



NOAA
FISHERIES

Alaska Fisheries
Science Center

Resource Assessment
and Conservation
Engineering Division

Alaska Fisheries Science Center:

Shellfish Assessment Program

What We Do

The [Shellfish Assessment Program](#) conducts a [wide range of research](#) and [surveys](#) to assess the distribution and abundance of various commercially important crab resources in the eastern Bering Sea. The collected data are used to set fisheries quotas and other management reference points, and to inform managers' decisions about crab conservation and utilization. Research topics include distribution and movement, unobserved fishing mortality, improved stock assessment methods, [disease](#), [habitat](#), [discard mortality](#), [reproduction](#), [growth](#), [culturing](#), and [effects of ocean acidification](#).



Top: Scientist sorting through snow crab on the NOAA eastern Bering

Middle: Sea bottom trawl survey. Snow crab on top of tanner crab.

Bottom: Blood samples being transferred to a 96-well plate for later PCR analysis.



▲ A biologist collects a hepatopancreas sample from a snow crab on survey to assess energetic condition.



2024 Accomplishments

- Prioritized being responsive to the Bering Sea crab fisheries crisis: as always, we conducted the survey of crab stocks in the Bering Sea; we processed and released the data on a highly compressed timeline for setting fall fishery quotas.
- Provided three Ecosystem and Socioeconomic Profiles to support decision-making by the North Pacific Fishery Management Council.
- Two members of the program served on the Crab Plan Team to provide scientific review for management decisions.
- Conducted extensive research on unobserved fishing mortality, a pressing issue for the Council. One program member served as co-lead for a Council working group on the topic, and we produced fisheries-dependent distribution models that were included in Council analysis on proposed conservation measures. The work with the Council resulted in two peer-reviewed papers.
- Collaborated on satellite tagging to collect winter distribution data on red king crab and moved forward on a tagging manuscript that will be another important contribution for management.
- Advanced a new method for measuring the energetic condition of snow crab on our survey that will give managers an early-warning indicator for future trophic stress in this stock.
- Contributed to several large collaborative studies published in Science and Nature Climate Change documenting the causes of the snow crab collapse, and successfully rescued historical pathology data that were written up for publication.
- Participated in winter and summer assessment and process surveys of red king crab in addition to the regular survey.
- Initiated studies in our saltwater lab, focusing on acidification and thermal physiology research on crabs, as well as life-history work focused on improving stock assessment models.
- Dive program participated in a large collaborative mariculture project and we advanced additional research on the ecosystem benefits and interactions of shellfish and seaweed farming on the environment.

2025 Preview

- The annual survey of Bering Sea crab stocks to support fisheries management will once again be our primary responsibility in 2025.
- These survey results will be critical for tracking possible recovery in the snow crab stock. This population appeared to be rapidly rebounding in 2023-24, and the 2025 survey will be critical for monitoring progress after the apparent low-ice conditions of 2025.
- We are continuing to integrate lab studies with ocean model outputs and carbonate chemistry observations to better understand whether ocean acidification is playing a role in depressed recruitment to the Bristol Bay red king crab stock.
- Research on crab distribution, movement, and unobserved fishing mortality is rapidly advancing and we expect the first results of an integrated distribution and movement model to be presented to the North Pacific Fisheries Management Council in 2025.
- We also expect our second paper using fisheries-dependent data to model crab distributions to be published in 2025.
- We are also planning an extensive set of lab experiments to better understand the effects of ocean acidification on golden king crab.
- A new Ecosystem and Socioeconomic Profile on the Bering Sea Tanner crab fishery will be presented to the North Pacific Fisheries Management Council.
- Our group will lead the discussion on uniform practices for the adoption of risk tables for crab stock assessments.



Howard Lutnick
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