LIMITS ON THE INDIVIDUAL PROPOSAL FUNDING AMOUNTS. LIMITS NOTED ARE THE OVERALL CATEGORY AMOUNTS UNLESS OTHERWISE NOTED IN THE TEXT. PROPOSALS EXCEEDING THOSE LIMITS WILL NOT BE PROCESSED. AMOUNTS ARE FOR THE ENTIRE STUDY, NOT PER YEAR.

Table 2. 2010 RFP for Regular Research Priorities with Target Amounts Totaling \$3.8 million.

1. General Research Priorities on Ecosystems Components	\$2,900,000
a. Oceanography and Lower Trophic Level Productivity	\$400,000
<ul style="list-style-type: none"> i. Importance of physical features to ecosystem processes ii. Changing Arctic food webs iii. Ocean acidification in Alaska waters iv. Other oceanography and lower trophic level productivity research 	
b. Fish Habitat	\$400,000
<ul style="list-style-type: none"> i. Bering Sea canyons: comparison between canyon and slope habitats ii. Essential habitats for forage fish and demersal spawning fishes iii. Habitat analysis in the Northern Bering Sea Research Area 	
c. Fish and Invertebrates (\$400K proposal cap)	\$800,000
<ul style="list-style-type: none"> i. Stock assessment, life history and population biology of North Pacific sharks ii. Stock assessment support iii. Fish movement iv. Pacific salmon v. Forage species vi. Ocean acidification impacts on fish vii. Other fish and invertebrates research 	
d. Marine Mammals	\$475,000
<ul style="list-style-type: none"> i. Declining or small populations ii. Ice-dependant pinnipeds iii. Short-term Steller sea lion movement patterns iv. Southeast Alaska sea otters v. Other marine mammal research 	
e. Seabirds	\$275,000
<ul style="list-style-type: none"> i. Influence of non-breeding season conditions on population dynamics ii. Seabird – forage fish ecosystem relationships iii. Declining or small populations iv. Other seabird research 	

f. Humans	\$275,000
<ul style="list-style-type: none"> i. Social and economic studies of bycatch and bycatch mitigation ii. Pre- and post-implementation studies of management actions iii. Community adaptability to ecosystem change iv. Cost-benefits of fishery enforcement services v. Other human research 	
g. Other Prominent Issues	\$275,000
<ul style="list-style-type: none"> i. Marine diseases and biotoxins ii. Invasive species iii. Marine spatial planning iv. Benthos 	
2. Local and Traditional Knowledge	\$100,000
3. Collaboration with Oil Spill Recovery Institute (\$200,000 total)	\$100,000
<ul style="list-style-type: none"> i. Prince William Sound NPZ model validation ii. Rockfish habitat association in Prince William Sound iii. Larval drift, transport and distribution in Prince William Sound 	
4. Cooperative Research with Industry	\$400,000
<ul style="list-style-type: none"> <i>i. Fishing Industry</i> <ul style="list-style-type: none"> 1. Gear modification 2. Handling mortality 3. Fishery monitoring 4. Ecosystem observations and research 5. Crab life cycle and rehabilitation <i>ii. O&G Industry</i> <ul style="list-style-type: none"> 1. Species of special concern in the Arctic 2. Monitoring from platforms in the Arctic 	
5. Community Involvement	\$100,000
6. Technology Development	\$100,000
<ul style="list-style-type: none"> i. Molecular and laboratory-based technology development ii. Marine measurement technology development iii. Resource assessment technology development 	
7. Ecosystem Indicators and Data Rescue	\$100,000
<ul style="list-style-type: none"> i. Data rescue ii. Ecosystem indicators 	
TOTAL	\$3,800,000

Request for Proposals for 2010**1. General Research Priorities on Ecosystems Components \$2,900,000**

The following research priorities follow the structure of the Science Plan. Please consult the Science Plan for clarification of appropriate research to be conducted under each heading. Care should be taken to consult current NPRB-funded projects (<http://project.nprb.org/>), including components under the BEST/BSIERP and GOAIERP programs, to show awareness of other ongoing projects and to avoid overlap and create synergies wherever possible.

a. Oceanography and lower trophic level productivity \$400,000

The NPRB expects to fund projects focused on the topical areas listed below. *Also see oceanography and lower trophic level productivity research under Collaboration with OSRI, page 12.*

i. Importance of physical features to ecosystem processes

Ocean fronts, eddies, and predictable retention zones are important physical features in marine ecosystems that can play a critical role in the distribution and abundance of upper trophic level species. The NPRB is requesting proposals to investigate the location, characteristics and importance of ocean fronts, eddies and retention zones to primary productivity and thus upper trophic level species. Emphasis should be placed on the physical-biological coupling, i.e., how are the abiotic and biotic components of the ecosystem coupled in these features?

ii. Changing Arctic food webs

Significant changes are evident in arctic seas. In particular, diminishing perennial and seasonal arctic ice cover is changing the lower trophic level productivity regime. The implications of a reduced ice-algae dominated system and shift to a longer open-water season are unclear. Apart from changes in the timing, location and extent of primary productivity, the increasing temperatures may set the stage for expansion of North Pacific Ocean organisms into the Arctic Ocean. The NPRB is requesting proposals to describe the changes in lower trophic levels that are occurring in the Arctic Ocean, and to examine the consequences of a changing arctic environment for lower trophic level structure and energy flow.

iii. Ocean acidification in Alaska waters

Approximately 30-50% of global anthropogenic CO₂ emissions are absorbed by the world's oceans. Increased CO₂ uptake by the oceans is expected to reduce surface ocean pH by 0.3 – 0.5 units by the end of the 21st century, which would be the largest change in pH to occur in the last 20-200 million years, with economic consequences estimated to be in the billions (Cooley and Doney, Environ. Res. Lett. 4, 2009). Ocean acidification likely will impact the ability of marine calcifiers, such as corals and mollusks, to make shells and skeletons from calcium carbonate. In addition, physiological consequences may occur before saturation levels are reached, and many species may display threshold instead of gradual responses. Finally, other unanticipated consequences of ocean acidification, such as a noisier ocean at lower pH levels (Hester et al. Geophys. Res. Lett. 35, 2008) must be considered. As a result, research in Alaska waters should focus on one or more of the following:

- a) Understanding the non-linear nature of ocean acidification in Alaska, including the importance of river plumes and coastal upwelling.
- b) Understanding and quantification of species-specific physiological responses of calcareous organisms to ocean acidification.

- c) Forecasting population dynamics, distribution and abundance, productivity, and ecosystem impacts of the physiological responses.

iv. Other oceanography and lower trophic level productivity research

While the topics already described in Oceanography and Lower Trophic Level Productivity are given priority status in this RFP, NPRB is also willing to consider proposals that focus on other topics identified in Table 3-2 of the Science Plan, p. 48.

b. Fish Habitat

\$400,000

The NPRB expects to fund projects focused on the topical areas listed below. *Also see fish habitat research under Collaboration with OSRI, page 12*

i. Bering Sea canyons: comparison between canyon and slope habitats

Canyons in the Bering Sea are believed to play a critical ecological role. Studies are needed that ground-truth existing mapping products (e.g. side-scan sonar, backscatter data) and that also, based on existing data (e.g. groundfish surveys, bathymetry, benthic habitat, seabirds, marine mammal distribution, fishing effort), evaluate whether Bering Sea canyons significantly differ from Bering Sea slope features. These features include but are not limited to the abundance, productivity, species richness, rugosity, food habits, and diversity of demersal, benthic, and pelagic species. Multi-species approaches are encouraged.

ii. Essential habitats for forage fish and demersal spawning fishes

New research is needed to improve our knowledge of the characteristics and importance of fish habitat, including strategies for protecting these habitats from human impacts and in light of environmental change. The NPRB is seeking proposals for research on habitat use by forage fish species and demersal spawning fishes. More data are required to identify fish habitat and map the distribution of various substrates and habitat types, including habitat-forming biota, infauna, and epifauna. In addition, an improved understanding of habitat requirements for forage fish and demersal spawning fishes is needed; including measures of habitat characteristics (e.g., sediment size, exposure, temperature, algal cover, etc). The overall goal of this category is to identify the areas and habitats that contribute most to the survival, growth, recruitment, and productivity of key fish species.

