Sarah Mackie

Hello and welcome to Northern Lights. My name is Sarah Mackie and I am a Postdoctoral Research Fellow with the Arctic Initiative at Harvard Kennedy School’s Belfer Center. That sound you just heard was the music made by the northern lights which appear when electrically charged particles from the sun hit the earth’s atmosphere. As well as beautiful dancing lights in green and purple, these particles create very low frequency electromagnetic waves which can be detected, and which, when played back, create the music that you just heard.

Sarah Mackie

Northern Lights is a podcast by inspirational students from across the Arctic and around the world, each a leading light in their own right. These students have worked with Harvard’s Arctic Initiative to bring you fascinating and engaging stories from and about the Arctic. Today, I am delighted to share with you the work of Emily Becker, a student at the University of Alaska, Anchorage. In her podcast episode, Emily discusses a groundbreaking new collaboration between wildlife biologists and indigenous subsistence hunters to monitor the health of walruses in the Alaskan Arctic.

This is Emily Becker with ‘Measuring Walruses’.

Emily Becker

Let’s say you wanted to study the health and fitness of the walrus, an absolutely enormous Arctic marine mammal. [sounds: walrus grunting] How would you even do it?

Karyn Rode

They can’t be captured, so you can’t apply a tag. You can't measure them, so you have to come up with an alternative way, and then they're also huge.
Emily Becker
Today you'll hear from Dr. Karyn Rode of the US Geological Survey and Vera Metcalf of the Eskimo Walrus Commission. They’ll explain a new pilot study that's enlisting the help of subsistence hunters on St. Lawrence Island, zoos, and high-tech drone imagery, all to learn more about the condition of walrus, a critical food source for indigenous people in an environment rapidly affected by climate change.

Emily Becker
Scientists studying the health of animals need to collect data on body condition. Dr. Rode explains.

Karyn Rode
Condition measures in wildlife are really useful because they give you an annual way to track their access to resources and the degree to which they are balancing their energetic needs.

Emily Becker
Dr. Rode is a wildlife biologist with the US Geological Survey and she has a lot of experience studying large mammals, including polar bears, and she's recently turned her focus to walrus.

Karyn Rode
For years we just couldn’t really come up with any leads on how we might be able to do that for walrus, because they are hard to study overall, and it’s hard to come up with ways on how you can track condition. But we came up with a new idea that we thought had some potential of applying things I've done with other species to walrus.

Vera Metcalf
Karyn came to us with a research project that she wanted to present.

Emily Becker
That’s Vera Metcalf, who was born and raised on St. Lawrence Island, and who spoke to me from Nome. Metcalf has been the director of the Eskimo Walrus Commission since 2002.

Vera Metcalf
The Eskimo Walrus Commission started in 1978 and it was formed by the communities to represent their interests to the federal agency, which is the US Fish and Wildlife Service, and we created cooperative agreements. We have 19 walrus hunting communities all the way from Utqiagvik and the Chukchi Sea down to the Bristol Bay region. So we’re big proponents of the Marine Mammal Protection Act, where we have cooperative agreements with the Fish and Wildlife Service, who have responsibility to manage the Pacific walrus.
**Karyn Rode**
The primary thing we were trying to do on St. Lawrence Island is actually to link measurements of condition to reproductive success. It's a really great opportunity to be able to do that because they see calves, they can measure calves, there's a lot of females and calves in the harvest. So we were going to have them take some measurements and also take some samples, like blubber samples, because the percent of lipid in the blubber has been shown to be a potential indicator of the condition of the female. They were going to collect milk samples because the quality of the female’s milk may be related to her condition and that might be a way that her condition affects the health of her calf, and so we are going to try to make some of those linkages.

**Vera Metcalf**
Well for many years our hunters have been involved in collecting samples from walrus, whether it be whiskers or blubber samples, to assess how healthy the walrus population is, because we’re more interested in that. Walrus health, looking into it, would not be possible with an organization like us. Hunters have been partnering and collecting a wide variety of biological samples for many years. She had funding, which, the neat thing about it, is that she has funding to pay hunters for providing the samples that she needs to look at for the project that she’s engaged in.

