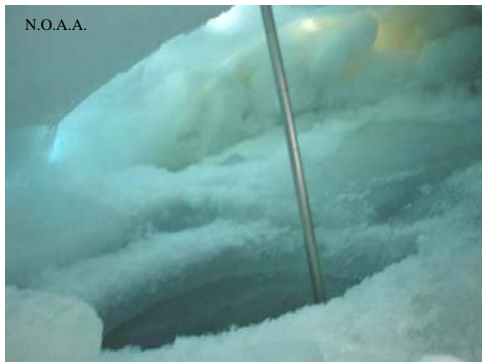


Ice Seal Movements and Stock Structure in a Changing Environment (515)

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WHAT IS A RINGED SEAL? Ringed, bearded, spotted, and ribbon seals are the four species of Alaska's seals called "ice seals" because of their association with sea ice and their dependence upon it for feeding, resting and giving birth. The ability of ringed seals to inhabit the arctic throughout the winter, when other ice seals move south, is largely due to their unique behavior of excavating breathing holes and lairs in the snow that covers the sea ice. Maintaining those holes allows ringed seals to remain in areas of continuous ice cover. The lairs provide protection from the cold and predators, (especially for the young which are born and nursed within the lairs). Early snowmelts expose ringed seal pups prematurely and increase their mortality rates from exposure to the cold, and exposure to predators like polar bears, arctic fox, and even birds.

Ringed seals have long been important in the subsistence economy of indigenous arctic people, and human colonization of the arctic was facilitated by the year-round presence of ringed seals, which served as a source of food, fuel, clothing and tents. Today, an estimated 10,000 ringed seals are taken each year by subsistence hunters in Alaska, but Inuit hunters in Canada have reported decreased availability of ringed seals associated with decreasing sea ice cover.



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WHAT ARE WE STUDYING? With \$203,644 in funding from the North Pacific Research Board Dr. Kelly and his co-workers are working to discover how vulnerable sub-populations of ice seals are to extinction. The biologists used trained Labrador retrievers to locate the seal lairs. A satellite tracking device was attached to the back flipper of eleven adult ringed seals and two juvenile bearded seals in May 2005. The tag will report the location of the seals for one year or longer. Biologists will then track the movements of satellite-tagged adult seals between breeding seasons and use collected tissue samples to genetically identify the seals. To determine whether or not the seals use the same breeding and birthing sites, Dr. Kelly and Boveng hope to track and identify forty seals between 2005 and 2006.

WHY IS THIS STUDY IMPORTANT? These ice-associated seals are the main prey of polar bears and have been vital to the subsistence economy of northern people for thousands of years. The sea ice ecosystem and subsistence economies in the arctic are threatened by decreases in sea ice cover associated with climate change. Ice seasonally covers 14,000,000 km² of northern seas and supports an ecosystem that includes spotted, ribbon, ringed, and bearded seals. Early snowmelts expose ringed seal pups prematurely and increase their mortality rates due to thermal stress and predation. The onset of snowmelt has advanced to the west near Point Barrow where it now occurs about 10 days earlier than in 1941. Understanding the population of ice-associated seals will help the NMFS and Alaska Natives to manage and protect these important components of "the ecologically diverse marine nation."

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