

# NUnA



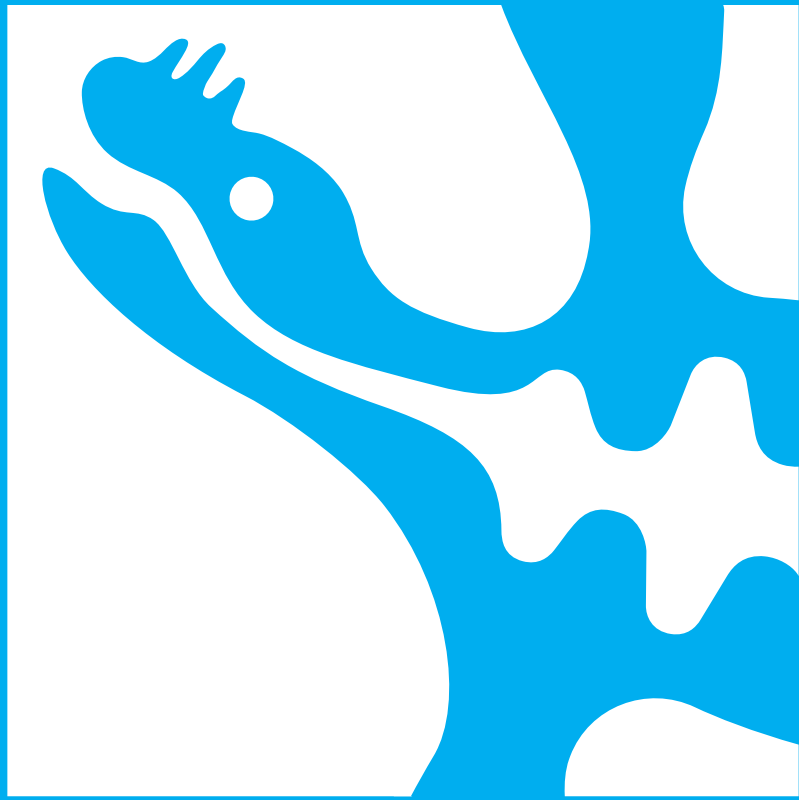
Qulleq Podcast  
Local Env. Observer Network  
Erin Gingrich Interview  
NNA CO REU Program  
Jasmine Perea Interview  
Edda Mutter Interview



# Arctic together

# Introduction

---



NNA  
CO

This Zine features salmon, subsistence, and NNA projects that benefit communities in the Arctic. We would like to feature Alaska Regions in the next Zine! Do you have a story you would like to share, know of an amazing program we should feature, or have something within your region you are particularly proud of?

## Contact Information

Jessica Lewis-Nicori at [jlewisnicori@alaskapacific.edu](mailto:jlewisnicori@alaskapacific.edu) or call (907) 564-8311. We welcome and look forward to sharing about your region!

# Table of Contents

---

**Editors:** James Temte, Jessica Lewis-Nicori

**Contributors:** J. Besl, Kelly Marciales,

Leah Corbin, Lars Flora,

Nasugraq Rainey Hopson

**Zine Design:** Sebastian Garber

**Cover Photo:** Erin Gingrich

**Photo Credits:** Erin Gingrich,

Anna Lena Bercht, Emily Sullivan,

Alyse Thurber, Jasmine Perea,

[sites.dartmouth.edu/qulleq](https://sites.dartmouth.edu/qulleq)

**Cover photo credit:** Erin Gingrich, Kivraq (Cut)

**Back cover photo credit:** Emily Sullivan

In 2021, the Navigating the New Arctic Community Office is founded by the U.S. National Science Foundation to provide coordination and assistance to the research teams, their research partners, and to anyone interested in applying for or partnering in future research under the Navigating the New Arctic program. The Community Office's overall goal is to help the research achieve greater benefit to Arctic communities, others living in the Arctic, and to societies worldwide. The Community Office is supported through a cooperative agreement (Award # 2040729) with the U.S. National Science Foundation.

All rights reserved. No part of this publication may be reproduced in whole or part without permission from the publishers. The Nuna Zine welcomes new contributors but can assume no responsibility for unsolicited manuscripts, photographs, or illustrations. Nuna is printed by Color Art Printing in Anchorage Alaska United States of America, on recycled paper.



8	From the Editors
12	Nikoosh Carlo
13	Jessica Kaagyugaq
14	Qulleq Podcast
20	Tamamta
21	NNA Annual Meeting
20	Environmental Observation
28	Indigenous Observation
32	Erin Gingrich
36	NNA CO Education
38	Coloring Pages
42	Recipes
48	Indigenous Advisory Board
51	Upcoming Events
52	Resources/Credits

Photo by: Anna Lena Bercht



## From the Editors

.....

Quyana naaqluku una, thank you for picking up this Zine! Writing, gathering materials for, and thinking about this issue reminded us of the importance of our land, waters, and food we gather. Although the world may be changing, this is a constant throughout our communities. Gathering berries and plants, processing fish and game, and being out on the land with family remains important despite the changing climate. For this journey, we found connection with fish, water, and people that are part of the Arctic.

We hope that you make connections, try Nikoosh's or Nikki's salmon dip, and are inspired toward actionable change that leads to a more positive, resilient, and connected Arctic.



**James Temte**



**Jessica Lewis-Nicori**

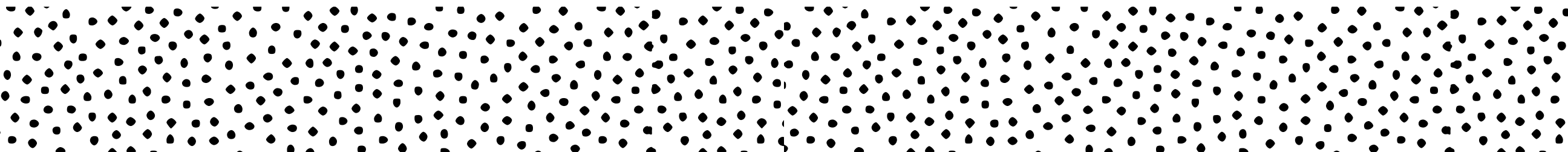


Photo by: Emily Sullivan

A grizzly bear forages vegetation on a fertile hillside in Interior, Alaska. Unlike salmon-feeding coastal bears, interior bears' diets are heavily dependent on roots, vegetation, and berries.  
**Photo by: Emily Sullivan**



**Team Member Spotlight:  
Nikoosh Carlo**

.....