**Karyn Rode**
So we talked to them about what materials can we provide you to make these measurements? So, for example, we had decided that we’d give them different colored strings for different measurements we want. They would use those strings and then put them around, try to put them around a walrus to get their girth, use those strings to get length, and then just trim them off and then we would measure them later. So we tried to come up with some easy, quick ways that they could try to get that information. So the study is a little bit of a pilot and trying to see, how feasible is that? You know, definitely some of them said, “You know, we'll try, we'll see, we’ll try to see what works this year.”

**Vera Metcalf**
The neat thing is that she went out to Gambell and Savoonga and explained this idea and asked for feedback. She was looking for reaction from the hunters and they did provide her really good feedback, where she adjusted in a way that would make it more doable for her to collect samples. How do you measure a large walrus that is on ice when you want to make sure that you butcher it and get back safely at the same time, too?

**Karyn Rode**
The primary purpose of that piece of working with hunters on St. Lawrence Island is to try to link condition to reproductive success of females, because if we're able to measure the body condition of the walrus, you have to know: what does that mean? So if you see this much difference in the girth or width of a walrus, does that matter? Just like for humans, if you lost five pounds, does it
matter? But if you lost 30 pounds, it would probably matter a bit more. So we had to get some context for what changes in body condition mean. So that's the part we're doing on St. Lawrence Island. The other primary piece of the study is working with aquariums and zoos in North America and in Europe to come up with ways that we can get condition on a regular basis without having to actually physically measure walrus. So we don't want hunters to be trying to collect this data all the time, and they're only able to collect at one time of year in the springtime when they have their hunt.

Emily Becker
Along with the data from subsistence hunters and the help from zoos, Dr. Rode plans to use a high tech solution: drone imagery.

Karyn Rode
So another opportunity for getting condition information on walruses is that they are starting to haul out on land in Alaska and Russia. In recent years they started using drones to try to assess how many walrus are at those haulouts, and we recognize this might be a potential opportunity to use drone imagery to get measurements on walrus that can be translated to measurements of condition.

Emily Becker
A big concern for both hunters and scientists is rapidly disappearing sea ice. The sea ice is where walruses haul out to rest, and it helps them to be closer to their foraging areas.

Karyn Rode
So typically they have hauled out on the sea ice during the summer time that's over areas that they feed. So they're benthic feeders, they feed on the ocean floor, and so their ideal habitat is sea ice, where they can come up and rest on, but then dive down as they need to forage directly below them in their foraging habitat. So now they're hauling out more on land so they're in some cases much further from their foraging habitat and have to travel longer distances.

Metcalf: It happens with climate change, which we are concerned about just about every day, how that would affect resources that we eat and rely for our sustenance. Eighty percent of our diet certainly comes from marine mammals and one of them is walrus.

Karyn Rode
There's certainly concern about projections for an ice-free summer because those walrus do need to haul out to rest and they need to be closer to their foraging areas. So in these large haul outs there is mortality associated with those because they don't typically haul out in such large numbers. So there's trampling events and there's disturbance events that lead to mortality at those haul out,
so there is definitely concern relative to changes in behavior that are being observed that are related to sea ice conditions and the projections for continued summer sea ice loss in particular.

Vera Metcalf
We want to make sure with all the changes in the environment that they are healthy and available and that we harvest them in a sustainable way because they are our food, it’s food for us. [sounds: walrus grunting]

Emily Becker
Like a lot of things in 2020, the Covid-19 pandemic has put some of the study plans on hold. But the spring hunt will continue, and the St. Lawrence Island hunters are ready to participate. Thank you, Dr. Karen Rode of the US Geological Survey and Vera Metcalf of the Eskimo Walrus Commission. Vera, by the way, is a bona fide member of the Alaska Women’s Hall of Fame. Thank you to Tony Fischbach of the USGS for the walrus audio. Our theme music is “Investigations” by Kevin MacLeod. I’m Emily Becker, student at the University of Alaska Anchorage. Thanks for listening.