

C8 2017 Research Priorities Review

Subtopic: Improved Coordination with North Pacific Research Board (NPRB)

Rationale: There is a great deal of overlap in the research needs of the Council and the function of the NPRB in funding and tracking research projects. Improved coordination of research priorities between the two groups should further their respective missions.

The NPRB's establishment in 2001 (*43 U.S. Code § 1474d - Environmental Improvement and Restoration Fund*) was done to create a formal review body to recommend to the Secretary of Commerce funding for "pressing fishery management or marine ecosystem information needs" as they pertain to the North Pacific Ocean, Bering Sea, and Arctic Ocean. The Council's annual review of research priorities culminates in its communicating research needs to the Secretary of Commerce as well as funding agencies (including NPRB) and research institutions. Coordination between the Board and Council, therefore, is a necessary step in the process, but improvements are needed. Better coordination would add elements of follow-through to the Council's review process, for example, connecting research priorities to funded and possibly published projects. Additionally, coordination will allow the Board to better draw from the Council's research priorities, i.e., "pressing fishery management or marine ecosystem information needs" during the funding process.

At its June 2016 meeting in Kodiak, the Council supported moving forward to better align Council and Board activities. At this stage of the initiative, there have been several staff to staff discussions on avenues and methods for improving coordination. There are currently two approaches that staff are exploring for further development:

First, Council staff is exploring linkages between Council research needs and projects tracked through the NPRB database. This is being done by searching for matches from both sets, using keywords. Progress is challenging using this approach and could be improved by operating directly within the NPRB database. Match-ups are generally not one-to-one, in terms of the language in the titles and descriptions of the Council's research priorities and those of the NPRB project database. More often, several projects will match minor or tangential aspects of a given Council priority, and vice versa. As such, consolidation on both sides using subject area categories would likely make the integration more straight-forward. Council and Board staff will continue to work toward alignment. Examples of existing Council priorities and (sort of) matching NPRB projects are provided in Table 1.

Second, NPRB staff is examining methods for incorporating Council priorities into the Request for Proposals (RFP) cycle that typically begins in early fall and closes around mid-December each year. Like most other funding sources, the NPRB solicits proposals for research through RFPs that highlight specific subject areas that will likely receive priority attention during the funding review process. In the 2017 RFP (http://www.nprb.org/assets/uploads/files/Annual_Program/RFPs/2017_RFP.pdf), "themes" (Figure 1) that comprise the Board's Core Program are associated with funding caps, and within themes, general areas of interest and issues of particular interest are listed. An example is provided below (Table 2). Nearly every issue within the example theme below has at least one corresponding Council priority item (see current list under C8).

A future goal of this exercise is to be able to provide Council priorities either on the Council’s website or within the existing database with hyperlinks to corresponding NPRB projects, whether completed or in progress. The “research status” field currently in the Council’s database is vaguely informative. Direct linkages would add a level of detail missing in the current configuration. Clearly, the mismatch in details associated with priorities and projects on either side presents an obstacle. Council priorities could be generalized for the purpose of matching with NPRB projects, but that might obscure the specific issues the Council is interested in. At the June 2017 Council meeting, Council staff and NPRB staff will discuss near and short-term plans to further coordinate research issues.

| Pressing Fishery Management Needs |  Oceanography & Lower Level Productivity |  Fish Habitat |  Fishes & Invertebrates |  Marine Mammals |  Seabirds |  Human Dimensions |
|-----------------------------------|---|---|---|---|--|--|
| | Marine Ecosystem Information Needs | Nutrient Dynamics Phytoplankton Ecology Phytoplankton - Sea Ice Dynamics Zooplankton Ecology | Other Human Related Impacts Fishing Effects Habitat Mapping Ecosystem Functions of Habitat | Stock Assessment Research & Development Alternative Harvest Strategies Socio-economic Considerations Reducing Catch of Unwanted Species Causes of Perturbations of Major Species Ecosystem Change Implications on Fisheries Management | Other Human Related Impacts Fisheries Interactions Marine Habitat Use Foraging Success Population Dynamics Long-term Climate Change | Other Human Related Impacts Fisheries Interactions Marine Habitat Use Foraging Success Population Dynamics Long-term Climate Change |

Figure 1. NPRB categorizes research into themes that include ocean productivity, lower trophic levels, fishes & invertebrates, seabirds, marine mammals, and human-related issues. Each year the RFP changes slightly to account for funding cycles and special focus sections.

Table 1. Examples of NPRB projects that overlap the subject area of some of the Council's existing research priorities – listed by Council Priority. Details on the enumerated NPRB projects can be found on the NPRB website:

<http://projects.nprb.org/>

| Council | | | |
|-------------|--|-----------|---|
| Research ID | Title | Priority | NPRB Projects |
| 226 | Continue to evaluate the socio-economic effects from fishery policy changes on coastal communities. | C.O.M. | <p>0318 Development of comprehensive baseline commercial fishing community engagement and dependency profiles for the Bering Sea, Aleutian Islands, and Western Gulf of Alaska regions</p> <p>0528 Socioeconomic baseline information for the Pribilof Islands</p> <p>0529 Valuation of habitat closures</p> <p>1412 Patterns and Trends in Salmon Fishing on the Yukon River, Alaska</p> <p>1520 Adapting to Environmental Change: Shifts in Values, Beliefs and Practices in Three Aleutian Island Communities</p> |
| 154 | Pacific cod stock assessment for the Aleutian Islands | Urgent | <p>0815 Pacific cod (<i>Gadus macrocephalus</i>) migration and distribution related to spawning in the eastern Bering Sea: a mark-recapture experiment on a large geographic scale</p> <p>0817 A landscape genetics approach to Pacific cod (<i>Gadus macrocephalus</i>) population structure in the Bering Sea and Aleutian Islands; investigation of ecological barriers to connectivity between potentially distinct population components</p> <p>1105 Age validation of Pacific cod using high resolution stable isotope signatures in otoliths</p> <p>1505 Size-at-age of Pacific cod (<i>Gadus macrocephalus</i>) in the Eastern Bering Sea</p> <p>1507 Experimental estimation of catchability of the combined bottom trawl and acoustic survey for walleye pollock (<i>Gadus chalcogrammus</i>) in the Eastern Bering Sea.</p> |
| 385 | Study Pacific halibut PSC, bycatch, and discard behavior in fisheries | Urgent | <p>0712 Bycatch characterization in the Pacific halibut fishery : A field test of electronic monitoring technology</p> <p>0710 Potential trawl impacts upon ecological processes controlling habitat quality in juvenile flatfish nurseries</p> <p>1525 Automated Fish Measuring System addressing monitoring needs for reducing halibut bycatch mortality in trawl fisheries</p> <p>1607 Reducing the prohibited species catch of Pacific halibut: A prospective analysis of fleet behavior in the North Pacific groundfish fisheries.</p> <p>1510 Survival of Pacific halibut released from Bering Sea flatfish trawl catches through expedited sorting: applying advanced tags to observe survival rates and relating outcomes to viability assessments</p> |
| 165 | Conduct routine surveys of subsistence in the northern Bering Sea and Arctic Ocean | Urgent | <p>1013 Little Diomedea Hunters and Elders Ecological Knowledge, Management Strategies, and Usage of Walrus (Odobenus rosmarus) in Bering Strait</p> <p>1113 Algal toxins in Alaskan marine mammal populations: Assessing current and emerging exposure threats</p> <p>1316 Long Term Observations on Sea Ice by the Community of Barrow Project Jukebox</p> <p>1412 Patterns and Trends in Salmon Fishing on the Yukon River, Alaska</p> |
| 172 | Develop and validate aging methods for crabs. | Urgent | None |
| 381 | Effects of changes to the observer program | Urgent | 1320 Feasibility study for automated image processing to identify and capture serial catch events and obtain length measurements of catch in the commercial small vessel (<60 LOA) hook and line small fishery using stereo cameras. |
| 363 | Area-specific variability in scallop population processes | Important | 1307 Analysis of Benthic Communities on Alaskan Weathervane Scallop Beds |
| 212 | Develop methods to estimate sea lion abundance | Important | <p>1120 Augmenting Steller Sea Lion Surveys in the Western Aleutians With Unmanned Aircraft</p> <p>1620 Developing VitaLink: autonomous remote satellite tag data recovery stations</p> |
| 231 | Retrospective analysis of the impact of Chinook salmon PSC avoidance measures on the BSAI pollock fishery | Important | 1008 Characterization of the salmon bycatch in the Bering Sea and Aleutian Islands (BSAI) pollock fisheries and its effects |
| 223 | Develop and evaluate global climate change models (GCM) or downscaled climate variability scenarios to assess impacts to recruitment, growth, and spatial distributions. | Strategic | <p>1006 Assessing age-0 walleye pollock distributions for cohort strength and response to climate change</p> <p>1402 Impacts of climate change on red king crab larval advection in Bristol Bay: implications for recruitment variability</p> <p>1403 'Pacification' of the Arctic: Climate change impacts on the eggs and larvae of Alaskan gadids</p> <p>1423 Defining critical periods for Yukon and Kuskokwim river Chinook salmon</p> |

Table 2. Detail from the 2017 NPRB Request for Proposals.

Fishes and Invertebrates

The individual proposal funding cap for this category is \$500,000.

General topics of interest:

- development and application of new assessment approaches
- estimation of life history parameters that impact stock assessments (e.g., age, growth, maturity, fecundity, natural mortality, environmental drivers, recruitment)
- spatial and temporal variation in stock distribution patterns (e.g., life history stages, environmental drivers, prey availability and/or predator avoidance)
- analyses of survey design and data (e.g., gear selectivity and species distribution/availability, influences of environment or habitat, linking multiple data sources, estimating parameter uncertainty)
- ecology and physiology of forage species (e.g., recruitment, growth, environmental linkages, and factors influencing availability to predators)
- bycatch and incidental catch (e.g., spatiotemporal distribution, ecological effects, discard mortality, and implications of management measures)
- characterization of habitat essential for spawning, nursery and feeding areas
- development of predictive models of habitat use and quality, including climate-driven shifts in habitat quality and availability
- other fishes and invertebrates research

Issues of particular interest:

- above topics of interest applied to data-poor stocks
- survey catchability
- discard mortality rates
- implementation of short-term climate forecasts (e.g., less than 5 years) for assessing changes in marine resources
- research on non-recovering stocks and mechanisms for recovery failure
- improvements to spatial resolution of stock assessments
- role of Arctic lagoons in fish and invertebrate population dynamics in the context of ecosystem change