**Could you provide an introduction?**

My name is Nikoosh Carlo. I am Koyukon Athabascan from the Interior region of Alaska - born and raised in the city of Fairbanks with roots to the village of Tanana which is at the confluence of the Yukon and Tanana Rivers. My parents are Gail and Wally Carlo from North Dakota and Tanana. And my grandparents were Poldine and Bill Carlo from Nulato and Rampart, Alaska. The Arctic is important to me not just because I have deep roots here but also because of the people who live and work across the Arctic - they really care and want to work together. I believe that we can do great things by working together and this is essential for us to live in balance with the environment far into the future.

**What is your role in the Community Office?**

I am the CEO of CNC North Consulting and co-chair of the two NNA-CO Advisory Boards. I lead the boards in ensuring the work of the NNA-CO is grounded in our guiding principles and that the boards' guidance is integrated into NNA-CO activities. Our guiding principles, found on NNA's website [www.nna-co.org/guiding-principles](http://www.nna-co.org/guiding-principles) ensure that NNA-CO's activities are ethical, inclusive, safe, and partnered with communities.

**What inspires you?**

I am inspired by action creating positive change. Seeing very public figures like Quannah Chasinghorse call for change and raise awareness of Arctic issues is refreshing and reaffirming. Remembering my family who took action to create positive change reminds me that I, too, must continue forward to reach my goal of an Arctic 180, where solutions to climate change issues are found together with Arctic residents and Indigenous peoples. To continue the forward momentum, I recharge by reading Indigenous authors and moving my body outside.

**Team Member Spotlight:  
Jessica Kaagyuaq**

.....

**Could you provide an introduction?**

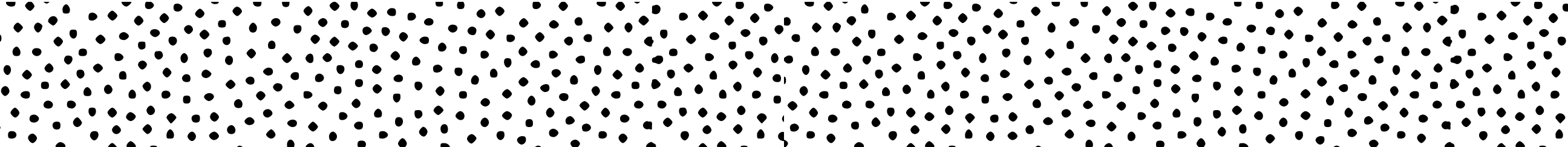
Waqaa! Kaagyugaugua, Caputnguarmi-unguunga, Yupiugua. Ayaginaar-aankuk Mancuaq-llu angayuqaqagka. Hello, I am Jessica Kaagyuaq Lewis-Nicori, I am Yup'ik from Chefnak. My parents are Walter and Julia (Panruk) Lewis. Before joining the Navigating the New Arctic Community Office (NNA-CO) team, I taught high school science for five years in my hometown. There were days where it made more sense to teach in Yugtun than English, and I am proud of the bilingual kids in Chefnak who made that possible. I have a background in education and wildlife biology and have worked in a variety of capacities in Chefnak, Fairbanks, and Bethel in various fields including environmental, education and outreach, and the health field.

**What is your role in the Community Office?**

I serve the NNA-CO as Indigenous Engagement Coordinator. I work toward NNA-CO's goals using my background in Wildlife Biology and Conservation, secondary education, and gained knowledge of ecosystem workings, including the importance of the land, that come with growing up in a Yup'ik small community to support the NNA-CO. It is my goal to bring together Indigenous groups / Indigenous serving organizations and entities with Arctic-facing researchers using a variety of media for connection and collaboration.

**What inspires you?**

My inspiration comes from those who came before and those who will come after me. My parents and grandparents worked hard to ensure we grew up knowing how to be self-sufficient Yup'ik people. Guidance came in words passed down from their elders about how to live life and prosper. My parents and grandparents modeled and told me that "Ca tamarmi elitengqertuq," or roughly translated, "everything has a way to be learned." I hope to instill this in the youth and inspire greatness through effort and determination- piyunggaamta, because we can.





**Can you introduce yourself and tell us a little bit about where you are from, and about the work you are involved in?**

Thank you for the invitation! I'm Mary Albert, Professor of Engineering at Dartmouth College. I've done research in a number of areas of the Arctic and Antarctic for decades. For the NNA program, I am Principal Investigator of the NSF-NNA project formally entitled "Innovations in Energy Technologies and Empowerment in Arctic Fishing Communities", which we informally refer to as the Qulleq Research project.

**Could you describe the meaning of Qulleq and share a bit about the project?**

A qulleq is a small soapstone lamp historically used for light and warmth in Inuit homes. Our project is about energy, including both light and heat; our partner Lene Kielsen Holm suggested at the start of the project that we use the nickname "Qulleq" for our research, and we all loved the idea.

# Qulleq Podcast



There's a fun side story: Almost five years ago, Lene came to a conference at Dartmouth where someone asked her 'what does quleq mean?' Lene's response was "power". She giggled and winked; I think her answer was ingenious. Overall, we are collaborating with the people of Avanersuaq (Qaanaaq and its sister settlements) to identify a pathway for an affordable, sustainable future for the hunter-fishers in NW Greenland. Specifically, we are working on a) incorporation of renewable energy (both at the community level and at the individual home level) in order to increase their self-reliance for energy and hopefully lower energy costs in the long run, and b) finding ways to increase their family income from small-scale fishing, through innovations in fish processing and new market possibilities.