iii. Habitat analysis in the Northern Bering Sea Research Area

NPRB is seeking proposals related to habitat mapping in the Northern Bering Sea Research Area (per NPFMC action, June 2006 http://www.fakr.noaa.gov/npfmc/current_issues/BSHC/BSHC.htm). Research should focus on analysis and digitization of existing data to assess habitat types, substrates, associated invertebrates, and habitat forming epifauna in the Northern Bering Sea Research Area.

c. Fish and Invertebrates**\$800,000**

NPRB is seeking proposals that are focused on one of the topics listed below. **The individual proposal funding cap under Fish and Invertebrates is \$400,000. Also see fisheries research under Cooperative Research, page 13.**

i. Stock assessment, life history, and population ecology of North Pacific sharks

Sharks form part of the 'other species' category used by the North Pacific Fishery Management Council. There are large gaps in our current understanding of shark life history parameters and abundance at spatial scales that are relevant to management advice for the Bering Sea and Aleutian Islands and the Gulf of Alaska. The NPRB is seeking proposals that will lead to improved stock assessments for sleeper sharks, spiny dogfish, and salmon sharks and hence an improved basis for management advice. Priority will be given to projects that address one or more of the following research activities:

1. A comprehensive evaluation of alternative ways to estimate abundance and trends to obtain indices of abundance for management purposes in the most cost-effective way.;
2. An improved understanding of shark age, growth, natural mortality, maturity, fecundity, diet and trophic levels, including development of alternative methods for aging these sharks species (*proposals should not duplicate previously funded NPRB projects 418, 511*);

ii. Stock assessment support

To support stock assessment of managed species, NPRB is seeking proposals that address **one or more** of the following topics:

1. Improved estimation of natural and/or handling mortality for use in stock assessments.
2. Development of improved stock assessment methodology for data-poor but commercially important species.
3. Development of optimal survey designs under changing environmental conditions, including climate.
4. Development of analytical tools to evaluate and communicate uncertainty in stock assessments, including uncertainty regarding ocean acidification, and the performance of precautionary harvest policies that incorporate uncertainty.
5. Improve species identification in catches by both processors and observers for priority species within species complexes to avoid misidentification, and to reduce the large numbers of unidentified individuals.
6. Effects of truncated age/size harvest distributions on stock productivity.
7. Conduct a baseline assessment of Arctic fish and crab stocks.

Proposals that include training of quantitative stock assessment scientists are encouraged.

iii. Fish movement

The NPRB is seeking proposals that will assess the movement and stock structure of fish. The goal of this research may include an improved understanding of the spatial importance of predator-prey interactions, stock structure and spawning ground identification as related to management boundaries, including seasonal changes and responses to environmental variability. Proposals should explicitly build on previous information and include retrospective analyses where appropriate. Proposals that include a tagging component must demonstrate that barotrauma and/or tagging mortality concerns have been addressed or must include it in the proposal to support a full-scale movement pattern study.

iv. Pacific salmon

A recent effort lead by the North Pacific Anadromous Fish Commission and supported in part by NPRB has resulted in a report titled *Long-Term Research and Monitoring Plan for Pacific Salmon in the North Pacific* (<http://www.npafc.org/new/index.html>). Based on the findings detailed in the report and other considerations, the NPRB is interested in supporting proposals that focus on the following research topics in Alaskan waters:

- a) identification of the physical and physiological factors that affect the marine survival of juvenile Pacific salmon over their first ocean winter;
- b) assessment of the ecosystem impacts of hatchery (800 million/year in AK) and wild pink salmon;
- c) use of pink salmon as ecosystem indicators (58% of catch in AK); and
- d) age structured models of exploitation rates for chinook and chum salmon in Bering Sea bycatch as well as for salmon of these species returning to western Alaska. International cooperation and retrospective analyses are highly encouraged, as appropriate.

v. Forage species

NPRB is seeking proposals that will improve our understanding of forage species ecology in Alaska marine ecosystems. Here we wish to focus on species such as sand lance, capelin (and other marine smelts), lanternfishes, euphausiids, etc., that are not commercial or otherwise well-studied taxa (such as herring or juvenile pollock). We are mainly interested in biological features that are important to predators, such as: distribution and abundance, school density, factors affecting recruitment, seasonal and annual variability in abundance or availability to predators.

vi. Ocean acidification impacts on fish

Changes in ocean chemistry are causing many concerns in regards to physiological and subsequent population and ecosystem impacts on commercially important fish and shellfish species. The NPRB is requesting proposals that will focus on:

- a) Understanding and quantification of species-specific physiological responses of all life stages of commercially important fish and shellfish species to ocean acidification, and
- b) Forecasting population dynamics, distribution and abundance, productivity and ecosystem impacts of these physiological responses.

vii. Other fish and invertebrate research

While the topics already described in Fish and Invertebrates are given priority status in this RFP, NPRB is also willing to consider proposals that focus on other topics identified in Table 3-4 of the Science Plan, p. 79.

d. Marine Mammals**\$475,000**

Proposals directed toward the study of marine mammals should be focused on one of the topics listed below. *Also see marine mammal research topics under Cooperative Research, page 13.*

i. Declining or small populations

Several populations of marine mammals in the North Pacific are either declining rapidly or have been reduced in population size through natural or human causes. These populations appear to be at high risk

and therefore warrant special attention. The underlying causes of population declines or failure to recover are poorly understood for all of these populations. The NPRB is seeking proposals that:

- a) Investigate environmental or anthropogenic factors controlling the current status or trends of one or more declining or small populations of marine mammals and the mechanisms by which those factors exert their control, with particular focus on factors that directly or indirectly cause depressed reproductive rates or increased mortality rates; or
- b) Quantitatively describe habitat utilization patterns, with particular focus on habitats that are important during crucial periods in the population's life history (e.g., breeding habitats) or that are important foraging grounds.

Proposals that address these topics may include measurement of basic biological and life history parameters and could include the development or testing of novel methods. Proposals should demonstrate a comprehensive knowledge of relevant historic and current research of the population(s) to be studied, and clearly describe how the proposed work will supplement or improve upon (and not duplicate) those other efforts. Proposals should substantiate that the population to be studied is declining or small.

ii. Ice-dependent pinnipeds

Ice-dependant pinnipeds are abundant top predators in the Arctic Ocean and Bering Sea ecosystems. They have always been, and continue to be, an important subsistence resource for Alaska native communities. Arctic climate change and associated changes in the extent and seasonality of ice cover have the potential to greatly affect these marine mammals, their ecosystems and the communities that depend on them for food and culturally important activities. Historically, ice-dependant pinnipeds have been difficult to survey and as a consequence we know little about their abundance, distribution and population trends. New survey capabilities such as acoustic monitoring, telemetry tagging and remotely operated aircraft have improved capacity for obtaining population data at reasonable cost and logistic effort. Given the importance of these marine mammals to the ecosystem and Alaskan peoples and the anticipated effects of climate change, it is timely to devote greater effort to monitoring these populations, to more precisely document and understand subsistence usage of these species, and to better understand their foraging ecology and potential effects from groundfish fisheries.

