



Informing Fishery Management and Marine Ecosystem Understanding

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Mission

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To develop a comprehensive science program... that provides a better understanding of the North Pacific ecosystems and their fisheries.... conducted through science planning, prioritization of pressing fishery management and ecosystem information needs, coordination and cooperation among research programs, competitive selection of research projects, enhanced information availability, and public involvement.

NPRB's Unique relationship with NPFMC

- Pressing fishery management issues
- Research Priorities
- Standing seat on Board and ExCom
- Science Panel, SSC, BSFEP Team

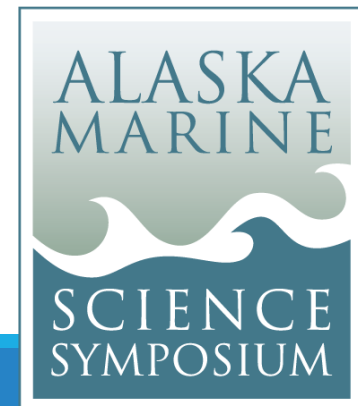


Focus areas

- Funding top research priorities
- Communicating results
- Northern Bering Sea IERP
- Incorporating CPK approach to programs
- Partnerships (*industry, science org, Alaska Native Communities*)
- Alaska Marine Science Symposium – 30 Years
- Managing a variable budget



Photo Credit Matthew Baker



Pressing Fishery Management Issues

NPRB and NPFMC coordinated approach to identify and track joint research interests:

- 1) identify priorities for research to inform fishery management
- 2) monitor investments in research and related results:
 - what priorities are addressed
 - what information is developed through research
 - how information is applied to inform management



NPRB Research Priorities

Research Priorities are determined through:

- Review of NPFMC priorities
- Solicitation of priorities from:
 - specific management agencies
 - research community and public through online portal (June-July)
- Input from Board, Science and Advisory Panel members