**Can you tell us about the fisheries aspect of this project?**

Small-scale fishing through the sea ice has provided food security for hundreds of years in northwest Greenland, and today the hunter-fishers live in a mixed subsistence and small cash economy. They sell part of their catch as whole fish to Royal Greenland, a major seafood company in Greenland. With unpredictable sea ice conditions in the weather and sea ice conditions in the fjord, the fisher's financial income is uncertain and often less than they need to support their families. We are working with them to explore innovations in processing their catch that may help them receive a higher price per kilo of fish than at present, by selling the filets as a boutique product. One means, identified by our partner Toku Oshima, is devising solar-powered portable fish drying chambers that would enable the fishers to filet their fish on the sea ice and dry the fillets while on the ice. Dried fish brings a great price on the Greenland home market. This research is currently underway. For Greenland fisheries, there are also other issues such as challenges

with Greenland government regulations of fisheries and possible conflicts with needs of small-scale fishers – that research is underway, and is a separate topic from the fish drying chambers.

**Much of this podcast is centered around equity and community. Can you talk about the transformation approaches or your own approaches towards co-production of knowledge in fisheries, community-based research?**

The ideas for this project were generated starting in 2015 by Toku Oshima and Lene Kielsen-Holm, who invited me to partner with them. Our approach toward co-production of knowledge is to partner with the hunter-fishers to solve challenging engineering-policy-fisheries problems that must be tackled in order for them to continue to live where they want to live and how they want to live. When NSF announced the NNA research opportunity, it was a natural fit for the ideas we collectively had been thinking about, and we worked together on the proposal. There are so many elements to this research project: the fisheries piece, engineering, marketing, and policy.

**Can you elaborate on the convergence aspect of this project?**

Real-world challenges to societies very rarely occur from a single cause, and so there is no single technology fix, no single policy fix, no single environmental fix that can improve conditions for individuals and societies in the long-term. In viewing the ways of life of the hunter-fishers as a system, the goal of our work is to do research on the "sticking points" within a variety of interlinked engineering-policy-fisheries issues to enable innovations to various parts of the system that will help "unstick" the system in order to enable fisher families to continue to live where they want to live and how they want to live. We aim to create a pathway for their affordable, sustainable future.

**“Our approach toward co-production of knowledge is to partner with the hunter-fishers to solve challenging engineering-policy-fisheries problems...”**

**What is one outcome you look forward to coming out of this project?**

I hope that our efforts will be useful to the hunter-fishers of Avanersuaq in empowering them to be able to continue to live where they want to live and how they want to live.

**So far, what worked, and what didn't work during this project?**

Our NSF-funded project is still underway, so it is early to identify all of the successes and challenges, but here are a few. Our successes so far is our ability to co-generate knowledge and work on problems that are identified by the hunter-fishers in the area; the research on incorporating renewable energy and inclusive dialog with residents of Qaanaaq as well as the Greenland government-run utility (Nukissiorfiit), and chemistry research for batteries have been successful so far. A major challenge so far is that the internet in Qaanaaq is far behind where it is elsewhere; the speeds are similar to dial-up and the cost is huge. I am paying for the internet out of my grant, but it is still a challenge to use, which makes communications difficult for times when we are not in the field.

**How will this project help or impact other Arctic communities? How do you see the results advancing the rest of the Arctic?**

Many of the technologies and processes we are developing will be useful in other Arctic and also mid-latitude communities. The development of battery technology for use in extremely cold conditions is needed by people across the Arctic, Antarctic and also cold high-altitude places in the mid-latitudes. The passive solar heating of rooms and small energy efficient, affordable homes could be used anywhere. The lessons of how to develop and market boutique fish products from small-scale fishing (that could bring a high price elsewhere) could be useful to increase fisher income for others living in small, remote fishing communities across the Arctic.

**How has this program impacted you personally?**

I find myself thinking much more broadly about possible approaches to convergence problems/challenges that have been posed by those experiencing the challenge. Some of the most promising solutions are not the most scientifically complex or cutting-edge, but the system solution does involve closely linked efforts in relevant areas. That's one aspect, but also, in addition, for most of my career, my scientific research was not initiated and sustained by personal friendships; our Quleq project is very different in that regard.

.....  
**The Quleq** project fits right in with what the Navigating the New Arctic Community Office goals and vision of co-production of knowledge and convergence research can look like.



A local fishing boat and bowhead whale in icy Disko Bay waters, both near the Arctic village of Qeqertarsuaq, Greenland at 69 degrees north latitude.  
**Photo by: Emily Sullivan**



## Program Spotlight: Tamamta

.....



**Tamamta, which is Yup'ik/Sugpiaq for “All of us,” is pulling from 14,000+ years of Indigenous knowledge as well as Western science to change how we learn about, and from, fisheries and marine sciences.**

The goal of this program is to create a more inclusive space for Alaska Natives in academia and fisheries management at both the state and federal level. At the heart of the Tamamta program is their Indigenous students and the work they are doing. There is a severe lack of Indigenous knowledge in higher education, especially regarding the relationships between the people, animals, and land. The work being done by the Tamamta fellows is reinforcing the importance of this generational knowledge, and the role it should play in community decision making for future generations.