The NPRB is seeking proposals for research on ice-dependent pinnipeds that focus on one or more of the following:

- a) Population survey and status and trends analysis;
- b) Foraging ecology and habitat use studies;
- c) Assessments of subsistence take and collection of local and traditional knowledge (LTK) about changes in abundance, distribution, and other natural history information

iii. Short-term Steller sea lion movement patterns

NPRB is seeking proposals to evaluate the degree of short-term movement and exchange of Steller sea lions (SSL) across population management borders (between eastern and western SSL populations). Studies could employ tagging or genetic methods and should investigate the potential effects of short-term exchange between regions in accounting and population trend analysis currently being used.

iv. Southeast Alaska sea otters

Sea otters were re-introduced to the outer coast of SE Alaska in the 1960s and the population has increased rapidly while expanding their geographic range along the coast and inside waters. Sea otters can consume up to 25% of their body weight each day. Their diet overlaps with and is affecting important commercial, subsistence and sport fisheries such as the Dungeness crab and dive fisheries (e.g. abalone,

geoducks). Presumed sea otter predation led, in part, to the complete closure of the abalone fishery in 1995, and greatly reduced the fishable area for the Dungeness crab fleet. Many of the parameters and effects of the growth in the sea otter population are not well documented. Given the importance of the affected fisheries to communities in coastal SE Alaska, and the potential for sea otter population shifts (boom/bust cycles), it is timely to devote greater effort to monitor this species in this region. NPRB is seeking research proposals on SE Alaska sea otters that focus on one or more of the following:

- a) Population survey and status and trends analysis, including using retrospective analysis to predict future population patterns;
- b) Population distribution, foraging and habitat use studies, including potential range expansions;
- c) Assessment of sea otter diet and overlap with fisheries, including potential dietary shifts;
- d) Assessment of past and projected effects of sea otter population growth on fisheries; or
- e) Assessment of subsistence take of sea otters by Alaska Natives

v. Other marine mammal research

While the topics already described in Marine Mammals will be given priority status in this RFP, NPRB is also willing to consider proposals that focus on other topics identified in Table 3-9 of the Science Plan, p. 94.

e) Seabirds

\$275,000

Proposals directed toward the study of seabirds should be focused on one of the topics listed below. *Also see seabird research under Cooperative Research, page 13.*

i. Influence of non-breeding season conditions on population dynamics

Seabirds are exposed to many environmental and anthropogenic stressors, including subsistence harvest, by-catch in fishing gear, marine pollution, introduced predators, degradation of breeding and/or marine habitats, and climate change, to name a few. Because seabirds are most easily observed during the breeding season, most of what is known about these impacts on seabirds comes from their time spent at colonies. In many instances, however, population regulation occurs outside the breeding season, a time for which little is known about the ecology of most species, or their vulnerability to the previously listed stressors. The NPRB is seeking proposals that aim to determine migration patterns and/or the location of wintering grounds for seabirds in combination with efforts to assess the influence of natural and anthropogenic stressors on seabird populations during this time.

ii. Seabird – forage fish ecosystem relationships

Seabirds are integral members of marine ecosystems in the North Pacific, and may serve as sensitive and cost-effective indicators of their health and status. The NPRB funded a study (project [516](#)) wherein an international panel of marine bird ecologists synthesized current knowledge of “seabirds as indicators” of marine ecosystems. NPRB also supported a pilot study relating seabird phenology and salmon returns in Bristol Bay ([531](#)), and is supporting the compilation of seabird diet data ([722](#)). NPRB continues to seek proposals that will exploit the utility of seabirds as indicators of forage fish stocks, e.g., of fish community composition, distribution, abundance, recruitment, and/or population dynamics. NPRB is particularly interested in using seabirds for monitoring prey stocks (e.g., euphausiids, capelin) that are also used extensively by important commercial fish species.

iii. Declining or small populations

Several populations of seabirds in the North Pacific are either declining rapidly or have been reduced in population size through natural or human causes and are not recovering. These populations appear to be at high risk and therefore warrant special attention. The underlying causes of population declines or failure to recover are poorly understood. The NPRB is seeking proposals that:

- a) Gather appropriate demographic data (e.g., breeding success, survival) that may be lacking but needed for understanding why populations are declining;
- b) Investigate environmental or anthropogenic factors contributing to population declines (e.g., predation, diets versus food supply, pollution) with particular focus on factors that may depress reproductive success or increase mortality at sea and over winter; or,
- c) Quantitatively describe critical habitat use, with particular focus on terrestrial habitats that are important for breeding or marine pelagic habitats that constitute important foraging grounds.

Proposals that address these topics may include measurement of basic biological and life history parameters and could include development or testing of novel methods. Proposals should demonstrate a comprehensive knowledge of relevant historic and current research on these populations, and clearly describe how the proposed work will supplement or improve upon (and not duplicate) those other efforts.

vi. Other seabird research

While the topics already described in Seabirds are given priority status in this RFP, NPRB is also willing to consider proposals that focus on other topics identified in Table 3-12 of the Science Plan, p. 110.

f) Humans**\$275,000**

Proposals directed toward the study of humans should be focused on one of the topics listed below.

i. Social and economic studies of bycatch and bycatch mitigation

Research is needed on methods for assessing the economic and social costs of bycatch and bycatch reduction efforts. This includes studies that evaluate the performance of bycatch control methods, the costs borne by fishery participants who must implement bycatch control mechanisms, and the social, economic, or other costs borne by economic and cultural stakeholders who depend on species that are affected by bycatch removals.

ii. Pre- and post-implementation studies of management actions

Pre- and post-implementation studies of the benefits and costs, and distribution of benefits and costs associated with changes in management regimes are needed. "Benefits and costs" include both economic and social dimensions and assessments of analytical methods are of interest in addition to directed studies. Specific topics might include: changes in product markets; characteristics of quota share markets; changes in distribution of ownership and/or crew compensation as a consequence of the introduction of catch share programs; and prospective and retrospective analyses of changes in the spatial and temporal distribution of fishing effort in response to management actions. Studies of this kind should also consider the cumulative impacts of regulatory decisions on fishing communities.

iii. Community adaptability to ecosystem change

NPRB is seeking proposals that investigate the adaptability of Alaskan communities and the sustainability of the subsistence way of life to ecosystem change (e.g. location, abundance and productivity of marine species of importance to commercial and subsistence activities). Preference will be given to those proposals that focus on communities in the Gulf of Alaska and the Arctic and to those in the Bering Sea and Aleutian Islands that do not overlap with current efforts undertaken as part of BSIERP.

iv. Cost-benefits of fishery enforcement services

Various fishery rationalization programs adopted or under consideration by the NPFMC (e.g. halibut/sablefish IFQ program) have spread fishing effort in space and time. Whereas these measures have most likely increased the overall safety of the industry and associated fishing fleets, this spread of fishing efforts has placed increased demands on enforcement. Similarly, an increasingly accessible Arctic, and the adoption of the Arctic Fisheries Management Plan, has increased enforcement and other safety (e.g. search and rescue) requirements. NPRB is requesting proposals that focus on the costs and benefits of recently implemented fishery management programs from an enforcement perspective. Studies of such kind could include research aimed at improving cost-effectiveness of fisheries enforcement, for example, through vessel monitoring systems (VMS) and other emerging technologies.

v. Other human research

While the topics already described in Humans are given priority status in this RFP, NPRB is also willing to consider proposals that focus on other topics identified in Table 3-13 of the Science Plan, p.120. Other human-related issues are also addressed under the LTK component of this RFP, page 12.

g) Other Prominent Issues**\$275,000****i. Marine diseases and biotoxins**

The NPRB is soliciting proposals to examine the role of pathogenic organisms in marine animals in the Gulf of Alaska, Bering Sea, and Arctic Ocean. Proposals could address the role of pathogens and algal toxins in the population dynamics of species of commercial or subsistence interest to the NPRB. Topics of importance include:

- a) effects of marine diseases on reproduction,
- b) spawning success,
- c) survival of different life stages, including disease as a source of mortality for juvenile fishes (including Pacific salmon);
- d) marine mammal diseases, and
- e) zoonotic transmission to humans.

