



Sarah Betcher
Farthest North Films



Ice Seal Committee summary — January 2021

Ikaagvik Sikukun—Ice bridges

The frozen environment around Kotzebue Sound is changing. Ikaagvik Sikukun—Iñupiaq for ice bridges—is a research project in Kotzebue, Alaska that connects the community with scientists to understand how sea ice, ocean physics and marine mammals are changing in the Sound. The science is guided by an Elders Advisory Council. Ikaagvik Sikukun began in 2017 and is expected to finish in 2021.

Support

Ikaagvik Sikukun thanks the Gordon and Betty Moore Foundation for funding and Selawik National Wildlife Refuge for logistical support.

Presented by

Cyrus Harris, a Sisualik Elder, and Donna Hauser, a scientist at the International Arctic Research Center on the UAF Troth Yeddha' Campus, on the traditional lands of the Tanana Dene People. Contact Donna at dhauser2@alaska.edu.

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Find out more

There are many ways to learn more about Ikaagvik Sikukun. Filmmaker Sarah Betcher captured each aspect of Ikaagvik Sikukun from the first conversations with the Elders Advisory Council, to the on-the-ground and in-the-air measurements in Kotzebue Sound. Much of the science was turned into short videos on YouTube. A feature length film will be released at the end of the project. The research and findings were also shared in twice yearly newsletters that were mailed to all mail box holders in Kotzebue.

Watch one of 16 Ikaagvik Sikukun short videos on YouTube at <https://bit.ly/3iWBoGt>

Read one of four Ikaagvik Sikukun newsletters at <https://uaf-iarc.org/publications/>

Follow Ikaagvik Sikukun on Facebook @[ikaagviksikukun](https://www.facebook.com/ikaagviksikukun)

Visit us on our website at www.ikaagviksikukun.org

Email questions or comments to ikaagvik_all_pis@lists.ldeo.columbia.edu.



Photo by Bjorn Olson



Elder Advisory Council



Bobby Schaeffer
Kotzebue Elder



Cyrus Harris
Sisualik Elder



John Goodwin
Kotzebue Elder



Roswell Schaeffer Sr.
Kotzebue Elder

The Ikaagvik Sikukun Elder Advisory Council shared their Indigenous Knowledge, passed down through generations, and learned from decades of observing the animals, ice, water and weather in and around Kotzebue Sound. The Elders proposed the questions Ikaagvik Sikukun studied. They used their knowledge of the ice to guide when, where and how to collect data, and led the science team on the ice to ensure safe travel. Lastly, they helped interpret the significance of results.

Different ways of knowing

The Iñupiaq have called the Arctic home since time immemorial and have developed a knowledge system shaped by the environment. For thousands of years, hunters have studied the animals, ice, land and ocean. Ikaagvik Sikukun acknowledges these different ways of knowing and believes that knowledge is stronger when scientists and Indigenous Knowledge work together as equal partners.

Cyrus Harris said: “The Indigenous people from way back in the day, they’ve always studied the climate and the weather as a way of survival. It gives them an idea of what conditions are going to look like for harvesting in certain areas or traveling.”

Ikaagvik Sikukun acknowledges that there is a long history of science conducted in ways that were not equitable to Alaska Native communities. Ikaagvik Sikukun endeavored to do better and always accept Indigenous Knowledge as equal to western science.

John Goodwin said: “We worked as a team. It was not one sided, it was not from the science department only, [Ikaagvik Sikukun] worked with the locals and with us Elders. And by doing that you get better results.”

Hunting ugruk



Alex Whiting
Native Village of Kotzebue,
Environmental Director



Donna Hauser
Scientist, marine mammal
ecology

Spring *ugruk* (bearded seal) hunting ends about 26 days earlier in Kotzebue Sound than it did in 2003. Sea ice breaks up three weeks earlier.

