NCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

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Science Serving Coastal Communities in Alaska

Introduction to NCCOS: Relevant, Credible, Timely Science

- NOAA National Ocean Service PPAs: Coastal Science and Assessment ($55.5M in FY23) and Competitive Research ($22.5M in FY23)
- National reach with labs in South Carolina, North Carolina, Maryland, and Alaska
- Foci: stressor impacts and mitigation, coastal change, marine spatial ecology, and social science

Kasitsna Bay Laboratory: A Regional HUB for Applied Science

- Mission: Deliver ecosystem science information and tools to support Alaska coastal communities and economies, with better understanding of the coastal impacts of subarctic ecosystem change, harmful algal blooms, ocean acidification and oil spills.
- Facility: Built in 1959; became part of NCCOS in 1999. $12.5M renovation in 2003-07 provided a new laboratory, flowing seawater, dive support, dock, dormitory, and maintenance facilities. Dock repair in 2023.
- Partners: NOAA and other Federal agencies, Kachemak Bay National Estuarine Research Reserve, Alaska Ocean Observing System, AK Sea Grant, AK Dept. of Fish and Game, AK Dept. of Environmental Conservation, AK Dept. of Health and Social Services, Alaska Native tribal organizations, Center for Alaskan Coastal Studies, Univ. of Alaska Anchorage/Kachemak Bay Campus, public schools, and other universities.

Living with HABs: Research, Monitoring, and Capacity Building

Changing ocean conditions are causing paralytic, amnesic , and diarrhetic shellfish poisoning events at different times and in more places. This impacts subsistence, recreational, and commercial harvest, and marine mammals and birds.

- Building Monitoring Capacity: Establishing and providing training for regional toxin detection laboratories, expanding tribal monitoring to include diarrhetic shellfish poisoning ($1M, 2019-2022), supporting the Alaska HAB Network.
- Developing HAB Forecasts for *Alexandium* and paralytic shellfish poisoning in the Bering Strait, Chukchi, Beaufort Seas, and in SW Alaska and Gulf. ($560K, 2019-2022).
- Modeling transfer and impact of HAB toxins in Alaskan food webs ($5M, 2020 to 2025).
- Event Response: Small awards expand testing and support radio, posters, and community forums about HAB risks and events. Recent awards supported the Norton Sound Health Corporation, Qawalangin Tribe of Unalaska, Agdaagux Tribe of King Cove, Aleut Community of St. Paul Island, and Qagan Tayagungin Tribe of Sand Point.
- Improving Decision-Making: Using research results to improve HAB risk assessment, build a more comprehensive and reliable HAB observing network, and ultimately develop HAB event forecasting capabilities that guide shellfish industry and public harvest decisions.

Building Coastal Resilience

Decision makers need a better understanding of damages and economic losses due to sea level rise, storm surge, nuisance flooding, and wave run-up, and access to science that provides insight on potential solutions.

- The Effects of Sea Level Rise Program provides science products to inform coastal managers of local coastal vulnerability and solutions to mitigate flood risk.
- An FY24 Alaska Regional Coastal Resilience focus area targets rural areas in Alaska that have previously not had high resolution data necessary to run advanced models that evaluate coastal resilience management options. In the past decade, progress has been made to collect localized elevation data in Alaska and improve nearshore bathymetry. We anticipate funding 1-2 projects of 2-4 years at $200,000 to $500,000 per year.

Deconflicting Ocean Uses: Marine Spatial Planning and Modeling

High-profile issues of conflicting nearshore ecosystem uses include fish hatchery operations in state park/critical habitat waters, and new state marine watercraft regulations. Increased investment in aquaculture, offshore wind, and oil and gas development requires informed spatial planning and modeling.

- Kachemak Bay and Cook Inlet: We are providing improved synthesis, visualization and geospatial planning, and information tools to support mariculture management and siting, shellfish management and restoration, coastal habitat management, and planning for oil/gas development and spill contingencies.
- Mariculture: NOAA and Alaska are identifying Aquaculture Opportunity Areas, focusing on shellfish, sea cucumber, and seaweed aquaculture. We lead a public process to identify a set of preliminary study areas based on criteria provided to us, including proximity of infrastructure to support aquaculture development and predicted sea ice cover.

Assessing Contaminants: PFAS in Salmon

PFAS, termed “forever chemicals”, have been linked with reproductive, developmental, and immunological effects, and at least two PFAS compounds appear to be carcinogenic. They are common in stain-resistant coatings and firefighting foams, and are increasingly found in marine systems.

- Stakeholders of the North Pacific Fisheries Management Council are concerned about PFAS contaminated fishery stocks. PFAS in Alaska clams resulted in product recalls and discards. Subsistence fishers may be at risk of exceeding safe consumption advisories. The perception of contamination puts the commercial salmon fisheries at risk.
- We are sampling PFAS chemicals in juvenile and adult Pink, Chinook and Coho salmon in collaboration with NOAA's Auke Creek and Little Port Walter Research Stations. We found PFAS in both juvenile salmon hatched near urban areas and in remote locations in southeast Alaska. This suggests maternal transfer of PFAS into fry. The short lifespan of salmon may prevent bioaccumulation at levels harmful to humans, though this is still an active area of research.

Learn more about NCCOS work in Alaska:
linktr.ee/NCCOSAlaska

For more information or questions
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