INUIT

INUIT CIRCUMPOLAR COUNCIL-ALASKA

ALASKAN INUIT FOOD SECURITY CONCEPTUAL FRAMEWORK:
HOW TO ASSESS THE ARCTIC FROM AN INUIT PERSPECTIVE

SUMMARY AND RECOMMENDATIONS REPORT

PUBLISHER PAGE

All information and concepts within this report are the product of a collaborative effort among 146 contributing authors (all Indigenous Knowledge (IK) holders), the project's Food Security Advisory Committee and the Inuit Circumpolar Council-Alaska. This project has been managed and facilitated by the Inuit Circumpolar Council-Alaska's Indigenous Knowledge/Science Advisor Carolina Behe. The final report was prepared by Carolina Behe in collaboration with the project's Food Security Advisory Committee members and contributing authors. Information and concepts from this report should be cited as: Inuit Circumpolar Council-Alaska 2015. Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic From an Inuit Perspective: Summary Report and Recommendations Report. Anchorage, AK.

This report and associated materials can be downloaded for free at iccalaska.org.

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Photo courtesy of Jacki Cleveland

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"Food is a lifeline to the community."

"All of the plants, all of the animals, the water, the air, the land is all of what we are. … It is who we are. This is our understanding. People making decisions have a different understanding."

"It is all connected. … You cannot know what is happening within a community, without knowing what is happening to the seal, or the ice. …"

"The ice connects us all. … Upriver to the coast."

"We have a duty and responsibility to take care of what is around us. When we no longer use these things, they are no longer available."

"If we don't take care of our food to share with widows and Elders that cannot hunt, we will lose it all."

"There are so many regulations up here, and we have our own regulations. To come in here with disregard (our regulations) is not right. They need to work with us under our laws and our culture. When outside agencies don't work with us, they are breaking our rules/laws. Our knowledge pre-dates them."

"We should have the right to take care of ourselves."

"How can we let the state (Alaska) or feds (federal government) know that we are capable of regulating our food source?"

"The animals are searching for food, just like we are."

"When you look at the value of food, there is a spiritual connection. … This connection is to respect our life, land, water and animals. This is a big part. Think of the respect for our animals and how they are handled and how there are feasts for our first catch and how women handle the preservation. … This is all done with respect."

All quotes provided by contributing authors during semi-directive interviews, community meetings, and/or regional food security workshops.

"Without whales where would we be? We would be nothing."
"Without seals we would be nothing."
"Without fish we are nothing."

"I want my son to have that first catch, to be able to give to the Elders, to become a provider."

"Emmonak is a slough leading to the Bering Sea. This is one little river that has been drastically altered due to the increase in beaver. This one little river is of huge importance to the people of Emmonak [village]. When the lakes overflow, little streams are made that lead to the river. This is how Imangaq (Can'giiq) [black fish] make their way into the river to lay its eggs."

"Here, Imangaq are very important to us, and when a child first catches their first Imangaq, they give it to their Elders. They know of sharing, of respect, of who they are."

"The beavers have put dams all the way along the river. They are controlling the water pulls and controlling where fresh water comes in, impacting where the Imangaq lay its eggs.

The beaver has come in and changed the migration and cut off all the fish, the white fish, the pike, and so on. This is also killing the trees. Because the plants and trees that line the river are being flooded out or not being fed. In this area there was once many, many rabbits, but no more, because they have no food. The ptarmigan also used to live off of this food, and they are no longer there. The renewable resources that have been there for many years are no longer there."

"The beavers are increasing across the coastline. Their predators are forgotten. We no longer hunt them for their fur. We no longer have a right to choose what we hunt and how to use the parts of animals. When we lost the beaver fur market, the era of food stamps came in and the role of man changed."

"All of this is important, but I don't see anything changing unless the nations change their behavior first. With all of the stuff going into the atmosphere, it is becoming too warm. Our berries are cooking around the village and becoming skimpy. Our food sources are becoming inconsistent."

"Tradition and culture is important from the very beginning that we come into this world. We start with a month of celebrating. We gather and share. This is part of our religion, our spirituality. It [gathering, processing, storing, sharing, consuming food] is our religion. We have to do it. We must continue. It is a culture we have to pass from generation to generation. We need it without interference from outside."