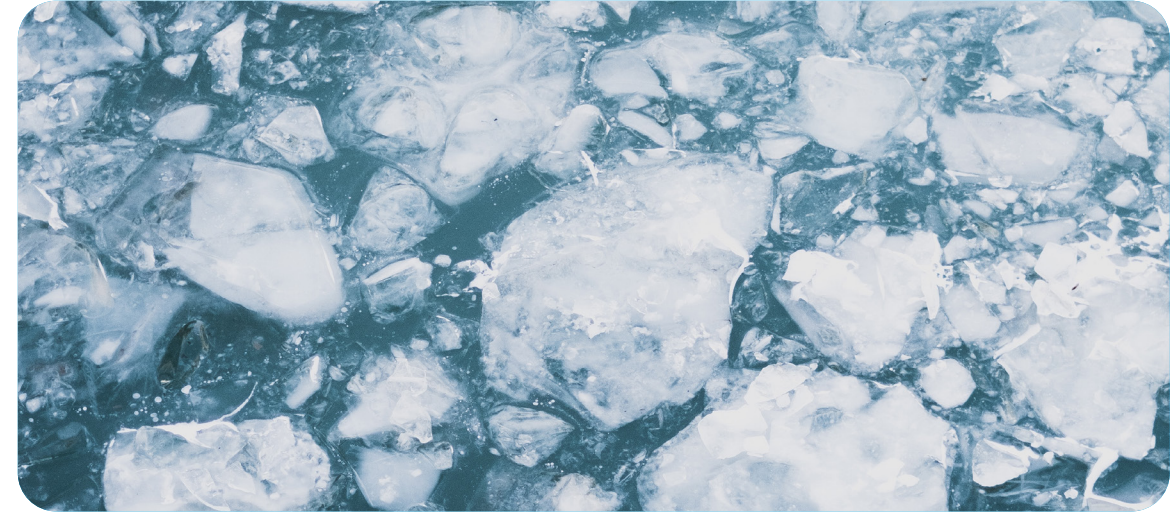
In the Tamamta Program we are trying to transform our whole approach to education, research, and management. Our team builds on years of cross-cultural and cross-disciplinary work to address pressing questions of equity and sustainability of life and relations in Alaska. Our fellows will use a co-production of knowledge (bridging Indigenous and Western knowledge) approach to explore key questions in our fisheries and marine and ocean systems. Indigenous students are the heart of our program. [tamamta.org](http://tamamta.org)

.....

**Episode 1** of the Arctic Together Podcast showcased Dr. Jessica Black and fellow Kendrick Hautala of the Tamamta Program. To listen and learn about Tamamta online, visit: [nna-co.org/arctic-together-podcast](http://nna-co.org/arctic-together-podcast)

## Event Spotlight: NNA Annual Meeting

.....



**The NNA-CO hosts Annual Meetings where the NNA community, including researchers, Arctic community members, educators, decision-makers, and potential partners are welcome to share and learn from one another.**

The 2024 NNA Community Meeting will take place during March 5-7, 2024 in Washington, DC, jointly hosted by the NNA-CO and George Washington University (GWU) and held at the University Student Center on GWU's Foggy Bottom campus.

This meeting will provide an opportunity for NNA researchers, NNA project partners, Arctic Indigenous community members, Indigenous organizations, policymakers, and federal agency partners to come together to consider the state of research and research relations within and beyond the NNA Initiative.

The theme of the annual meeting is “UUMATIŃ IŃUURUQ: Collaborating for equitable Arctic research, engagement and policy.” The meeting will be held in-person, and will feature plenary sessions, parallel sessions, and a poster session!

.....

**For more information**, visit the NNA-CO's annual meetings page at: [nna-co.org/nna-annual-community-meetings](http://nna-co.org/nna-annual-community-meetings) To listen to a podcast on the 2022 annual meeting, visit: [nna-co.org/arctic-together-podcast](http://nna-co.org/arctic-together-podcast) For inquiries about the Annual Meetings, please contact the NNA-CO at: [contact@nna-co.org](mailto:contact@nna-co.org)

Photo Spotlight:  
Emily Sullivan

.....

A team of Greenlandic sled dogs rests on a warm spring day near Sisimiut, Greenland. These working dogs have incredibly pure bloodlines, and are only legal north of the Arctic circle. Photo by: Emily Sullivan





Left, A polar bear sow and cub sniff the air for human scent near Kaktovik, Alaska. This image was made on the last day the sun rose above the horizon for the year at 70 degrees north latitude.



Right, A member of the Porcupine caribou herd takes respite in the willow brush in the Arctic National Wildlife Refuge, Alaska.  
Photo by: Emily Sullivan



Left, Harvesting sage under the 2am sun above the Hula Hula river in the Arctic National Wildlife Refuge.

Right, Deenaalee Chase-Hodgdon, co-founder of mutual aid network the Smokehouse Collective, cuts and jars salmon in Dillingham, Alaska. Photo by: Emily Sullivan



**The Local Environmental Observation (LEO) Network is an on-line community of people who share knowledge, local news articles, and first person observations about environmental change. It is available to anyone and anywhere, and serves both as a consultation service, and surveillance system for early signals of climate, and other drivers of change. Type “salmon” into the LEO search engine and you’re instantly drawn into a digital tapestry spanning Alaska, Canada, Iceland, and Scotland, courtesy of the Local Environmental Observer (LEO) Network. This dynamic platform serves as a global storyteller, offering unique, context-specific perspectives on scientific and human aspects of our natural world.**

At its core, the LEO Network serves as an invaluable repository of observations, each with its own timestamp and geographical significance. The Network provides insight into the lives of salmon, a resource which holds profound cultural and ecological importance, extending far beyond Alaska’s borders.

In Scotland, LEO documents a riveting tale of seal predation, where these cunning hunters posed a significant threat to salmon populations, igniting a struggle for their protection among local fishermen.

Shift our focus to Iceland, the LEO Network tells the tale of humpback salmon, an unexpected interloper disrupting the local ecosystem.

In Alaska, the salmon narrative is suspenseful– with numerous reports of mass die-offs and the documentation of strange-looking fish that continue to puzzle local observers.

What makes the LEO Network so extraordinary is its accessibility. It’s a well-known resource for environmental offices across Alaska, offering a hub for relevant articles, local observation data, and a visual gallery that anyone with an email address and an internet connection can access. The LEO Network traces its origins to the Alaska Native Tribal Health Consortium (ANTHC), which established the Center for Climate and Health to address the impacts of climate change on Arctic communities. In 2012, the LEO Network emerged as a tool to facilitate the sharing of vital information on climate and environmental changes.

Today, the LEO Network thrives, generating new partnerships with local observers in the Arctic and beyond. It continues to weave a grand narrative of our ever-changing environment. Join us on the digital journey and become a part of nature’s ongoing story.

The LEO Network is a testament to the power of community-driven environmental awareness, where adventure and advocacy converge. In a candid conver-

sation with Lars Flora, a vital contributor to LEO’s vibrant community, we unearthed the fascinating journey that took him from the world of competitive skiing to environmental stewardship. Lars underscores the importance of the LEO Network today.

