NOAA FISHERIES
National Marine Fisheries Service
Alaska Fisheries Science Center

Research Brief

The Trophic Roles of Ice Seals

October 1, 2021 – September 30, 2024

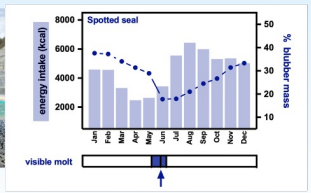
- **Otoliths provide fish prey species ID, count, and size**

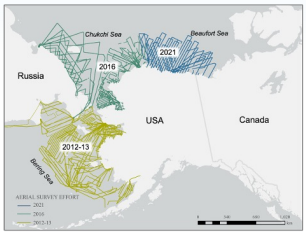


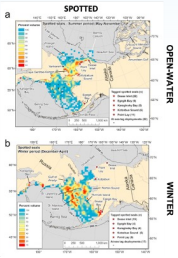


- **Energy intake by spotted seals raised in a captive research setting, allowed to determine for themselves how much to eat**
- **Provides a lower bound on energy requirement by age, sex, season (Rosen et al. 2021. *Aquatic Mammals*)**









- **Breeding population estimates from spring aerial surveys (*N*~257,000)**
- **Year-round distribution from seal tracking studies (Citta et al. 2018)**

What is the research objective?

The objective is to combine recent information about Arctic seals' diets, energy intake, and population sizes to estimate seasonal and regional requirements of their major prey species:

- What do they eat?
- How much do they eat?
- Where and when do they eat it?

Where is the research being conducted?

There is no field work required for this project. It is an analysis of existing information from previous studies in the field and in managed-care research facilities.

Who is conducting the research?

The project was funded and is led by NOAA Fisheries' Alaska Fisheries Science Center, in collaboration with researchers from Alaska Department of Fish and Game, North Slope Borough Department of Wildlife Management, University of California Santa Cruz, University of British Columbia, and University of San Francisco.

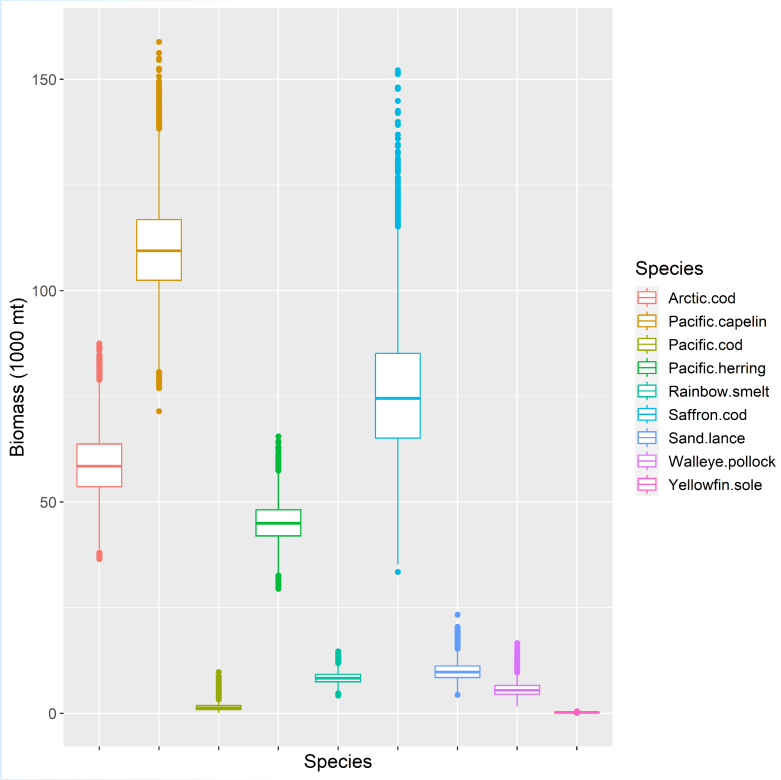
The project relies on results from previous studies conducted in coordination with the Ice Seal Committee: Aerial surveys for abundance; satellite tagging for seasonal movements; bio-sampling of subsistence-harvest seals; and captive-facilities studies of energy requirements.

What steps are you taking to prevent conflicts with subsistence hunting?

Because no new field work is required for this project there is no potential for conflicts with subsistence hunting.

See more about this research on back

Spotted seal example: Annual consumption of their major fish prey species is more than 300,000 tons, an ecologically significant quantity



Why are the results important? How will they be used?

The importance of ice seals is under-appreciated in marine science because quantitative information about their prey consumption has not been available. Now, by combining recent results from a variety of studies by agencies and university researchers, it is feasible to produce reasonable estimates of the amounts of the primary prey that ice seals require. These estimates will be published in journal articles and shared with the research community to raise awareness about the need for inclusion of ice seals in ecosystem considerations.

How do you plan to communicate research results?

The Marine Mammal Laboratory will lead the preparation of publications on the consumption of major prey species by spotted, ringed, and bearded seals. The results will be presented to science conferences and resource management organizations such as the North Pacific Fisheries Management Council and the Scientific Coordinating Group under the Central Arctic Ocean Fisheries Agreement.

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