Informing Fishery Management and Marine Ecosystem Understanding

Lynn Palensky, Executive Director
Matt Baker, Science Director
Anchorage, Alaska
Mission

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
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
Research Programs

Core Program

Integrated Ecosystem Research Programs

Long-term Monitoring Program

Graduate Student Research Awards
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

Core Research Program 66%

Bering Sea IERP 14%

Gulf of Alaska IERP 8%

Arctic IERP 8%

Long-term Monitoring Program 2%

Graduate Student Awards Program 1%

North Pacific Marine Research Institute 1%

All Programs 2002-2022 – $150 million
NPRB FUNDING HISTORY AND OUTLOOK

TOTAL GRANT AMOUNT


Grant Years: G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12

Funding Amounts: $10,000,000, $12,000,000, $14,000,000, $16,000,000, $18,000,000, $20,000,000
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.
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

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Investigator</th>
<th>Agency</th>
<th>Amount</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pcod IBM Validation and Enhancement</td>
<td>Katharine Miller</td>
<td>NOAA_AFSC</td>
<td>$582,665</td>
<td>2018-2022</td>
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<tr>
<td>Cooperative pilot study for Pacific cod tagging in the Aleutians</td>
<td>Susanne McDermott</td>
<td>NOAA_AFSC</td>
<td>$299,683</td>
<td>2019-2021</td>
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<tr>
<td>Thermal effects of Gulf of Alaska pacific cod</td>
<td>Ben Laurel</td>
<td>NOAA_AFSC</td>
<td>$291,010</td>
<td>2020-2022</td>
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<tr>
<td>Pacific cod spawning habitat in a changing Bering Sea</td>
<td>Lauren Rogers</td>
<td>NOAA_AFSC</td>
<td>$599,719</td>
<td>2020-2023</td>
</tr>
<tr>
<td>Pacific Cod response to warming: looking back to see forward (otoliths)*</td>
<td>Jessica Miller</td>
<td>OSU</td>
<td>$299,988</td>
<td>2023-2025</td>
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</table>

**TOTAL COD** $2,442,527

* Partnership with BSFRF, PCCRC
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Investigator</th>
<th>Institution</th>
<th>Funding</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Pacific Crab Growth</td>
<td>Andre Punt</td>
<td>University of Washington</td>
<td>$230,261</td>
<td>2016-2019</td>
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<tr>
<td>Pribilof Islands blue king crab recruitment limitation</td>
<td>Ginny Eckert</td>
<td>UAF</td>
<td>$284,052</td>
<td>2016-2019</td>
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<tr>
<td>Qualitative approaches for blue king crab management</td>
<td>Sean McDonald</td>
<td>UW</td>
<td>$116,989</td>
<td>2016-2019</td>
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<tr>
<td>Tanner crab response to temperature change</td>
<td>Pamela Jensen</td>
<td>NOAA_AFSC</td>
<td>$305,234</td>
<td>2017-2020</td>
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<tr>
<td>Variation in body condition of Bering Sea snow crab</td>
<td>Erin Fedewa</td>
<td>NOAA_AFSC</td>
<td>$176,346</td>
<td>2020-2024</td>
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<tr>
<td>Epidemiology and pathology of black eye syndrome</td>
<td>Maya Groner</td>
<td>Bigelow</td>
<td>$495,428</td>
<td>2021-2025</td>
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<tr>
<td>TOTAL CRAB</td>
<td></td>
<td></td>
<td>$1,608,310</td>
<td></td>
</tr>
<tr>
<td>Project Description</td>
<td>Principal Investigator</td>
<td>Institution</td>
<td>Funding</td>
<td>Years</td>
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<tr>
<td>-------------------------------------------------------------------------------------</td>
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<tr>
<td>RRS of pink salmon in PWS</td>
<td>Tyler Dann</td>
<td>ADFG</td>
<td>$289,435</td>
<td>2016-2018</td>
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<tr>
<td>Data and information in salmon stock-recruitment analysis</td>
<td>Milo Adkison</td>
<td>UAF</td>
<td>$96,041</td>
<td>2017-2020</td>
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<tr>
<td>State-space model of factors affecting coho survival and abundance</td>
<td>David Tallmon</td>
<td>UAS</td>
<td>$82,195</td>
<td>2017-2019</td>
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<td>A sex identification assay for Chinook salmon</td>
<td>James Seeb</td>
<td>UW</td>
<td>$167,335</td>
<td>2017-2019</td>
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<td>Body size and spawning abundance of Sockeye Salmon</td>
<td>Peter Rand</td>
<td>PWSSC</td>
<td>$446,771</td>
<td>2019-2022</td>
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<tr>
<td>Salmon winter ecology</td>
<td>Charles Waters</td>
<td>NOAA_AFSC</td>
<td>$134,945</td>
<td>2020-2023</td>
</tr>
<tr>
<td>Automation of Sockeye Salmon Scale Age Estimation (machine learning)</td>
<td>Rob Campbell</td>
<td>PWSC</td>
<td>$349,566</td>
<td>2022-2025</td>
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<tr>
<td>Engaging Yukon River Fishers in Research on Chinook and Chum Salmon Decline</td>
<td>Catherine Moncrieff</td>
<td>Yukon River Drainage Fisheries Association</td>
<td>$180,481</td>
<td>2023-2026</td>
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</table>

* Partnership with BSFRF, PCCRC

**TOTAL SALMON** $1,746,769
## Integrated Ecosystem Research - Past and Future

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Budget</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Integrated Ecosystem Research - Bering Sea</td>
<td>$31,000,000</td>
<td>2005-2014</td>
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<tr>
<td>Integrated Ecosystem Research - Gulf of Alaska</td>
<td>$18,000,000</td>
<td>2010-2018</td>
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<tr>
<td>Integrated Ecosystem Research Program - Bering Sea and Arctic</td>
<td>$18,600,000</td>
<td>2016-2022</td>
</tr>
<tr>
<td>Integrated Ecosystem Research Program - Northern Bering Sea</td>
<td>TBD</td>
<td>2026-2032</td>
</tr>
</tbody>
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## Integrated Ecosystem Research - Current

### Arctic Synthesis

- **Ecosystem restructuring in the Northern Bering and Chukchi**
  - 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

### 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

- **Total Funding**
  - $1,598,497

### 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
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?