Lars transitioned from skiing at the Oslo World Championships to fostering a community-based ski program in rural Alaska, motivated by a desire to bring the energy and ski culture he experienced in Oslo back to his home state. He also pursued an undergraduate degree in Environmental Science, which eventually led him to the Alaska Native Tribal Health Consortium (ANTHC), where he learned about the LEO Network.

“As I traveled around Alaska on skis, I started paying a lot more attention to the outside world from an environmental perspective.” His evolution from a competitive athlete to an environmental observer unfolded as he skied through Alaska’s wilderness. His observations began with safety considerations but gradually expanded to encompass spring snow conditions, ice breakups, and spring storms. “Skiing around Alaska was really about gliding through the forest, tundra, and hills, meeting new people who understood a world I was very unfamiliar with and connecting with the people.” This opportunity allowed Lars to connect with locals and scientists living in rural Alaska and he soon developed a profound understanding of the region’s environmental changes. From interviews with elders in Shishmaref to dinners with experts like whale biologist

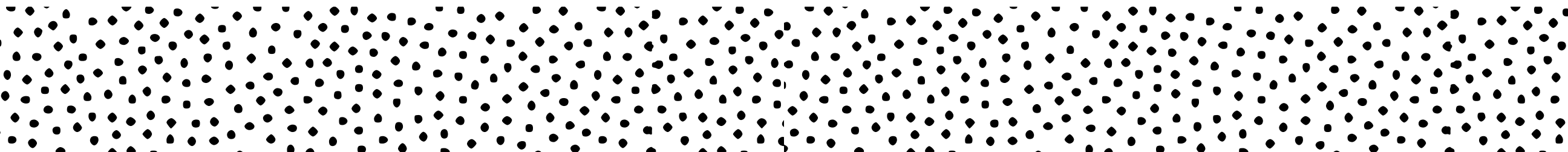
Craig George and caribou biologist Geoff Carol, Lars continued to broaden his perspective.

Today, as an integral part of the LEO Network, Lars leverages this platform to understand Alaska from the unique viewpoints of a kayaker and a skier. LEO Network provides a space for individuals like Lars to share their observations and build connections across the globe and within agencies like NOAA and ANTHC.

“The LEO Network presents a tool and a community to help me better understand Alaska.” Lars’s journey underscores the importance of individuals like him who bridge the gap between adventure and environmental stewardship. Join the LEO Network today, and become part of this exciting journey where adventure meets environmental observation.

.....

**Lars Flora is a two-time Olympian**, Founder of Skiku, and holds a One Health Masters from University of Alaska Fairbanks. Today he works at ANTHC for the LEO Network. For questions about LEO, observations, and submitting items, contact Lars at [lflora@anthc.org](mailto:lflora@anthc.org) or Rebekah Arnold at [rarnold@alaskapacific.edu](mailto:rarnold@alaskapacific.edu)



It is a bright, sunny day. The sounds of chirping birds blend with the joyful laughter of children playing outside. It's on a day like this that I sat with Edda Mutter, the Science Director for the Yukon River Inter-Tribal Watershed Council (YRITWC). Together, we embarked on a journey into the heart of the Yukon and Kuskokwim Watersheds, delving into their hidden secrets within the permafrost and exploring the transformative work of the environmental change-makers at the YRITWC.

### **The Birth of Stewards and Our Shared Journey.**

Long before I met with Edda, the story began with tribal leaders from across the watershed gathering to discuss the state of the land. This watershed, an area of land that channels rainfall, snowmelt, and runoff into the Yukon River or Kwig'pak, is the longest, free flowing river in the world and is home to the longest inland salmon run. These leaders along the watershed found they were each driven by a shared commitment to safeguard their home's natural resources and took on the role as stewards. From this group, the YRITWC was born. And it wasn't an overnight success; it was a labor of love, forged through unwavering dedication and a common goal—to protect and preserve this great river.

The YRITWC's activities are continual and change with the seasons, engaging in backhaul to remove over 100 years of solid waste from rivers and lakes, assessing landfills, and monitoring water quality. And the quest goes deeper than just routine tasks. They're on a mission to answer some vital questions whose answers will have real impacts. How do changing rivers affect subsistence? How does shifting water quality and ion chemistry impact ecosystems? And they have set a strategic goal: make the Yukon River water safe to drink within 50 years.

### **ION 2.0 Unveiled and Nature's Secrets Revealed.**

Imagine a basket woven together with grass from different banks along each inlet and estuary the Yukon River feeds. Each blade adds to the strength and resilience of the basket, each blade tells a different story of a time and of a place. ION 2.0 unearths that story. Guided by the YRITWC in collaboration with the University of Alaska Fairbanks, ION 2.0 adds a new layer to monitoring water quality—it also monitors the changes in permafrost depth due to the thawing of the active layer at their monitoring sites.

ION (Indigenous Observation Network) has been a witness to nature's secrets, revealing long-term changes in major ion chemistry driven by the thawing permafrost. Water quality and permafrost data are pieces of a puzzle that will form a comprehensive model. This model will

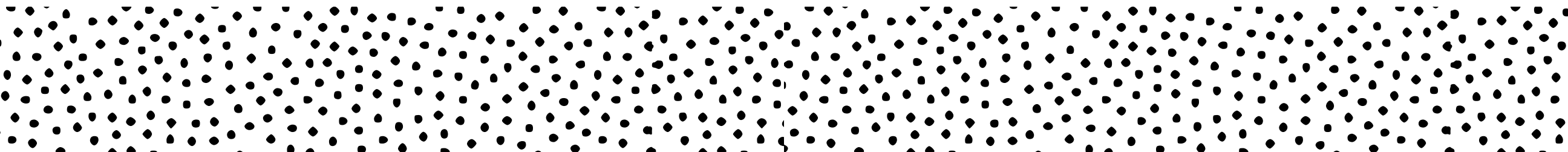
help researchers to interpret the intricate chemistry of the Yukon River watershed. It isn't just about data, though. ION was created with sharing knowledge with Indigenous communities in mind, creating paths toward empowerment through training and analysis.