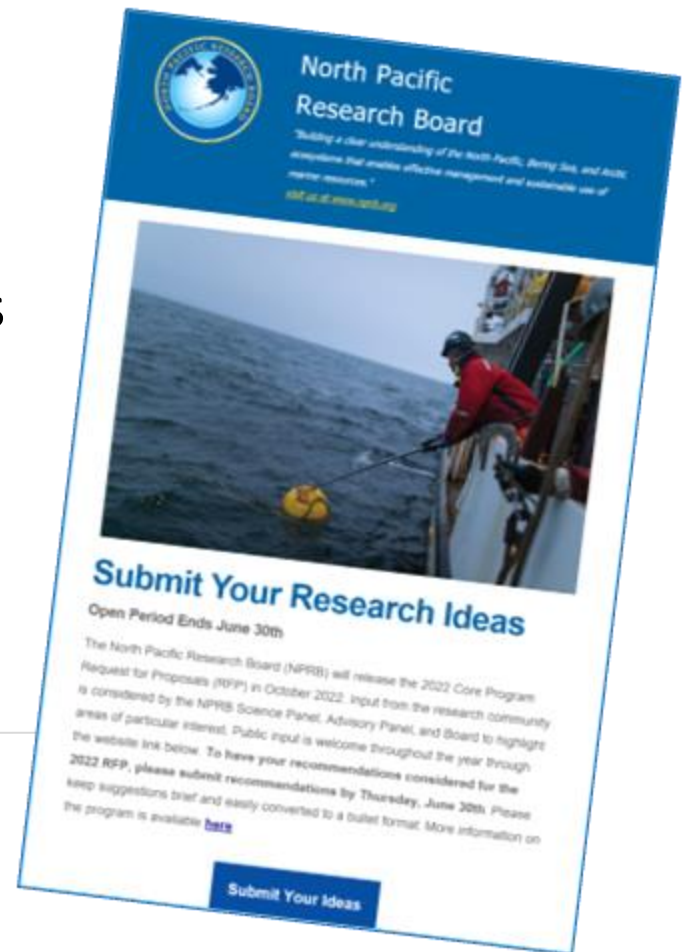




Photo Credits Vladimir Burkanov

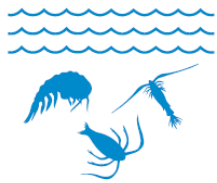
Research Programs

Core Program

Integrated Ecosystem Research Programs

Long-term Monitoring Program

Graduate Student Research Awards



Oceanography and Productivity



Fishes and Invertebrates



Marine Mammals and Seabirds



Human Dimensions



Interdisciplinary Studies

Research Categories

Oceanography and Productivity: physical, chemical, biological processes

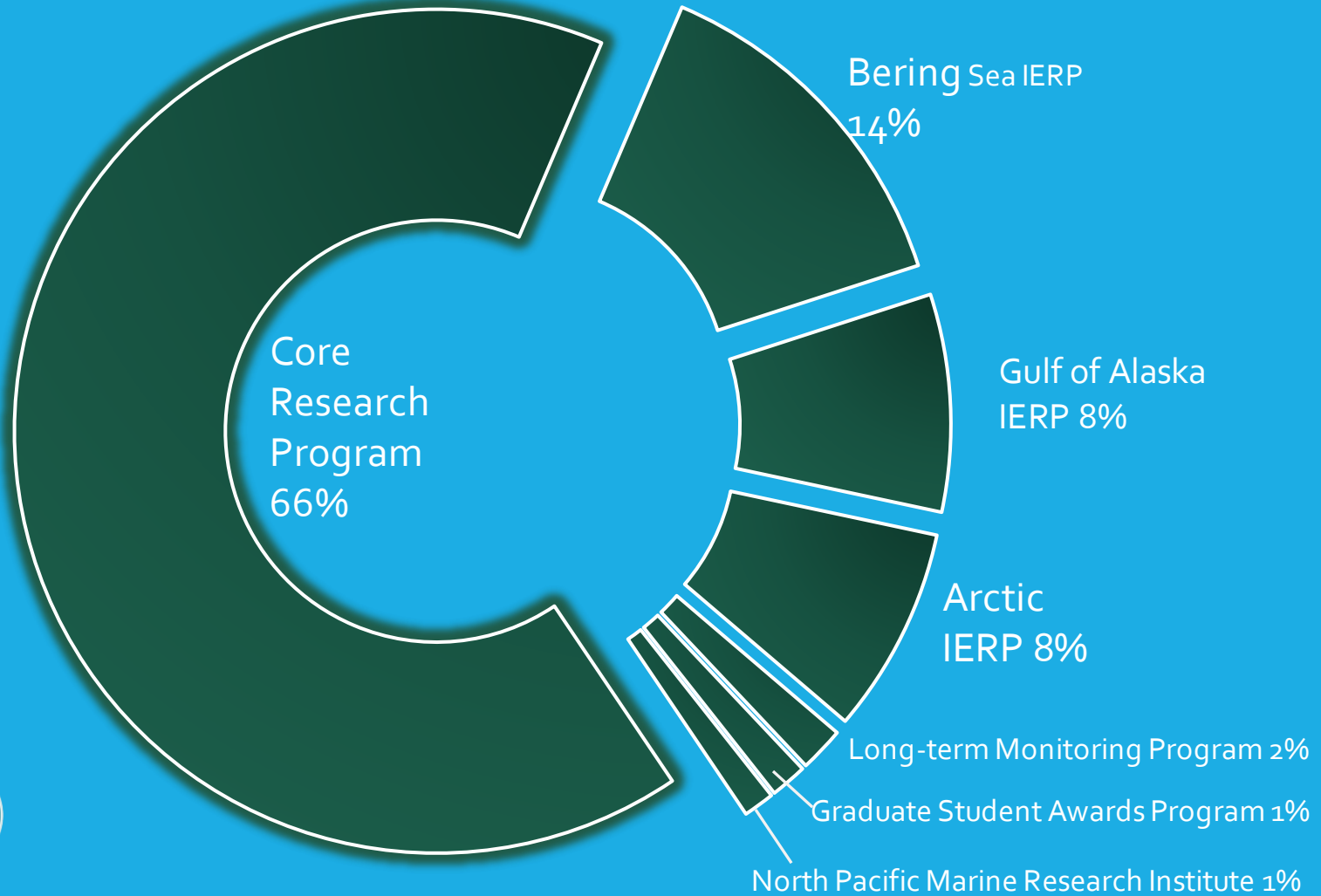
Fishes/Invertebrates: distribution, population dynamics & human impacts