Ugruk in Kotzebue Sound are closely tied to certain ice conditions, so hunting them is essentially the same as hunting ice. To quantify how the loss of sea ice has impacted the *ugruk* hunting season length, and start and end dates in Kotzebue Sound, **Alex Whiting** and **Donna Hauser** co-led a project interviewing Elders, examining Tribal records, and analyzing sea ice data.

reports on weather, travel conditions, wildlife and fish, and hunting and fishing since 2002. Each spring, he records when *ugruk* hunting season starts—based on when the first hunters are able to boat out of Kotzebue—and when the season ends—the last *ugruk* harvested or when people can no longer find *ugruk*. Alex’s journals created a way for Ikaagvik Sikukun to quantify how much the *ugruk* hunting season changed since 2003.

Interviewing Elders

The Elder Advisory Council provided Indigenous Knowledge about the sea ice conditions that impact *ugruk* and *ugruk* hunters in Kotzebue Sound.

Tribal records

As the Environmental Program Director for the Native Village of Kotzebue, **Alex Whiting** has made weekly

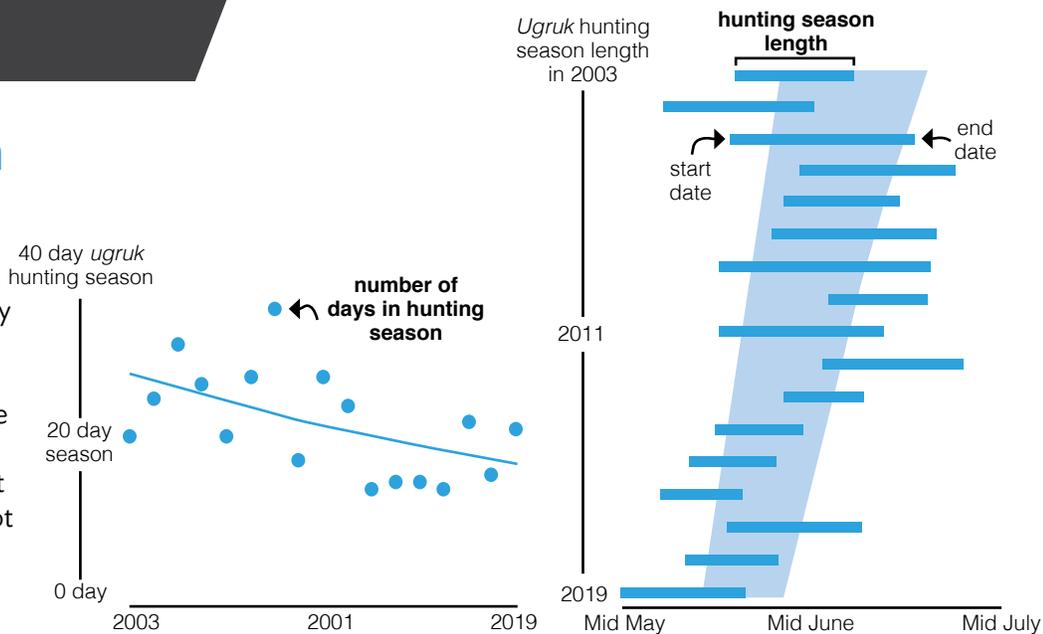
Sea ice data

Ikaagvik Sikukun scientists used satellite data to understand why the *ugruk* hunting season was shortening. They examined satellite images to detect annual events in the ice cycle that the Elders said were important for *ugruk* and hunters.

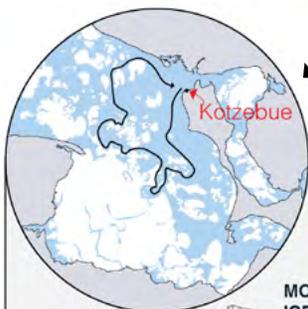
Check out the data

Shorter *ugruk* season

Alex and Donna's team found that over the past 17 years, the length of the spring *ugruk* hunting season for the Qikiqtagruṅmiut people decreased nearly a day per year. Kotzebue Sound now breaks up about 22 days earlier than it did in 2003 and is the main reason for the shrinking hunting season. Compared to the early 2000's, the hunting season start date is now slightly earlier, but there is not a significant trend. The most significant change is that the hunting season now ends in mid-June rather than early July.