### **Tales of a Changing Watershed and The Dance of Water Chemistry.**

Water is a dancer, telling the ever-evolving story of the Yukon River. The beat ebbs and flows with rain and snowmelt. Changes to the land and changes in its temperatures have had profound impacts on chemical composition and oxygen levels which in turn impact salmon and other critical food sources wrapped up in the dancer's story. Other documented changes include soaring peak temperatures and alterations in permafrost depth. "The river smells different," Edda remembers an elder telling her. This sparks a profound discussion about water chemistry.

In the center of the Yukon River, the YRITWC and ION 2.0 are working to keep the dance alive. Their efforts are adding to a wealth of knowledge about the river, unraveling its role in the livelihoods and cultural tapestry of the people, and leading as experts in the field.

.....  
**To embark** on your own journey of discovery, visit YRITWC's website at: [yritwc.org](http://yritwc.org). For a deeper dive into the project's abstract, set sail to: [nna-co.org/research/projects](http://nna-co.org/research/projects) and search for "NNA Collaborative Research Indigenous Observation Network 2.0."







“I like to see that what I’m doing is just the maintenance of the ancient relationships my ancestors have developed and built with our nunaat, or homelands, and with our wild relatives,” she says. “They worked so very hard to make systems of care [and] reciprocity that are built into our subsistence lifeways.”

Her artwork aims to capture that same balance. “What drives me is being fed from the land and then turning around and recognizing that gift and making it into something tangible through carved work,” she says. “We belong to our homelands, not the other way around.”

Erin Ggaadimits Ivalu Gingrich is an interdisciplinary artist whose work reflects her place in the North. Her photography mimics Arctic light, with high contrast and blue tones. Her carvings represent Alaska wildlife like natchiq (seal), asiaq (berry) or tatirgak (sandhill crane). Her beadwork further connects her art to her Indigenous identity.

# Erin Ginrich

Ivalu is Koyukon Denaa and Iñupiaq and comes from a family of artists, qaspeq-makers, skin sewers, painters, and beaders. She was born in Fairbanks, moved to Galena on the Yukon River, and graduated from high school in Anchorage. Along the way, she visited grandparents on the tundra in Nome and her grandmother in the rainforests of Southeast. It was a gift to experience so many regions of Alaska at a young age and witness “the biodiversity of our beautiful homelands here,” she says.

“All of these beautiful places really have affected my understanding of our wild resources and the things that feed us and keep us here in the North.”

She carried that perspective to college at University of Alaska Fairbanks, where she originally studied wildlife biology. Alongside her science classes, she also took classes at the Native Arts Center. It’s where she first started carving. One class led to another, and she decided to switch her focus to art. Ivalu graduated from UAF with a Bachelor of Fine Arts in 2014.

Her background in biology remains a clear influence on her carvings, though. Ivalu’s pieces begin as a single piece of basswood which she carves into familiar forms, like otter, salmon, or caribou.

She paints each carving and attaches beadwork, adding an Indigenous adornment to her wild relatives. The beads represent a form of care, she says. “I’ve always been covered in beads, and so I cover my sculpture in beads in the same way,” she notes. Strands of beads hang from the eyes, ears, and mouths of the sculptures. She often carves salmon with their heads removed, then hangs strands of blood-red beads from their bodies to represent the “beautiful reality of subsistence work,” she says. Processing fish is messy, but there’s beauty in the experience and the connection.

Ivalu’s career as an artist has accelerated since graduating from UAF. She’s had solo shows in Fairbanks, Anchorage, and Homer and contributed to galleries in New York, New Mexico, Washington, and Quebec. Several museums have purchased her artwork, including the Anchorage Museum, the Rhode Island School of Design Museum, and the Institute of American Indian Arts. Her pieces are currently on view at the Anchorage Museum through Sept. 16, 2024, as part of the “How to Survive” exhibition. In addition, she returned to school and will graduate with a Master of Fine Arts degree from the Institute of American Indian Arts in 2024.

.....  
**This has been** the busiest year of her life, but she’s grateful for the opportunities to share her carvings and her culture.

## NNA-CO Education and Outreach: Research Experience for Undergraduates

.....

This year, 4 undergraduate students from Alaska worked with NNA-funded research mentors and a community partner on research projects through an online undergraduate research experience program through the Cooperative Institute for Research in Environmental Sciences. The students' research aligns with the science the research mentors are conducting in the Arctic but also focuses on science that benefits Arctic communities. The students are currently working to develop a presentation about their findings that they will showcase this fall.

One of the REU students, Jasmine Perea grew up in Seward, Alaska, and graduated from Alaska Pacific University this past April with a B.S. in Environmental Public Health. We recently asked Jasmine a few questions.

### Why did you apply for this REU program?

I wanted to expand my experience in research, in particular research that focuses on integrating Indigenous Knowledge and Western Science methods, or two-eyed seeing.

### What experience led you to your research project?

Our team has been working with Elder Roswell Schaeffer of Kotzebue. Ross has talked about continuing a way of life that our ancestors survived on and fought to keep. He told us about the history of his community and what he is nervous about for the future. Alaska Native Villages have been experiencing climate change at the forefront of what is happening. This inspired me to think about how Indigenous knowledge or experience helps us better understand the effects of climate change. Laura (Landrum; research mentor) studies sea ice and changes in sea ice. I have used conversations with Ross and recorded interviews with other elders in Kotzebue on Project Jukebox to create a visual timeline of change. I pulled out the dates and observations from the interviews to pinpoint changes or differences in sea ice and how it has decreased over time.

### What has surprised you the most about this research experience?

The first week of this program, we talked a lot about observations and what we can learn from observations. It has really shifted the way that I think about what "counts" as scientific data. I now think much more "outside the box" of Western science. We can use Indigenous knowledge as the basis for research. Observations can create a story or message that helps us to understand a thing.