Marine Birds/Mammals: protected species, fishery interactions, food security

Human Dimensions: LTK, interactions of humans, management & environment

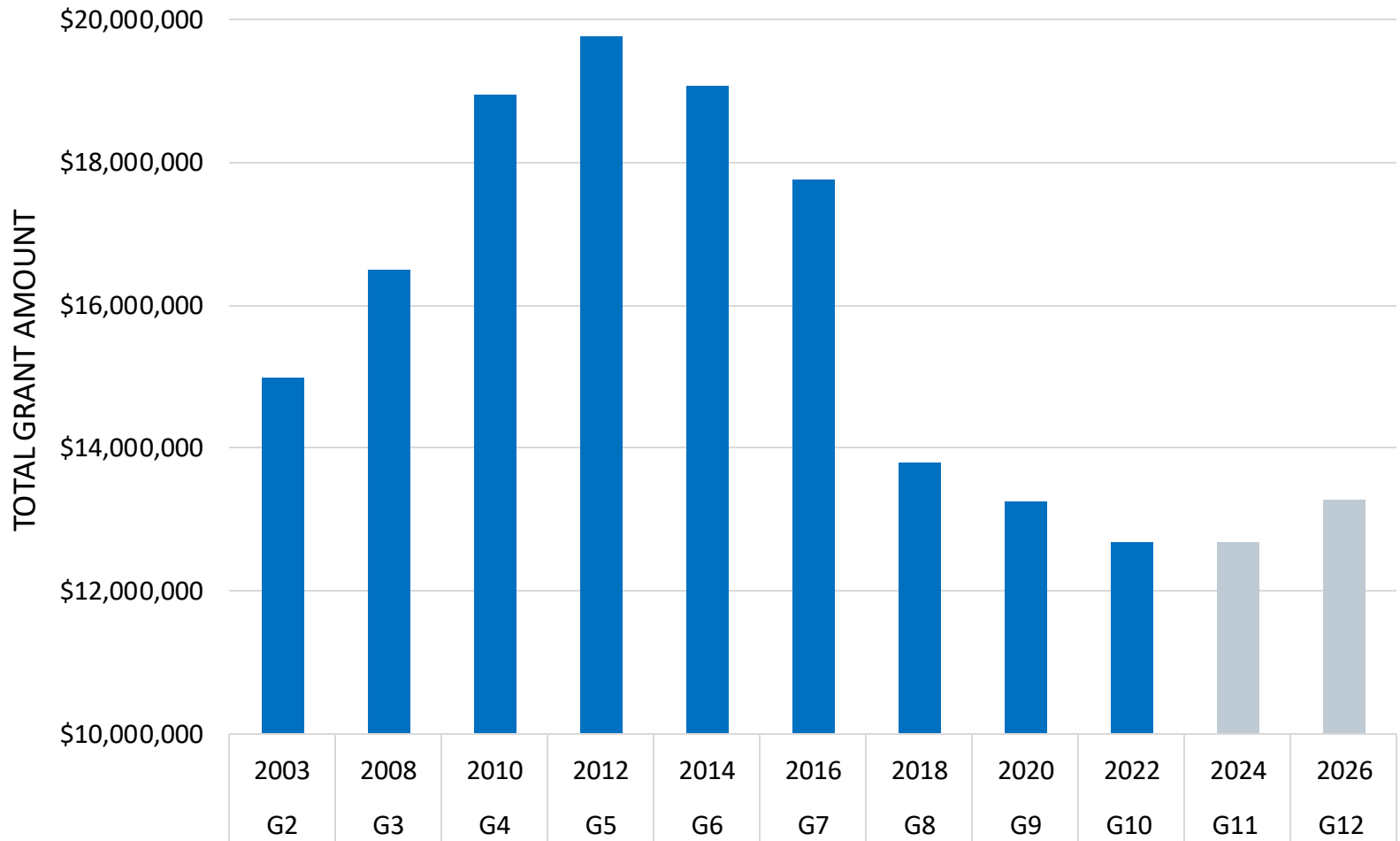
Interdisciplinary: synergistic or causal effects across ecosystems

Research Investments



All Programs 2002-2022 – \$150 million

NPRB FUNDING HISTORY AND OUTLOOK



Partnerships

Shared investments and priorities and in interest in research questions

- Cooperative Research with Industry - 2 new agreements for CORE
- Research Organization Partners
- Alaska Native Organization Partners
- Regional and Community Partners

Most involve financial contributions (dedicated or general), research and in-kind, however, recent partnerships involve NPRB as the funding partner for collaborative research. With the help of our Partnerships Committee, we will further develop our partnership approaches.