Research could also address improving knowledge of life cycles and ecology of key wildlife pathogens (e.g. marine *brucella*).

ii. Invasive species

Invasive species can pose a major threat to Alaska native flora and fauna and result in ecosystem disruptions that could cause severe economic harm. A recently published status report (Non-native and Invasive Animals of Alaska) lists the occurrence of marine invasive species in Alaska

(http://www.adfg.state.ak.us/special/invasive/documents/invasivespp_report.pdf), several with high potential for economic impact and/or further threat of expansion, especially in light of ever increasing ship traffic (in the Arctic especially, but also through the Great Circle Route and other maritime activities) and changing ocean conditions. NPRB is seeking proposals that focus on ecological and/or economic impacts of marine invasive species in Alaska. This could also include a risk assessment for new species invasions given future climate scenarios and associated changes in human activities, including risk assessment due to marine vessel activity (e.g. ballast water discharge), excluding passenger vessels. Vessel traffic should focus on fishing vessels in the first instance and cargo vessels in the second.

iii. Marine spatial planning

Proposals submitted to this category should focus on ways to improve engagement of the fishing industry and other stakeholders in marine spatial planning, including the development and testing of possible marine spatial planning methods. The intent is to test spatial planning methods at a pilot scale and to learn from those approaches in order to “jump start” new spatial planning efforts once Federal guidelines are established. Proposals are expected to be collaborative efforts between the fishing industry and the appropriate federal agency involved in developing marine spatial planning approaches.

iv. Benthos

Baseline information on species distribution and abundance is needed in order to assess change. For some species groups such as benthic marine invertebrates the needs are even more basic as we lack fundamental information on their occurrence in Alaska waters. NPRB is requesting proposals that will carry out a taxonomic compilation based on existing data of benthic marine invertebrates that occur in Alaska waters.

2. Local and Traditional Knowledge \$100,000

The Board is requesting proposals that address one or more of the research priorities identified elsewhere in this 2010 RFP that do not duplicate current Local and Traditional Knowledge (LTK) efforts and engage LTK and its holders. Potential projects must be responsive to the LTK section of Chapter 4 of the NPRB Science Plan and contribute to the mission of the NPRB. In addition to the usual proposal evaluation criteria, LTK proposals will be assessed with regard to:

- (a) the depth to which they engage LTK throughout the project, including design and interpretation as well as the collection of data and information, and
- (b) the demonstrated commitment of community partners (where “community” may refer to a geographic, ethnic, occupational, or other group), as research team members or in letters of support. Proposals should include specific plans for communicating research results back to the appropriate communities.

3. Collaboration with Oil Spill Recovery Institute (\$100,000 NPRB) \$200,000 total

An opportunity exists to conduct collaborative research in the Gulf of Alaska. This is the fifth year of collaboration between NPRB and the Oil Spill Recovery Institute (OSRI), and again this year, NPRB and OSRI have each committed up to \$100,000 for this collaboration, yielding a total of up to \$200,000. All proposals received under this section will compete against each other with a funding cap of \$200,000 for all categories. This section of the RFP is open to all organizations and individuals and is in no way restricted to those associated with OSRI or the Prince William Sound Science Center.

i. Prince William Sound Nutrient-Plankton-Zooplankton model validation

Nutrient-plankton-zooplankton (NPZ) models provide a modeling linkage between ocean circulation models and fisheries models. The GLOBEC and AOOS programs have both been involved in the development of NPZ models in the Gulf of Alaska and Prince William Sound. It is important to validate these models with field observations so that they can be applied to increase ecosystem understanding and be used in a forecast mode. We are requesting proposals to validate the existing NPZ models for this area with data collected during the 2009 PWS Field Experiment (see <http://www.aos.org/> for details) or alternatively through another coordinated modeling and observation program designed for this validation purpose. Proposals should test the model's ability to forecast nutrient, plankton, and zooplankton distributions and levels through the summer and possibly into the fall.

ii. Rockfish habitat association in Prince William Sound

Rockfish are a diverse group of long-lived marine fish that can be prone to impacts from oil spills and overfishing. In Prince William Sound, the recovery of the rockfish population from the *Exxon Valdez* oil spill is unknown, in part because we do not know what the original impact may have been. A better general understanding of the impacts of spills and fishing on rockfish populations requires knowledge of available habitat. Recent advances in technology and the completion of high-resolution bathymetric surveys may make it possible to better characterize rockfish habitat in Prince William Sound. We request proposals that use existing data to identify rockfish habitat and quantify the suitability of that habitat to protect and sustain populations of rockfish.

iii. Larval drift, transport and distribution in Prince William Sound

Several ocean circulation models have been developed that cover the Gulf of Alaska and smaller regions within the Gulf. Several important fish and shellfish taxa in Prince William Sound, including herring, crab, and clams, have planktonic life stages during which behavior, spawning and hatching locations, and the oceanographic circulation can determine their dispersal. We request proposals to model the larval transport of commercially important species (current or historic) out of or into Prince William Sound. We seek proposals that will generate probability maps showing where settling of the selected species may occur, given a fixed spawn/hatch location and date and several different years of ocean and meteorological conditions.

4. Cooperative Research with Industry \$400,000

The Board is requesting proposals that address one or more of the research priorities identified below *and engage the fishing or oil and gas industries, or others, as appropriate*. Potential projects must be responsive to the Cooperative Research section of Chapter 4 of the NPRB Science Plan and contribute to the mission of the NPRB. In addition to the usual proposal evaluation criteria, cooperative research proposals will be assessed with regard to:

- a) The depth to which they directly engage the relevant industry throughout the project, including project identification, design, and interpretation as well as the collection of data and information;
- b) The applicability of the proposal to addressing pressing conservation and management needs identified for the applicable industry;
- c) The extent to which the project will help to build a better understanding between science and industry, and greater confidence in the products of research and in the regulatory process; and
- d) Scientific integrity, practicality, and cost effectiveness of the experimental design.

Cooperative Research priorities identified are listed below and will be given highest priority. The NPRB also will consider other proposals relating to other priorities in its Science Plan as long as they have a strong cooperative research component. Proposals that include financial support from industry will be looked upon favorably.

i. Fishing Industry

1. Gear modification

Areas of interest include gear modifications to reduce habitat impacts, gear loss, interactions with non-target species of fish, avoidance or minimization of interactions with marine mammal or seabirds, and improvements for catchability and selectivity.

2. Handling mortality

Handling mortality studies for groundfish and shellfish are needed. The NPRB is seeking proposals that will conduct field work to develop and assess techniques to reduce handling mortality in Alaska shellfish fisheries, or for prohibited species in Alaska groundfish fisheries, through careful release or sorting on deck. Proposals could also include an assessment of methodologies to rapidly assess viability on deck prior to release.

3. Fishery monitoring

The necessity for accurate and cost-effective fishery monitoring is growing as management becomes more dependent on real or near-time data. Observer program logistics and costs are real impediments to improving monitoring or meeting management needs in many fisheries. Various forms of remote monitoring, including electronic monitoring (EM), may offer practical solutions. NPRB is seeking collaborative proposals to develop or further refine EM or other fishery monitoring techniques.

4. Ecosystem observations and research

Ecosystem research could utilize platforms of opportunity in the fishing fleet to carry out marine observations. These platforms could be used to deploy oceanographic sensors, to make cooperative biomass assessments and surveys, to study marine mammal/fishery interactions and methodologies to reduce such interactions. They could assist in deployment of acoustic monitors, evaluate non-fisheries activities on fish behavior (e.g. seismic testing), and carry out cooperative marine mammal or seabird monitoring.

5. Crab life cycle and rehabilitation

Research is needed for the development of rehabilitation techniques for depressed crab species, including genetic identification and marking, nutritional needs, larval settlement and survival, and habitat requirements.

ii. Oil and Gas industry

Cooperative research with the oil and gas industry should center on the topics listed below. For all topics, priority will be given to studies that take place in the southern Beaufort and Chukchi seas or the near-shore deltas and habitats of particular interest, such as Herald and Hanna shoals.

1. Species of special concern in the Arctic

Of interest are proposals that benefit species of special concern in the Arctic, particularly species of marine mammals (including polar bears) and seabirds that are directly impacted by sea ice declines in the Beaufort and Chukchi Seas. Other species of special concern are salmon and other subsistence fish species, sea ducks, and all listed federal or state threatened or endangered marine species and other declining or at-risk marine species for which evidence of significant threat and vulnerability can be demonstrated.

2. Monitoring from platforms in the Arctic

Changes in the marine ecosystem in the Beaufort and Chukchi Seas are predicted to take place in the near future. Platforms used for oil and gas exploration could be utilized as sites to measure changes in the arctic environment. Potential measurements include atmospheric parameters (air temperature, humidity, wind speed and direction, precipitation, solar radiation, and long wave radiation) and oceanographic parameters (sea surface temperature, sea surface height, salinity, currents, nutrients, acoustics, fluorescence, wave height and ice cover). The use of these platforms would ensure that observations would be carried out frequently at fixed locations over relatively long periods of time.

