

**Request for Proposals for 2011****1. General Research Priorities on Ecosystems Components \$2,300,000**

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

**a. Oceanography and lower trophic level productivity \$500,000**

The NPRB expects to fund projects focused on the topical areas listed below.

**i. Biotic and abiotic features driving ecosystem processes**

Ocean fronts, eddies and predictable retention zones are important physical features in marine ecosystems that will likely be affected by changes in ocean conditions, but play a critical role in the distribution and abundance of upper trophic level species. The NPRB is interested in research that examines the processes that drive and maintain primary and secondary production from one year to the next, as well as those examining ecosystem implications resulting from changes in these processes (e.g. changes in albedo, loss in the dominant species of *Calanus*). In the Bering Sea, for example, investigations have shown that reduced frequency and intensity of summer storms reduce surface mixing and increase sea surface temperature, thereby increasing stratification. This results in a mixed layer that is shallower than the euphotic zone, and leads to extensive subsurface primary production and depletion of nutrients in the entire water column. On the other hand, moderate decreases in the intensity of summer storms reduce replenishment of nutrients to the euphotic zone, lowering summer primary and secondary production. Although these mechanisms have been described in concept, more research is needed to both continue collecting the relevant information as well to better quantify these relationships. The NPRB is seeking proposals that further our quantitative understanding of these processes and physical-biological couplings to help better forecast the impacts of climate change on the transfer of energy to other trophic levels.

**ii. The role of iron in GOA productivity and ecosystem structure**

Iron plays a key role in regulating the biogeochemical cycles of carbon and nitrogen, and pelagic ecosystem structures in the North Pacific Ocean. Although a variety of NPZ models applied to the Gulf of Alaska (GOA) include iron, insufficient information is available to quantitatively evaluate the interplay between its sources (e.g. dust, rivers, sediments, and volcanoes), the physical features affecting its availability (e.g. upwelling, meso-scale eddies, boundary currents, and tidal mixing), and its effects on primary and secondary productivity. The NPRB is seeking proposals that will provide proper in situ iron measurements in the GOA and will quantify physical, biological and chemical processes controlling iron distribution and transformation and its linkages to ecosystem processes.

**b. 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 fish and fisheries-related research topics under Cooperative Research and in Arctic Focus section.**