OIL SPILL RECOVERY INSTITUTE
CORDOVA, ALASKA



Partnership investment in salmon research

IYS Partnership: High Seas Expedition

- NPRB directed partnership funding for IYS's collaborative effort to conduct winter surveys in the North Pacific - from Kamchatka to the Gulf of Alaska. \$650,000
- U.S. Scientist assistance on the surveys conducted by the *TINRO* and the *NW Explorer*
- Continued coordination and assessment of data gathered during the surveys
- Data will help us understand the distribution of salmon in the North Pacific and factors that affect populations



Current research and recent funding decisions

- Pacific Cod
- Crab
- Salmon
- Northern Bering Sea IERP
- Long-term monitoring



Pacific Cod

Pcod IBM Validation and Enhancement	Katharine Miller	NOAA_AFSC	\$582,665	2018-2022
Cooperative pilot study for Pacific cod tagging in the Aleutians	Susanne McDermott	NOAA_AFSC	\$299,683	2019-2021
Thermal effects of Gulf of Alaska pacific cod	Ben Laurel	NOAA_AFSC	\$291,010	2020-2022
Pacific cod spawning habitat in a changing Bering Sea	Lauren Rogers	NOAA_AFSC	\$599,719	2020-2023
Pacific Cod response to warming: looking back to see forward (otoliths)*	Jessica Miller	OSU	\$299,988	2023-2025
		TOTAL COD	\$2,442,527	

* Partnership with BSFRF, PCCRC



North Pacific Crab

North Pacific Crab Growth	Andre Punt	University of Washington	\$230,261	2016-2019
Pribilof Islands blue king crab recruitment limitation	Ginny Eckert	UAF	\$284,052	2016-2019
Qualitative approaches for blue king crab management	Sean McDonald	UW	\$116,989	2016-2019
Tanner crab response to temperature change	Pamela Jensen	NOAA_AFSC	\$305,234	2017-2020
Variation in body condition of Bering Sea snow crab	Erin Fedewa	NOAA_AFSC	\$176,346	2020-2024
Epidemiology and pathology of black eye syndrome	Maya Groner	Bigelow	\$495,428	2021-2025
		TOTAL CRAB	\$1,608,310	



Pacific Salmon

RRS of pink salmon in PWS	Tyler Dann	ADFG	\$289,435	2016-2018
Data and information in salmon stock-recruitment analysis	Milo Adkison	UAF	\$96,041	2017-2020
State-space model of factors affecting coho survival and abundance	David Tallmon	UAS	\$82,195	2017-2019
A sex identification assay for Chinook salmon	James Seeb	UW	\$167,335	2017-2019
Body size and spawning abundance of Sockeye Salmon	Peter Rand	PWSSC	\$446,771	2019-2022
Salmon winter ecology	Charles Waters	NOAA_AFSC	\$134,945	2020-2023
Automation of Sockeye Salmon Scale Age Estimation (machine learning)*	Rob Campbell	PWSC	\$349,566	2022-2025
Engaging Yukon River Fishers in Research on Chinook and Chum Salmon Decline*	Catherine Moncrieff	Yukon River Drainage Fisheries Association	\$180,481	2023-2026
		TOTAL SALMON	\$1,746,769	

* Partnership with BSFRF, PCCRC

Integrated Ecosystem Research - Past and Future

Integrated Ecosystem Research - Bering Sea ¹			\$31,000,000	2005-2014
Integrated Ecosystem Research - Gulf of Alaska			\$18,000,000	2010-2018
Integrated Ecosystem Research Program - Bering Sea and Arctic ²			\$18,600,000	2016-2022
Integrated Ecosystem Research Program - Northern Bering Sea			TBD	2026-2032

Integrated Ecosystem Research - Current

Arctic Synthesis

Ecosystem restructuring in the Northern Bering and Chukchi ³	Elizabeth Logerwell	NOAA_AFSC	\$796,318	2022-2025
Change in Nutrients and Ecosystems within the Pacific Arctic	Thomas Kelly	UAF	\$629,959	2022-2025

Northern Bering Sea Assessment

Whitefish in Beringia and resilience of subsistence species	Kevin Fraley/Alex Whiting	WCS, Kotzebue	\$172,220	2022-2024
			\$1,598,497	