5. Community Involvement \$100,000

The NPRB seeks proposals for small-scale research activities based in communities along the coast of Alaska. The intent is to provide community-based organizations and individuals with the chance to gain experience in conducting research projects and to address their research interests and priorities, consistent with the overall mission of the NPRB. This section of the RFP is not intended to discourage community-based organizations from applying for other and larger projects under any other section of the RFP. Instead, it provides an opportunity for those organizations to define priority research, to explain how that research is connected to the NPRB mission, and to describe how the project would be conducted to meet scientific standards as well as community expectations. The NPRB intends to fund two or three projects under this item.

6. Technology development \$100,000

NPRB is interested in supporting new technological development in the following areas:

i. Molecular and laboratory-based technology development

There is a need to develop molecular discrimination techniques with applications to one of the following:

- 1) Larval stages of commercially important species;
- 2) Detection and species identification of invasive species;
- 3) Detection and identification of marine diseases.

The NPRB seeks proposals addressing the development of such techniques that would show clear management applicability.

ii. Marine measurement technology development

The development of technologies to measure a wide variety of variables in the marine environment is needed. Both sensor technologies and their platforms need continual evaluation in the face of rapidly

advancing engineering. In the interest of promoting marine environmental information needs, which should consider resource management needs, NPRB is interested in supporting proposals that focus on marine sensor technology development. Examples include, but are not limited to, turbidity or pCO₂ sensors, fluorometers, and acoustic technologies for Arctic and subarctic marine environments. The focus of proposals should be on the design and field testing of such technologies. NPRB funding should not be a substitute for small business development grants.

iii. Resource assessment technology development

Further technology development is needed to improve resource assessment. Examples include: innovations to provide broader systematic sampling of biota and the physical environment, identification of advanced sampling technologies to conduct stock assessment surveys and improvements in acoustic assessments using fixed and mobile gear.

7. Ecosystem Indicators and Data Rescue

\$100,000

i. Data rescue

Marine research in Alaska has produced a lot of new information and insights, and large amounts of data have been collected. Many of these datasets have been digitized and submitted to national data centers, such as NODC, for storage and retrieval by the broader scientific community. Yet a variety of datasets spanning from oceanography to fisheries, seabirds, marine mammals and humans are currently not in a format accessible to other researchers (e.g. gray literature reports, paper files, field notes, undocumented local and traditional knowledge) and as a result cannot be used to help answer many current science management questions. In light of limited resources for marine research and in order to maximize investment into new research, the NPRB is interested in supporting proposals to rescue currently inaccessible datasets by transforming them into shared digital formats. Applicants must describe the nature and state of the data to be rescued (location, format, content); ensure that they have not been digitized before, and describe the utility of the dataset in terms of current and relevant science and management questions. Proposals should include integration of the rescued data into appropriate national data centers or databases, and could also include subsequent analyses of these data.

ii. Ecosystem indicators

NPRB held a Bering Sea Ecosystem Indicator Workshop in 2006 ([Project 502](#)). From this workshop followed a series of recommendations on how to proceed with research and management application of indicators. Research is still needed into the assessment and determination of appropriate ecosystem indicators. Most current models are designed for gradual changes based on observed ecosystem states, yet many biological systems show threshold responses. Proposed research could focus on evaluating current indicators (false positives, etc., see the final report for project 502) and/or a 'risk assessment' approach to determine indicators for shifts into alternate states, i.e., regime shifts. Furthermore, the North Pacific Fishery Management Council has prioritized the development of operational ecosystem indicators appropriate to each Alaska marine ecosystem, including socioeconomic, biological and oceanographic indicators of ecosystem health. An objective review of ecosystem responses to existing indicators could be done, and such efforts could be linked to extensive retrospective analysis or meta-analysis of the appropriate data.

PROPOSAL APPLICATION MATERIALS AND PROCEDURES

All applicants should refer to http://www.nprb.org/proposals/current_rfp.html for a copy of proposal application materials. If you need further information please contact the NPRB office by phone at (907) 644-6700, or by email to NPRB' staff members, Carolyn Rosner (Carolyn.Rosner@nprb.org), Carrie Eischens (Carrie.Eischens@nprb.org) or Tom Van Pelt (tvanpelt@nprb.org).

Please note that if the links to the template documents provided below do not work on your computer due to your internal security settings, you may find all templates at the above mentioned website.

PROPOSAL SUBMISSION AND DEADLINE

Proposals must be submitted online at http://www.nprb.org/proposals/current_rfp.html. Applicants will need to prepare the following information and documents (described in more detail below). Sections 1-7 (except for names of potential reviewers) will be sent out for technical reviews.

1. Proposal Summary Page (abstract of max 250 words)
2. Proposal Classification
3. Contact Information for the Applicant, Principal Investigator, Co-Investigators, Collaborators, Grant Managers, and Potential Reviewers
4. Community Involvement
5. Research Plan (max 12 pages, *use provided template*)
6. Budget Information and Budget Narrative (*use provided templates*)
7. Résumés (max 2 pages per principal investigator)
8. Previously Funded NPRB Projects
9. Current and Pending Support (*use provided template*)
10. Letters of Support

Online submission for proposals will be available between **23 October and 4 December 2009**. During the submission process you will create an account to which you can return at a later date if needed. Returning applicants can use their existing accounts. You will be asked to fill in a variety of forms with information from the list above as well as to upload files (research plan, resumes, etc.). **Templates** for the research plan, budget summary, budget narrative and the current and pending support form will be provided (hyper-links in the appropriate sections below) and **must be used**. Download these templates, complete them, and upload them again in the appropriate places. Your information will be saved as you move through this process and you will have the ability to update any information you have provided at any time before your final submission.

A link to generated complete summary pages will appear as soon as you have provided the following information: full address and contact information for each agency or entity that will be legally bound to perform the research if funded, name of the principal investigators and co-investigators that will be associated with the project and their agency/organization affiliation and email address, the 250 word summary, the 150 word community involvement summary, and funding request. Please print these pages and have it signed by the appropriate legal representatives of each institution participating in this research. Once you have finalized your submission you will be assigned a reference number. Insert this number in the appropriate place on the signed summary page and mail it to:

**North Pacific Research Board
1007 West 3rd Avenue, Suite 100
Anchorage, AK 99501**

It is acceptable for each authorized representative to sign a different sheet of paper and send it in separately. The proposal Applicant should sign the overall summary sheet.

Proposals must follow the guidelines and criteria specified herein and **must be submitted online by 4 p.m. Alaska time (5 p.m. Pacific time), 4 December 2009**. In the interest of fairness, **no proposals received after the deadline will be considered for funding**. Please note that it is in your best interest to have fully submitted your proposal ahead of the deadline, and not wait until the last minute. The system will be closed promptly at the times noted above, and even if you are partially done, your proposal submission will be interrupted and no further work allowed. This will lead to immediate rejection of your proposal. If you have trouble submitting your proposal, you may contact NPRB staff (*prior to 4 p.m. Alaska time on 4 December 2009*) for assistance but you are still entirely responsible for getting it in on time.

The signed summary page generated by the system at the end of the application process must be received at the NPRB office no more than one week after this deadline, i.e. **4 p.m. Alaska time, 11 December 2009**. Please note that courier and express deliveries to Anchorage, Alaska, normally require a minimum of two days for delivery.

Confidentiality of Proposals

If a proposal is submitted, but not funded, only the following information may be released to the public: proposal title, names of principal and co-investigators, funding amount requested, duration, and the proposal summary. If a proposal is approved for funding by NPRB and the Secretary of Commerce, then the full proposal (without salary information) will be released to the public. Proposals submitted in response to the joint NPRB-OSRI collaboration will go through a special joint review process and will be distributed to the OSRI Board and its advisory bodies in accordance with their standard operating procedures.

I. Proposal Package

The full proposal package consists of ten elements:

1. Proposal Summary Page

The proposal summary page will be created automatically based on the information you provide during the online submission process. It will include a **title, project period, names of applicant organization and principal/co-investigators, a summary of work** (250 words or less), a **community involvement summary** (150 words or less), **requested funds and other support**, and a place for the **signature** of an official authorized to legally bind the submitting organization. This page is not confidential and will be made available to the public. Ensure that you have not included any social security numbers in any of the fields. The proposal summary page is not a numbered page and thus does not count towards the 12-page limit of the Research Plan.