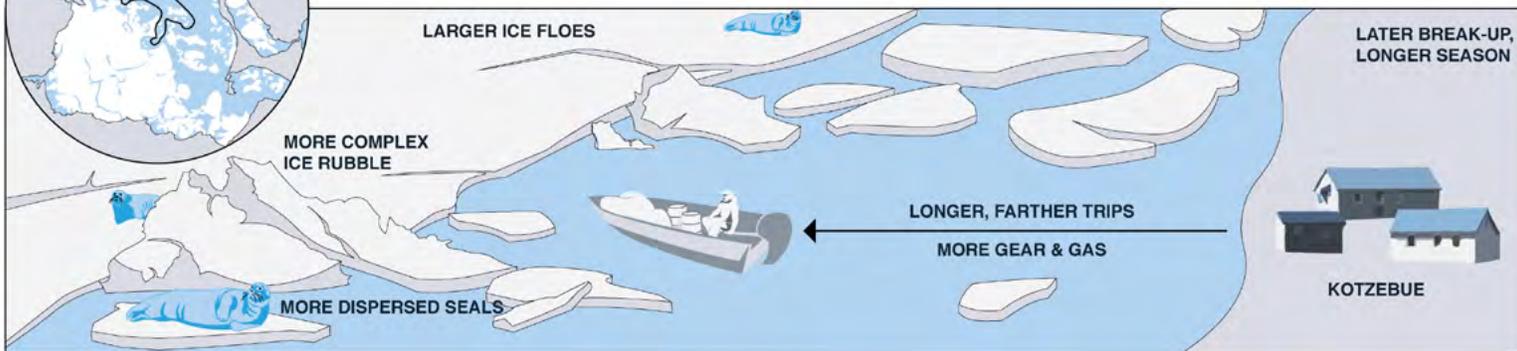


Ice pattern in a typical past season: Consistent ice, more searching for *ugruk* (black line shows hypothetical hunting route).



Past *ugruk* hunts

In the past, Kotzebue Sound was reliably covered by near-continuous sea ice from January–April. Open water typically began forming in May, but broken ice existed into July. Hunters typically went on longer, farther trips navigating through complex ice floes searching for *ugruk*.



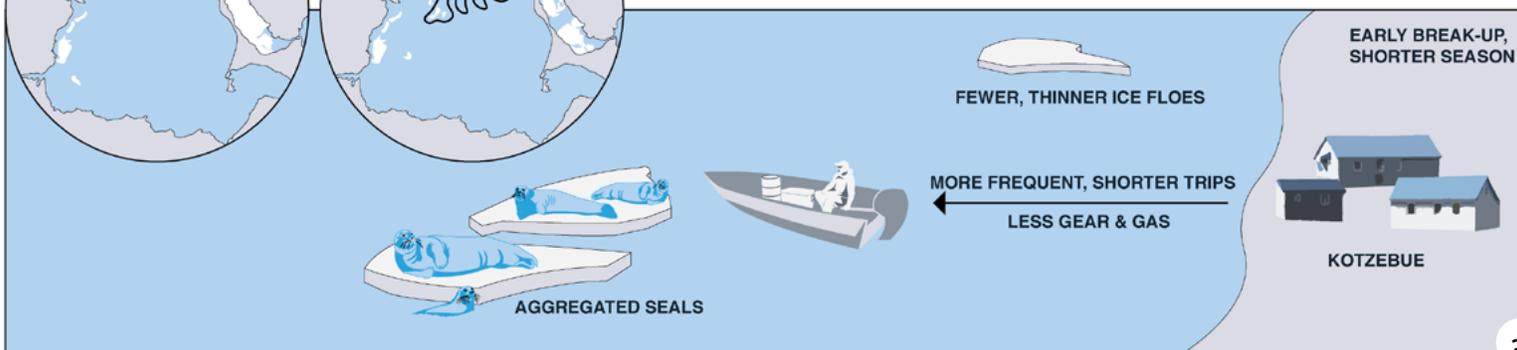
Ice pattern in 2019: Many *ugruk* on a few ice floes close to Kotzebue. Low effort to hunt, high success.