Bering Sea Ecosystem Dynamics – Core Program

Traditional knowledge and western science to inform Bering Sea EBFM	Sarah Wise (Lauren Divine, Kate Haapala, Kirstin Holsman)		\$263,557	2022-2025
Bering Sea Inner Shelf: Improving fishing efficiency and reduced bycatch	Phyllis Stabeno (Brad Harris, John Gauvin)		\$467,755	2022-2025
			\$731,312	

Partners:

¹ NSF

² BOEM, NSB/Shell Baseline Studies Program, ONR Marine Mammals and Biology (in kind: UAF, NOAA, USFWS, NSF)

³ NOAA OAR Arctic Research Program



INTEGRATED ECOSYSTEM RESEARCH PROGRAM

NPRB aims to improve understanding of how changing environmental conditions influence physical, chemical, and biological processes in marine ecosystems.

Northern Bering Sea IERP (2024-)

Arctic IERP documented significant changes in the physical and biological environment in the Northern Bering and Chukchi Seas

NBS IERP will further investigate the changing ecosystem in this region.

The future IERP will be centered in, but not limited to, the Northern Bering Sea.

- how shifts in environmental processes influence species of commercial, ecological, and subsistence importance
- implications for state and federal fisheries management, and communities that depend on these resources.

NPRB is interested in research that facilitates co-production of knowledge with Alaska coastal communities.



Longterm Monitoring Program

- new or existing time-series research to depict the current state of marine ecosystems and to predict future ecosystem states.
- provide data across long time frames to provide reference and indices for ecosystem conditions
- provide real-time and archived data. .



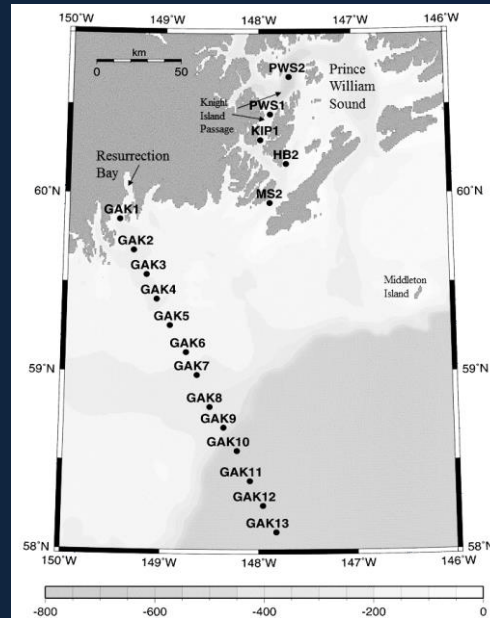
Continuous Plankton Recorder Survey

Towed behind commercial ships to survey the quantity, community composition, and variability of plankton.



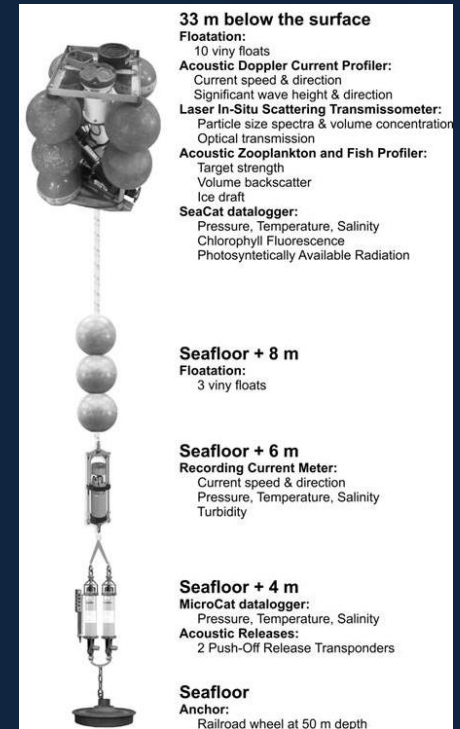
Seward Line Survey

Oceanographic sampling in cross-shelf survey. Mid-shelf mooring for real-time meteorological and oceanographic data



Chukchi Ecosystem Mooring Array

Year-round autonomous collection of physical and biogeochemical data



What research is needed to help inform the Council's management decisions?

What research do we need to adapt to climate change?