2. Proposal Classification

During your submission, you will be asked to provide the following:

- a. *Keywords*: Describe your project with 5-10 keywords (do not include any words that would apply to items b-e below).
- b. *Species*: Provide the species name(s) of the focal subjects of your study.
- c. *Ecosystem Components*: Indicate one or more of following ecosystem components addressed in your study: Oceanography & Lower Trophic Level Productivity, Fish and Invertebrates,

- Fish Habitat, Seabirds, Marine Mammals, Humans, and/or Other Prominent Issues (e.g., contaminants, disease, invasive species, climate change, etc.) – see NPRB for details.
- d. *Large Marine Ecosystem(s) (LME)*: Indicate the LME(s) in which your study takes place: Arctic Ocean, Bering Sea and Aleutian Islands, and/or Gulf of Alaska (consult the NPRB Science Plan for LME boundary definitions).
 - e. *Places*: List one or more regional geographic locations in which your study will take place; this should be a finer scale location than the one identified in the LME section.
 - f. *GIS Location*: Enter the proper lat/long coordinates for your location or area of study. If necessary, there is a map feature incorporated into the online submission process to assist with this requirement.
 - g. *Research Priority*: Identify ONE primary research priority from the 2010 RFP which your proposal will compete under. In Section C of the research plan you may identify up to three secondary research priorities to show the broader responsiveness of your proposals to the RFP, but your proposal will only be considered and competed for funding under the primary research priority you indicate in the online system.
 - h. *Topical Area*: Identify the topical area of your proposed research based on Tables 3-2 through 3.13 in the Science Plan.
 - i. *Research Approach*: Identify which research approach(es) will be used in your study: Monitoring, Process Study, Retrospective Analysis and/or Modeling.
 - j. *Reviewer Expertise Criteria*: Towards the end of your submission you will be provided a form where you will need to fill in criteria that best describe the expertise needed to properly review your proposal. Filling in this form as accurately as possible will help ensure proper peer review of your proposal.
3. Contact Information for the Applicant, one Principal Investigator from each organization, Co-investigators, Collaborators, one Administrative Grant Manager from each organization requesting funds, and potential Reviewers. Note that a Principal Investigator and Administrative Grant Manager are required for each organization requesting funding. It is not required to suggest potential reviewers. If you choose to submit names for reviewers, these will not be disclosed, but please read the [conflict of interest form](#) before doing so.
 4. Community Involvement

While not necessarily required for some research priorities, researchers should recognize that local community knowledge of, and interest in, natural resources extend beyond physical boundaries of the communities themselves to harvest areas and beyond. Furthermore, researchers should advise communities and people involved or affected by the studies of the purpose, goals, and time-frame of the research and its potential positive and negative implications. Inclusion of local and traditional knowledge and wisdom is encouraged. Applicants should specify in this section what, if any, communities they plan to interact with during their research and how, including, but not limited to, results will be brought back to the community when the project is completed. In addition, proposals for research on specific Alaska Native communities or health issues must have a letter of support from appropriate community and tribal governing bodies (see section 10 below). If you feel that this section does not apply to your proposal please, say so.
 5. Research Plan ([use template](#), 12-page maximum including references, tables and figures; continuous line numbers; upload your plan as a **WORD document**).

The main body of the proposal will be your research plan, **limited to 12 consecutively numbered pages** formatted as follows: All pages (*including the reference section*) must have **1-inch margins** at the top, bottom and sides. Text (*including tables, figure legends, citations and references*) must be single-

spaced, and the font and size must be **Times New Roman 11 point**. No page in the proposal and supporting material may be formatted to any size other than 8.5x11 inches. Color graphics are allowed, but may be reproduced in black and white and should thus be sufficiently descriptive. Note that submitted proposals will be converted to PDFs, and this conversion may impact the quality of your graphics. Please ensure an appropriate resolution is used. The research plan (and only the research plan) **must have continuous line numbers** from beginning to end to facilitate review.¹

Failure to comply with any of the formatting specifications above will result in automatic dismissal of your proposal without further review.

Following the provided template, your research plan will have the following elements:

- A. Project Title. Include the **long title**, and a suggested **short title** of up to 60 characters.
- B. Proposal Summary. Briefly explain the project goal and value, and why NPRB funds should be used, in language understandable by individuals not familiar with the specific subject area, such as Congress and the public. The 250-word summary from the Proposal Summary Page would suffice.
- C. Project Responsiveness to NPRB Research Priorities or Identified Project Needs. Identify the specific research priority identified in the RFP to which you are responding **and describe how your proposal addresses this priority**. Note that the priority discussed here **must match** the one selected during the online submission process. In case of discrepancies the priority selected during the online submission process will be used. In this section you may describe and identify up to three secondary research priorities also addressed by your proposed research to show its broader applicability, but note that your proposal will only be considered and competed for funding under the primary research priority.
- D. Soundness of Project Design and Conceptual Approach. State what the project will accomplish and why it is important. Demonstrate an understanding of the problem being addressed, the present state of knowledge in the field, the project's relation to previous work and work in progress by the principal/co-investigator(s), and the measurable benefits which will result from the proposed research. If this project builds on a project previously funded by NPRB, describe your progress to date and the objective of the next funding period. Describe the conceptual or statistical model underlying your experimental work. Present a list of clear hypotheses and project objectives. Describe the experimental design (and associated power analysis) and the analytical approach, including assumptions required, sample size, other relevant information needed to determine the utility and technical feasibility of accomplishing your research, and the expected outcome.
- E. Education and Outreach. Describe in detail the education and outreach component of this project. Principal/co-investigators are required to develop a plan and materials for communicating their research results to non-scientific audiences. **Proposals must include a minimum of \$2,000 for such activities in the proposal budget and give a detailed breakdown of how the money will be spent in the Budget Narrative**. Education and outreach activities should target as many of the audiences identified in the *North Pacific Research Board Science Plan* (2005) as possible, or at least one other audience besides marine researchers. NPRB reserves the option of pooling

¹ In Microsoft Word, on the **File** menu, click **Page Setup**, and then click **Layout** tab. In **Preview**, apply to **Whole Document**. Click **Line Numbers**, and then select the **Add Line Numbering** check box. In the **From text** box, must be **Auto**. In **Numbering**, click **Continuous**.

education and outreach funds from funded projects, where appropriate, to achieve the broadest impact in communicating about research, working closely with the principal investigators. Please note that NPRB **does not** consider scientific posters or oral scientific presentations at scientific conferences as education and outreach activities. For more ideas, please refer to *Education and Public Outreach: A Guide for Scientists* (see <http://www.nprb.org/education/outreach.html>), or contact the Alaska Center for Ocean Sciences Education Excellence (www.coseealaska.net) for ideas and links to experts in science communication and marine education.

- F. Timeline and Milestones. Applicants must demonstrate they can achieve an outcome and product within the requested award period, **including data analysis and submission, metadata and data submission, and timely completion of final reports**. In planning the duration and timeline of your project, do not assume that a no cost extension will be granted. Provide a clear table, organized by semi-annual reporting period, detailing your timelines and associated measurable milestones (accomplishments and deliverables) that will be used to track and evaluate your project performance through the entire award period. You may additionally describe the product or result that may be used to measure your success (e.g., report, published paper, management implementation) and how you plan to disseminate the research results.
- G. Project Management. Describe the organization and management of the project and the experience and qualifications of the principal and co-investigator(s). Demonstrate how they will coordinate and collaborate with other projects, and leverage their proposals with support from other sources. Applicants must seek to avoid duplication of other research efforts. If there is more than one investigator involved, the applicant must clearly identify which one will be responsible for the overall work (the designated principal investigator) as well as the specific responsibilities of each PI/co-PI involved in the project. Also indicate whether there is only one binding contract envisioned, or separate ones for each co-investigator. Principal and co-investigators are those that accept responsibility to ensure that the grant is properly administered and completed. Collaborators obligate themselves to work with a project and complete specific tasks, but are not responsible overall for successful completion of the project.