## By: Alyse Thurber and Jasmine Perea Research Experience for Undergraduates A NNA-CO Education & Outreach Program

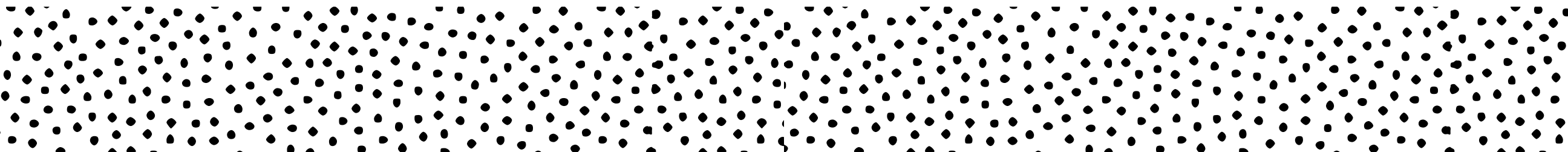
.....

### Is there anything you want the next generation to know?

It is important for youth to understand that there isn't one specific route you are supposed to go. As an at-risk Indigenous youth I never thought I could be a scientist, but I found mentors who believed in me and Elders who spoke very wise words of encouragement. Youth should look to elders. Elders have wisdom. You should foster those relationships with elders to make changes and grow as a community so you can pass down knowledge our ancestors fought hard to keep.

Jasmine plans to attend The University of Kansas for an engineering program where she will continue work on efficient anaerobic digestion of wastewater. Her long term goal is to return to Alaska to set up efficient wastewater systems that are sustainable for Alaska Native Villages.

.....  
**To learn more** about the Education and Outreach team at the NNA-CO, visit: [nna-co.org/index.php/strategic-objectives/education-and-outreach](https://nna-co.org/index.php/strategic-objectives/education-and-outreach) (nna-co.org, under the Focus Areas dropdown, click on Education and Outreach.)







Nasugraq Rainey Hopson  
© 2010

# Recipe

.....

## Nikoosh Carlo's Salmon Dip

### Ingredients

1 half-pint canned or jarred salmon, drained and flaked  
1-2 stalks celery, small dice  
3 small petite kosher dill pickles or pepperoncini peppers, small dice  
1-2 tablespoon yellow or dijon mustard  
1 tablespoon extra virgin olive oil  
Salt and pepper to taste  
WASA gluten free crackers, rice crackers, hard rye crackers, or pilot bread  
Fresh dill or parsley

### Directions

1. Drain, flake, and check for bones in the canned salmon.
2. Place into a bowl and add the diced celery and dill pickles. Mix well.
3. Start with 1 tablespoon each of mustard and extra virgin olive oil and add more depending on how well the salmon is sticking together (look for a tuna salad consistency).
4. Salt and pepper to taste.
5. Serve with your favorite cracker or bread.
6. Garnish with fresh dill or parsley.



## Nikki Pollock's Salmon Chowder

### Ingredients

½ lbs salt pork or bacon, cut into ½ inch pieces  
1 tablespoon water  
1 medium onion, finely chopped (~8 oz)  
2 large ribs celery, finely chopped (~6 oz)  
Kosher salt and freshly ground black pepper to taste  
2 tablespoons all-purpose flour  
1 cup bottled clam juice  
1 quart whole milk  
1 pound Russet or Yukon Gold potatoes, peeled and cut into ½ inch cubes  
1 bay leaf  
¾-1 lb boneless, skinless fish scraps, such as jarred or filet salmon, cut into ¾ inch chunks  
Minced fresh herbs such as parsley, dill, or chives  
Crackers for serving

### Directions

1. Cook the bacon in a pan, separate.
2. In a large soup pot, mix all the rest of the ingredients together over medium heat, about 40 minutes. Top chowder with bacon. Enjoy.

## Nikki Pollock's Salmon Spread

### Mix together

1 jar fish  
18 oz cream cheese  
1 can Rotel Diced Tomatoes & Green Chilies OR salsa  
Eat with saltine or Ritz crackers



**NNA Photo Contest Spotlight:  
Anna Lena Bercht**

.....



Photo by: Anna Lena Bercht





**Team Member Spotlight:  
Indigenous Advisory Board**

.....



**Nikoosh Carlo**  
**Advisory Boards Lead & Co-Chair**  
**nikoosh.carlo@gmail.com**

Dr. Nikoosh Carlo (Co-PI) is Koyukon Athabascan, CEO of CNC North Consulting, and the co-chair of the NNA-CO advisory boards. In this role she will lead the boards in ensuring the work of the NNA-CO is grounded in our guiding principles and that the boards' guidance is integrated into NNA-CO activities. As the founder and chief strategist of CNC North Consulting, Dr. Carlo, helps clients develop a vision for their climate change and Arctic priorities and build momentum to achieve change. She has worked across political divides for State Senators, Ambassadors, and Governors on issues of Arctic governance. Her true passion is working with organizations that support climate change equity, and the well-being of Arctic residents and Indigenous peoples.



**Mellisa Maktuayaq Johnson**  
**Board Co-Chair**

Mellisa Maktuayaq Johnson is Inupiaq born and raised from Nome, Alaska. As a tribal member of Nome Eskimo Community, Mellisa has a strong passion for protecting, respecting, advocating and maintaining traditional Indigenous ways of life. Inspired by Elders, community members, and her family, Mellisa works to share with others the importance of maintaining culture and heritage in language revitalization efforts, climate advocacy, and incorporation of Indigenous knowledge into different systems. She previously worked as Executive Director with Bering Sea Elders Group (2018-2022), has sixteen years experience with tribal health, and currently works with the Arctic-Yukon-Kuskokwim Tribal Consortium as Government Affairs/Policy Director and also with the University of Alaska Anchorage Alaska Native Studies department as Adjunct Professor in Inupiatun, the language of the Inupiat. She holds a Bachelor's degree in Health Services Administration with a minor in Human Services from Alaska Pacific University and is also a United States Air Force veteran.

**Team Member Spotlight:  
Indigenous Advisory Board Cont.**

.....



**Malinda Chase - Board Member**

Malinda Chase is an enrolled tribal member of Anvik, a Deg Hit'an Dene' village, located in Alaska's interior region, at the confluence of the Yukon and Anvik Rivers. She works as the Tribal Resilience Liaison for the Alaska Climate Adaptation Science Center, in partnership with the Aleutians Pribilof Islands Association, to support tribes in their self-determined efforts in addressing climate change. This role is affiliated with the national BIA Tribal Climate Resilience Program. Throughout her work life, Malinda is fortunate to work closely with Alaska Indigenous communities, prominent Alaska Native Elders and talented Alaska Native educators in tribal and community planning and Indigenous initiatives that perpetuate and share Alaska Native knowledge, beliefs and strength.



