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Alaska Fisheries  
Science Center

Marine Mammal Laboratory

# Alaska Fisheries Science Center:

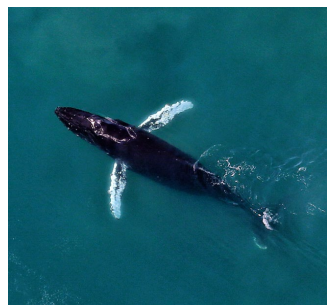
## Cetacean Assessment and Ecology Program

### What We Do

The Cetacean Assessment and Ecology Program is responsible for conducting applied research to assess the abundance, distribution, stock structure, and habitat of whales and porpoise in Alaskan waters to address critical management issues identified by NMFS, other federal agencies, and our Alaska Native co-management partners.

Our recent assessments have focused on species important to the Alaska subsistence harvest, including bowhead whales and multiple stocks of beluga whales. We have also increased our focus on the Eastern North Pacific right whale population to understand the current distribution of this critically endangered species. Our recent harbor porpoise studies were designed to evaluate whether a common instrument - a pinger - would be effective in reducing fishery bycatch of this species in Southeast Alaska.

To collect data on these species we use NOAA-owned or chartered aerial and vessel platforms, shore-based stations, acoustic monitoring, genetics, and photo-identification. We have pioneered the use of machine learning to speed the processing of acoustics data, and photographs collected using uncrewed aerial systems (UAS) to provide a more accurate estimate of abundance for some stocks. We are researching and developing the use of satellite imagery to understand cetacean distribution; while promising for small areas, we are working to scale this work so it can be routine and reliable over spatial scales relevant to Alaska.



Above - top: Beluga whales in Cook Inlet, Alaska.

Above - middle: Humpback whale in the eastern Chukchi Sea.

Above - bottom: Western Arctic bowhead whale.



North Pacific right whales in the Gulf of Alaska.



## 2024 Accomplishments



▲ Eastern Bering Sea beluga whale aerial survey team.



▲ Preparing harbor porpoise acoustic pinger and monitoring equipment for deployment.



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Secretary of Commerce

Vice Admiral Nancy Hann  
Acting Under Secretary of Commerce  
for Oceans and Atmosphere

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- ❖ Conducted an aerial survey of Eastern Bering Sea belugas with the Alaska Beluga Whale Committee to estimate the abundance of this beluga stock, which is a critical subsistence resource for coastal village communities.
- ❖ Increased capacity for automating image processing for validation by annotators for the Geospatial Artificial Intelligence for Animals (GAIA) project. GAIA will increase efforts to assess occurrence of endangered species like Cook Inlet belugas, bowheads, and Eastern North Pacific right whales using high-resolution satellite imagery, especially in areas and at times when surveys are not feasible.
- ❖ Published an update on sightings and feeding areas of endangered Eastern North Pacific right whales through 2023.
- ❖ Analyzed Eastern North Pacific right whale acoustics data from our array of 25 long-term passive acoustic moorings, extending from the Gulf of Alaska to the Chukchi borderlands. These data help us understand changes in occurrence throughout the Bering Sea and Aleutian Islands and are crucial for evaluating a petition to expand this species' Critical Habitat under the Endangered Species Act.
- ❖ Completed the final field effort of a multi-year collaborative project to evaluate whether acoustic pingers are likely to deter harbor porpoise from fishing nets given concerns about commercial fisheries bycatch in Southeast Alaska.



▲ A scientist deploys an acoustic sonobuoy to monitor endangered Eastern North Pacific right whales.

## 2025 Previews

- ❖ Conduct a bowhead and beluga whale survey in the U.S. and Canadian Arctic to meet requirements of the International Whaling Commission for routine assessments prior to issuing the bowhead whale quota. Co-led and co-funded by Alaska's North Slope Borough.
- ❖ Assess the abundance of Cook Inlet belugas using two methods: conventional line transect crewed aerial surveys and AI-assisted photo-identification using uncrewed aerial systems (UAS). This comparison is needed to support a final decision about which survey method to use in the future.
- ❖ Complete multiple publications documenting long-term changes in cetacean distribution and habitat use based on acoustics, including North Pacific right whales and bowhead whales.
- ❖ Estimate the abundance of Eastern Bering Sea belugas using sighting data collected in 2024 in partnership with the Alaska Beluga Whale Committee.
- ❖ Continue to improve the IT infrastructure and machine learning algorithms needed to readily process, analyze, and transfer large data files, including acoustics data and satellite imagery.
- ❖ Initiate the planning for a joint project with the U.S. Navy to understand the abundance and distribution of cetaceans in their Western Management Area in the Gulf of Alaska. Information on this data-poor area is needed for U.S. Navy NEPA and ESA Section 7 compliance.