If applicable, **permits** that may be required as part of the project should be documented in this program management section. If available, permit applications or granted permit numbers should be provided. Permitting requirements are the responsibility of the applicants and the NPRB will not financially support the permit application process.

Also in this section, list the number of **graduate students** you intend to make part of your project. Include the level (M.Sc., Ph.D.), duration, and amount of funding support they would receive. Also list whether you intend to have none. Whether or not you are planning to have graduate students or post-docs on your project, while strongly encouraged, will not affect the evaluation of your proposal and is intended for informational purposes only.

- H. Figures and Tables
Figures and Tables are part of the 12-page limit and should be embedded in the text of the research plan.
- I. References
References are part of the 12-page limit. Avoid using long strings of references for the same statements. List all references used in the Research Plan in a format appropriate for a major journal such as *Fisheries Oceanography*, *Transactions of the American Fisheries Society*, *ICES Journal of Marine Science*, etc.

(Note: This is the end of what should be part of the 12-page limit. Line numbers are not required and should not be included beyond this part of the proposal package.)

6. Budget Summary and Budget Narrative (use templates)

Budget Summary

Amounts specified in the research topics above are for the full duration of the project, and are not to be interpreted as ‘per year’ funding. Fill in the template and upload the completed Excel workbook using the online submission system. The **Budget Summary** file is a series of spreadsheets (one for each institution/organization requesting funds) that detail by year (where year 1 is the first 12 months starting at your proposed start date) the following mandatory budget categories: salaries, fringe benefits, travel, equipment, supplies, contracts/consultants, other expenditures, indirect costs (F&A), and other support/cost sharing with other programs. The template Budget Summary includes a summary page that automatically combines all information for up to four different organizations. You may revise this template to include more institutions if necessary. Please note that each organization requesting funds must designate one **Principal Investigator** to be responsible for that component of the project. **You must ensure that your total budget requested matches the one entered online. If discrepancies are found between the two we will assume the lower amount is the correct one.**

Your budget must include costs of preparing all required reports, publication of results in appropriate scientific journals, providing metadata and data records to NPRB and a minimum of \$2,000 for education and outreach (see above). The plan for your education and outreach funds should be described in your research plan as indicated above. In the Budget Narrative, describe the cost breakdown of the education and outreach funds, and include them under the appropriate budget category.

Include travel costs for at least one representative of the project to attend the annual January science symposium in Anchorage for each year during the period of the project, **plus the annual symposium in the January following the completion of the project**, to present your results. Please ensure that your project end date incorporates attendance at this final symposium. Please note that travel to and presentations at the annual symposium **do not** fulfill the education and outreach requirement.

Budget Narrative

Guided by the example in the template for the **Budget Narrative**, **each institution requesting funds must provide** a detailed description of costs listed under each budget category in the budget summary above. You may include associated spreadsheets and other supporting material if applicable.

Clearly state whether or not your project will require any **international travel**. Inclusion of international travel will not impact the review process, but approval of international travel after the approval of the proposal will require a special application that may take up to 3 months to process. Please note that the Fly America Act will apply.

Please be explicit whether your budget includes ship time, or, if it does not, how required ship time (if any) and costs will be covered by other guaranteed funds.

Other support. Applications must reflect the total budget necessary to accomplish the project, including contributions from federal or non-federal grants, base organizational budgets, and/or donations. Cost-sharing is not required, but encouraged. If an applicant chooses to cost-share and if that application is selected for funding, the applicant will be bound by the percentage of the cost share reflected in the grant award. Please be advised that although EIRF-based (Environmental Improvement and Restoration Fund)

funds are not appropriated, the U.S. Department of Commerce has made a finding that EIRF funds should be considered to be federal funding since an authorization act created the “fund” in the U.S. Treasury.

Indirect Costs (sometimes referred to as overhead or F&A). The budget summary may include an amount for indirect costs if the applicant has an established indirect cost rate with the Federal government. The total dollar amount of the indirect costs proposed in an application under this program **must not exceed the indirect cost rate negotiated and approved by a cognizant Federal agency prior to the proposed effective date of the award, or 100 percent of the total proposed direct cost dollar amount in the application, whichever is less**. If applicable, a copy of the current, approved, negotiated indirect cost agreement with the Federal government must be included. It will be retained in the office and not distributed to reviewers.

*Please ensure that your budget has been approved according to your organization’s standard proposal approval process. The details of the Budget Narrative must match **exactly** to the numbers entered in the Budget Summary. Also, please check your final budget before submission to ensure that the addition of indirect costs as a percentage or some other revision to your budget does not cause your total budget to exceed the individual proposal funding cap for the research priority addressed. **If your proposal exceeds the cap by even \$1, it will be returned without further processing.***

7. Resumes (limited to 2 pages per principal investigator)

The resumes of all principal/co-investigators and other senior personnel involved in the proposal must be provided (collaborators do not need to submit their resumes). Each resume is limited to two consecutively numbered pages and must include the following information:

- a. A list of professional and academic credentials, mailing address, and other contact information including work phone number and email address.
- b. A description of current activities relevant to the proposed project.
- c. A list of up to five of your most recent/relevant publications most closely related to the proposed project and up to five other significant publications as appropriate. Please highlight publications that are based on research supported by NPRB funds.
- d. A list of all persons (including organizational affiliations) in alphabetical order with whom you have collaborated on a project or publication within the last four years. If none, this should be indicated.

8. Previous NPRB-funded Projects

During online submission you will be asked to indicate if any of the principal investigators and co-investigators of the current proposal have previously been awarded funds for NPRB projects. If yes, you will be asked to identify previous project numbers. Following successful proposal submission, principal investigators and co-investigators who have been awarded NPRB funds for previous projects may receive an email link to an online survey regarding those projects. If so, **completing the survey will be considered mandatory and part of a complete proposal submission**.

9. Current and Pending Support Form (use the [provided template](#))

Upload Excel documents using the online submission system. For each principal/co-investigator and other senior personnel involved in the proposal, use the provided template to disclose any current and pending financial resources that are intended to support research related or similar to that included in the proposal, or that would consume the time of the proposer(s). The proposer must also disclose if they have submitted the proposal to other funding sources.

10. Letters of Support

Letters of support from relevant management agencies, communities, including Alaska Native communities and tribal governing bodies (if applicable) or others potentially impacted by project activities (e.g., seabird colony work at times of subsistence activities) or benefiting from the projects results, should be provided. Letters should be specific about the role of collaborators and indicate how the results will be of use or benefit. Upload these letters, if any, in the appropriate place during the online proposal submission.

PROPOSAL REVIEW PROCESS

Initial Screening of Applications. Upon receipt, the NPRB staff will screen applications for conformance with requirements set forth in this notice. This review will consider not only whether the proposal meets the format and structure requirements in this RFP, but also whether it is responsive to NPRB's enabling legislation and criteria and adequately addresses the research priorities selected from this RFP. If necessary, the Executive Director will request an ad hoc committee of available Science Panel members to help in the initial screening. **Those proposals that are found to not comply with the requirements of the RFP will be rejected without further processing.**

Consultation with Interested Parties. NPRB may consult with NOAA and other Federal and State agencies, the North Pacific Fishery Management Council, and other entities, as appropriate, who may be affected by or have knowledge of a specific proposal or its subject matter.