**Liza Mack - Board Member**

Dr. Liza Mack is the Transportation and Village Infrastructure Protection Program Manager at the Denali Commission. The Denali Commission is a grant-making Federal agency that is dedicated to building and maintaining infrastructure in Rural Alaska. Prior to joining the Commission, Liza served as the Executive Director of the Aleut International Association, a non-profit organization that represents Unangan (Aleut people) at the Arctic Council. Dr. Mack is Unangax, born and raised in King Cove, a small village at the end of the Alaska Peninsula. She graduated with her PhD in Indigenous Studies from the University of Alaska Fairbanks in 2019. Her research focused on political ecology, natural resource management, knowledge transfer, and engagement of Native communities in the regulatory process. Dr. Mack has over 20 years of experience working in and around Indigenous organizations and communities. She has an A.A. in Liberal Arts from the University of Alaska Sitka, a B.A., and M.S. in Anthropology from Idaho State University. She lives and works in Anchorage with her son on the homelands of the Dena'ina People.

**Team Member Spotlight:  
Indigenous Advisory Board Cont.**

.....



**Gunn-Britt Retter - Board Member**

Ms Gunn-Britt Retter lives in the coastal Saami community Unjárga-Nesseby in north-eastern Norway. She is a teacher of training from Sámi University of Applied Sciences and holds MA in Bilingual studies from University of Wales. Since 2001, Retter has worked with Arctic Environmental issues, first at Arctic Council Indigenous Peoples' Secretariat (IPS) and since 2005 in the present position as Head of Arctic and Environmental Unit of the Saami Council. Retter has been involved in issues related to Indigenous Peoples and knowledge associated with climate change, biodiversity, language, pollution and management of natural resources, both at Arctic and International levels.



**Lisa Ellanna - Board Member**

Lisa Ellanna is Inupiaq from Nome, Alaska. Lisa is a life-long learner and strives in her work to understand the present and historical context of the communities she serves. Lisa is a JD candidate with the Mitchell Hamline school of law, and an MA candidate with the University of Alaska Fairbanks. Lisa values gathering natural foods and plant medicines and learning from her Elders.

**Upcoming Events:  
[nna-co.org/index.php/upcoming-events](http://nna-co.org/index.php/upcoming-events)**

.....

**February 15, 2024 | 12:00-1:30pm AKT, 2:00-3:30pm MT**  
Communicating science to policy: Writing policy briefs on why your science matters. Click Session 2 registration [www.nna-co.org/upcoming-events](http://www.nna-co.org/upcoming-events).

**February 2, 2024 and February 9, 2024 | 9:00am-12:30pm AKT, 11:00am-2:30pm MT**  
Indigenous Evaluation Virtual Workshop. Honoring Reconciliation in Evaluation: Wearingan Indigenous Evaluation Lens, parts 1 & 2. Sign up here. [www.nna-co.org/upcoming-events](http://www.nna-co.org/upcoming-events)

**February 2024 (Exact date/time TBD)**  
Science Storytelling Series  
Crafting Story Maps

**March 5-7, 2024 | Washington, DC**  
2024 NNA Annual Community Meeting

Non-NNA-CO events:  
  
Alaska Forum on the Environment: [www.akforum.org](http://www.akforum.org)  
  
These events are not exhaustive of events that serve communities and researchers. Up to date NNA-CO events can be found at: [www.nna-co.org](http://www.nna-co.org) under the Events tab,  
  
IARPC events at: [www.iarpccollaborations.org](http://www.iarpccollaborations.org) under the Events tab  
ARCUS events at: [www.arcus.org/meetings](http://www.arcus.org/meetings)  
  
If you wish to share upcoming meetings with the NNA-CO, please contact: [jlewisnicori@alaskapacific.edu](mailto:jlewisnicori@alaskapacific.edu) or [www.contact@nna-co.org](http://www.contact@nna-co.org)

## Resources

.....

NNA-CO's website has resources that you can browse! Learn more about NNA-CO, the team, the Advisory Boards, our guiding principles, Co-production of Knowledge, Convergence Research, the Arctic Together Podcast, the Nuna Zine, and more! Visit: [www.nna-co.org](http://www.nna-co.org) and browse the drop-down menus, which include an NNA Projects Database, the CAP Portal, and more.

For questions about the website, email: [contact@nna-co.org](mailto:contact@nna-co.org)

## Credits

A big thank you to contributors and editors of this second edition! Your writing, stories, and shared experiences show heart in communication and research, and that with many great minds, we can move toward an Arctic that is sustainable and resilient! If you would like to contribute to the next Zine article, please contact the editors! We look forward to hearing from you and sharing your story in the next article.

With gratitude, the NNA Community Extension Office at Alaska Pacific University.



## Contributors

.....



**Alyse Thurber**, NNA-CO Education and Outreach Associate, and Jasmine Perea, REU participant and recent graduate of APU. Authors: Education & Outreach Highlight - Research Experience for Undergraduate Students Featuring Jasmine Perea (pg 24)



**Leah Corbin**, Soil Health Production Coordinator for Alaska Pacific University. Editor: Tamamta (All of Us) (pg 14)



**Lars Flora**, Local Environment Observers Network Program Administrator. Editor: Local Environment Observers (LEO) Network - Salmon Observations & Lars Flora Highlight (pg 18)



**J. Besl**, writer. Author: Artist Feature: Erin Ggadimits Ivalu Gingrich (pg 22)



**Kelly Marciales**, Alaska Pacific University's Kellogg Campus Manager. Editor: Local Environment Observers (LEO) Network - Salmon Observations & Lars Flora Highlight (pg 18) and Impacts of Environmental Change on the Yukon and Kuskokwim Watersheds - Indigenous Observation Network 2.0 (pg 20)





**NUNA**

*Arctic together.*