Alternate future ice pattern: Few ice floes further from shore, hunting requires more searching, less chance of success.



Current *ugruk* hunts

Around 2010 sea ice patterns changed in Kotzebue Sound. Ice floes disappear from the Sound about three weeks earlier than they did in the past. Today's May/June ice looks like historical June/July ice. While hunters are not necessarily able to begin hunting any earlier, the season is increasingly cut short. Hunters typically embark on shorter, more frequent trips. Hunt success has not necessarily changed.



Seal habitat surveys



Jessie Lindsay
Graduate student, ringed seal lairs & habitat



Donna Hauser
Scientist, marine mammal ecology



Andy Mahoney
Scientist, sea ice & impacts

What kind of ice and snow features do ringed seals need to build pupping lairs and breathing holes in Kotzebue Sound?

Female ringed seals birth pups in snow covered lairs built into snowdrifts on the downwind side of pressure ridges. The pups are covered in white, woolly hair for the first few weeks of their life while they build blubber. Well-built lairs keep pups safe, warm and dry.

Jessie Lindsay is an Ikaagvik Sikukun graduate student studying seals and their habitat in Kotzebue Sound. Jessie, along with project leaders **Donna Hauser** and **Andy Mahoney**, measured snow and ice characteristics at seal lairs and breathing holes compared to ice without any seal structures. These surveys help explain how rough the ice needs to be in order for snow to accumulate deep enough for seal lairs. *All seal research was conducted under NMFS Permit No. 19309.*

Finding seals

It can be hard to find seals, seal lairs and their breathing holes. In 2018 and 2019, Ikaagvik Sikukun used a combination of snowmachine expeditions, led by the Elders Advisory Council; surveys with unmanned aerial vehicles (commonly known as drones) equipped with thermal cameras; and an airplane to follow the drone and photograph seals from the air.

Lairs found during on-ice surveys were in 12.5 inches of snow on average. They were usually in snow drifts associated with rougher ice. It is possible that some lairs were in marginal habitat. For example, one lair was in 10.8 inches of snow. The actual lair was 8 inches tall with only about an inch of snow over top.

Breathing holes usually were on smoother ice with an average 7.9 inches of snow.

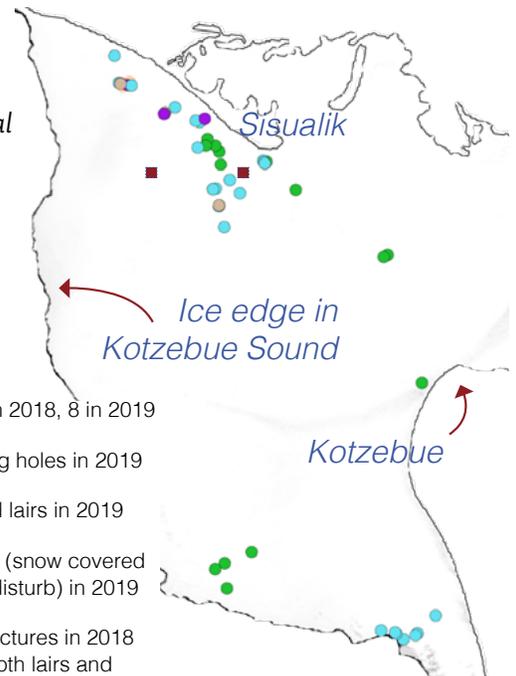


Photo by Jessie Lindsay
NMFS Permit No. 19309