Independent Technical Evaluations. All proposals that pass the initial screening will undergo independent, anonymous, technical peer review, conducted by regional, national and international experts. Reviewers will be asked to provide comments and qualitative assessments of the technical aspects for each proposal, as indicated below (percentages indicate the weight that the subsequent review by the NPRB Science Panel will give to the criteria), and an overall summation. The overall summation will include five tiers: poor, fair, good, very good and excellent, recognizing that poor and fair proposals will have little chance of being funded, good and very good proposals may be funded, and excellent proposals would most likely be recommended for funding:

- a. Soundness of Project Design/Conceptual Approach (60%): Is there a clear statement of what the project will accomplish and why it is important? Have the applicants demonstrated a clear understanding of the problem being addressed, the present state of knowledge in the field, the project's relation to other work, including their own, and the measurable benefits which will result from the proposed work? Is there sufficient information to evaluate the project technically? What are the strengths and/or weaknesses of the technical design relative to securing productive results? Is there a clear hypothesis to be tested, objectives to be addressed and well defined expected outcomes? Is there a clear description of a detailed experimental design with associated power analysis as appropriate, including assumptions required, sample size, and other relevant information needed to determine the utility and technical feasibility of accomplishing the research? Is there a list of data sources or requirements? Reviewers will give the following approximate weights to components within this criterion: 10% for background and need; 10% for statement of problem or question; 20% for study design; and 20% for analysis.
- b. Education and Outreach (5%): Is the education and outreach plan clearly defined? Are the education and outreach activities/materials planned aimed at audiences other than the scientific community?
- c. Timeline and Milestones (10%): Is there a clear table detailing appropriate timelines and associated measurable milestones, accomplishments and deliverables that can be used to track and evaluate

project performance through the entire award period? Is there a description of the product or result that may be used to measure project success (e.g., report, published paper, management implementation) and how the research results will be disseminated?

- d. Project Management (15%): The organization and management of the project, and the project's principal/co-investigator(s) and other personnel in terms of related experience and qualifications will be evaluated. Applicants must demonstrate how they will coordinate and collaborate with other projects and leverage their proposals with support from other sources. Applicants must seek to avoid duplication of other research efforts.
- e. Project Costs (10%): The justification and allocation of the budget in terms of the work to be performed will be evaluated. Is the project cost unreasonably high or low?

Science Panel Review. All proposals and their accompanying technical evaluations will be submitted to the NPRB Science Panel for review and evaluation based on the above criteria.

Board Review. The North Pacific Research Board will review responsive proposals, consider technical evaluations, Science Panel recommendations, and other factors as appropriate, and decide which proposals to fund. Other factors may included, but are not limited to, how well applicants involved in previously funded NPRB projects have managed those past projects, in terms of adhering to project budgets, timelines, and reporting requirements. Achievement of previously funded project objectives will also be considered. Public comment will not be taken from current applicants when the Board makes final funding decisions. The exact award period will depend upon the requested duration of funding, the decision of the NPRB on funding amount, the results of post-selection negotiations between the applicant and NPRB officials, and review by NPRB and Department of Commerce officials.

Secretary of Commerce Review. By law, all recommendations of the Board are subject to final approval by the Secretary of Commerce, who must ensure that there is no duplication with other projects funded by NOAA or other Federal organizations, and that the projects selected for funding are those that best meet the objectives of this solicitation. The review will include a determination of compliance with federal regulations, including the National Environmental Policy Act, and may result in additional requirements as a condition for funding (see General Condition 3 below).

D. Tentative Schedule

The tentative schedule is as follows (except for the proposal deadline, the schedule is subject to change):

<u>Schedule Item</u>	<u>Tentative Timeline</u>
Release of RFP	October 2, 2009
Online Submission Opens	October 23, 2009
Deadline for Proposals	December 4, 2009 at 4 p.m. Alaska time
Deadline for Signature Pages	December 11, 2009 at 4 p.m. Alaska time
Technical Evaluations	December 2009 – March 2010
Science Panel Review	March – April 2010
NPRB Selection	May 2010
Submission to Secretary of Commerce	May 2010
Final Notification of PIs	Late May 2010
Grant Agreements to PIs	May-June 2010
Commence Research	July 1, 2010 (earliest)

The exact amounts of funds awarded to a project will be determined in pre-award negotiations between

the applicant and NPRB. Projects should not be initiated in expectation of Federal funding until a Notice of Award document is received. Applicants should not request a project start date before **July 1, 2010**.

GENERAL CONDITIONS

This RFP is only a solicitation of offers and should not be construed as an expectation of award, or as any reasonable basis for detrimental reliance. NPRB is not obligated to award any specific project or any available funds. There is no guarantee sufficient funds will be available to make awards for all acceptable projects, and NPRB may choose to reject all proposals. No oral statement by any person can supersede or modify the terms of this RFP.

1. All Federal, State, private, and foreign organizations are eligible. Recipient organizations must have a DUNS number (<http://fedgov.dnb.com/webform>) and be registered in the Central Contractor Registration (CCR) system (www.ccr.gov) before any award can be made. Recipient organizations required by OMB Circular A-133 to have a single or program-specific audit will be required to submit a copy of their most recent single or program-specific audit for review before any award is made.
2. Responding proposals are firm offers and shall remain open for the NPRB to accept any time before June 1, 2010 in accordance with a standard NPRB agreement for the performance of the work proposed. A proposal is accepted only when NPRB sends the applicant written approval and has a completed agreement. A proposal accepted for funding does not obligate NPRB to provide additional future funding.
3. NPRB's Subaward Compliance Policy, finalized in March 2009, is based on Federal law that governs award agreements and on comments received on an interim compliance policy from NOAA's Federal Law Assistance Division, the National Science Foundation, and grants managers from five major research institutions. This policy will be part of all awards made as a result of this RFP. (http://doc.nprb.org/web/nprb/policies/03.09_nprb_subaward_compliance_policy.doc)
4. The applicant is responsible for obtaining all Federal, State, and local governmental permits and approvals for projects or activities to be funded under this announcement. This includes, as applicable, certification under state Coastal Zone Management Plans, section 404 or section 10 permits issued by the Army Corps of Engineers; experimental fishing or other permits under federal fishery management plans; scientific permits under the Endangered Species Act and/or the Marine Mammal Protection Act; and assistance to the Federal government in developing analysis to meet the requirements of the National Environmental Policy Act. All experiments must be conducted in compliance with law, and only pursuant to mandatory permitting duly granted by the appropriate federal and state agencies. Requirements for special permits, for example, those required for taking marine mammals, should be clearly described and whether the permit is in possession or not. The Secretary of Commerce may withhold final approval or stipulate additional conditions on projects to ensure compliance with the above.
5. Projects that require at-sea research using research vessels must comply with all research vessel safety standards in accordance with the guidelines for the operation of oceanographic research vessels owned, operated or chartered by members of the University-National Oceanographic Laboratory System (UNOLS), to ensure that research at sea is conducted to the highest practicable standards of safety and prudence. Those standards also apply to chartered non-institution vessels. (See: http://www.gso.uri.edu/unols/saf_stand/contents.htm.)

6. Funded participants are wholly responsible for the conduct of research, submission of required reports, and preparation of the results for publication. Participants will be required to submit semiannual progress reports and a final report to be posted on the NPRB website and in other databases. Final reports may be submitted for peer review at the discretion of the NPRB. Failure to submit timely reports or to respond to peer review comments on final reports, or not meet project objectives due to problems in program management, may result in withheld payments. Every effort should be made to submit research results for publication by an appropriate scientific journal within one year of the completion of study. The NPRB Executive Director may in his sole discretion grant written exceptions if requested timely. All manuscripts shall acknowledge that funds were provided by the NPRB through the U.S. Department of Commerce, NOAA, NMFS.
7. Successful applicants will be required to provide metadata and data records to NPRB at the completion of their project in accordance with the NPRB Metadata and Data policy (<http://www.nprb.org/projects/metadata.html>). Submission of metadata and data records constitutes part of the final project reporting requirements. Failure to submit such records may result in withheld payments. Among other requirements, this policy specifies the storage media and format(s), month and location for reporting, and other relevant information that may be required by the circumstances of the project.
8. Release of funds for newly approved projects may be delayed if investigators involved in previous completed NPRB projects have not fulfilled all their reporting requirements, including metadata and data delivery.
9. Researchers applying to do research involving human subjects are expected to demonstrate compliance with regional protocols for researcher/community interactions or the specific human subjects screening done by most academic institutions and agencies. The purpose is to ensure that privacy is protected, data are collected in a suitable manner, data are maintained in a secure environment, and results of any study are made available to participants if they indicate their interest.
10. In accordance with federal statutes and regulations, no person on grounds of race, color, age, sex, national origin, religion, marital status, pregnancy, parenthood, or disability shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under this program.