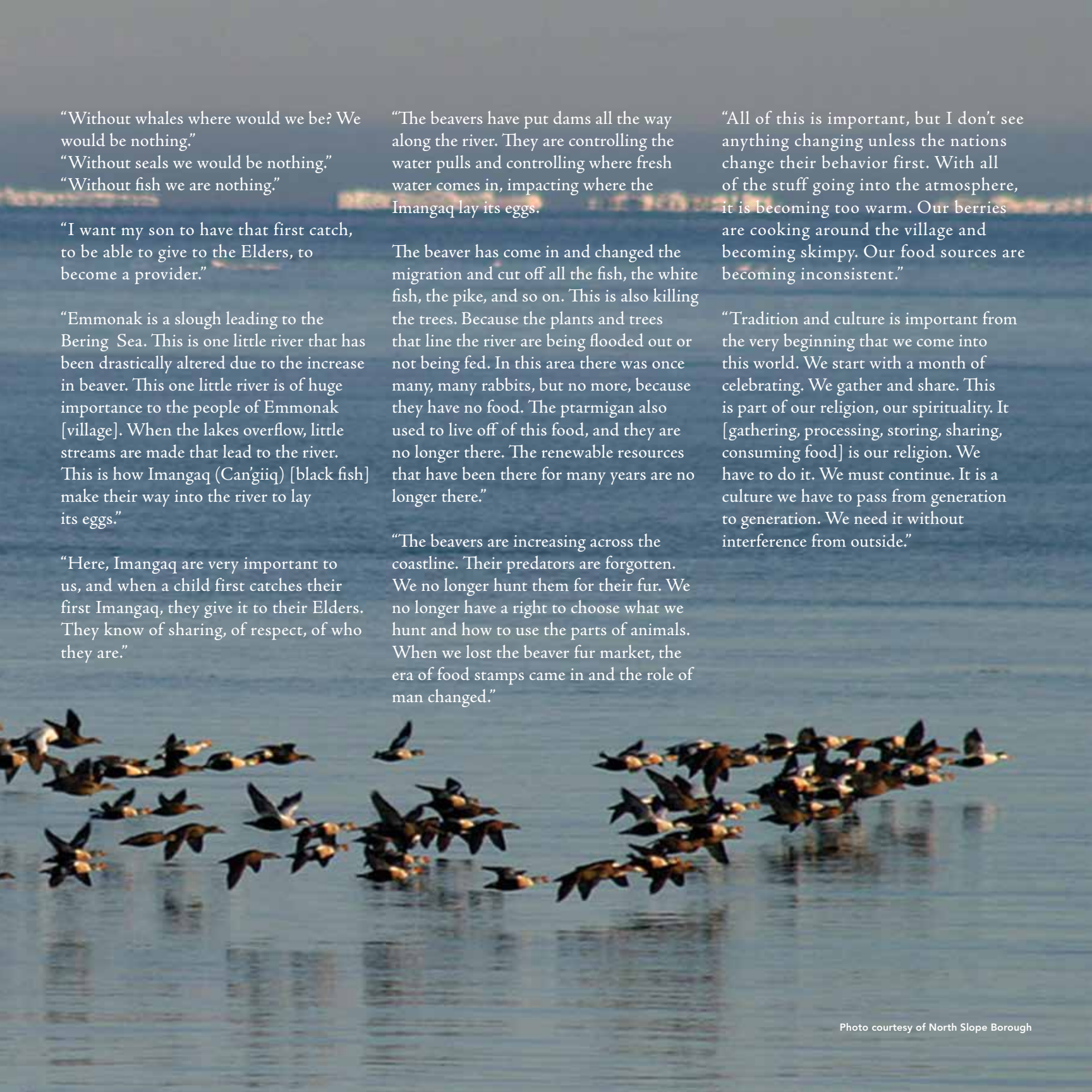


Photo courtesy of North Slope Borough

EXECUTIVE SUMMARY

Drastic changes are occurring within our world. We are on the forefront of these changes. We have lived here for millennia and have grown and changed with all that is around us. All that is around us physically and spiritually nourishes us, and our culture reflects the Arctic because we are part of this ecosystem.

With these rapid changes comes the need for holistic information based on Indigenous Knowledge (IK) and science. With this understanding, we brought our concerns regarding the impact of Arctic changes on our food security to forums throughout the Arctic. Through these conversations, it quickly became evident that we were referring to something different than those we were holding the discussions with.

We have often heard people within academia, policy and management speak to us of nutritional value, calories and money needed to purchase food. All of this is important, but not what we are talking about when we say food security. We are speaking about the entire Arctic ecosystem and the relationships between all components within; we are talking about how our language teaches us when, where and how to obtain, process, store and consume food; we are talking about the importance of dancing and potlucks to share foods and how our economic system is tied to this; we are talking about our rights to govern how we obtain, process, store and consume food; about our IK and how it will aid in illuminating the changes that are occurring. We are talking about what food security means to us, to our people, to our environment and how we see this environment; we are talking about our culture.

From the realization that we need to fully share what our food security means within the Alaska Arctic, this project was born. There has been a lot of positive work completed and ongoing to increase academic and governmental understanding of food security. The outcomes of this project come directly from us, Alaskan Inuit, to share what our food security is, how to assess changes occurring and how to move forward in a way that will strengthen our food security.

The objectives for the project were clear from the beginning – define food security, identify what the drivers (or causes) of food (in)security are, create a conceptual framework and provide an assessment process to determine Alaskan Inuit food security. What resulted is something much more. As we came together through community meetings, one-on-one and group interviews, regional workshops and numerous conversations, we realized that the drivers of our food security are all the same and that what make up food security within each of our identities, villages and regions is the same.

A Project Led by Alaskan Inuit

Over a three-and-a-half-year period, a group of IK holders, regional youth representatives and two cultural anthropologists acted as the Food Security Advisory Committee. The Committee guided ICC-Alaska through the development, implementation and analysis of information gathered. The final products of the project are the result of 146 Inuit contributing authors – a title fitting for those who provided all concepts, philosophies and recommendations that have come out of this project.

Photo courtesy of Jacki Cleveland

Defining Alaskan Inuit Food Security

Alaskan Inuit food security is the natural right of all Inuit to be part of the ecosystem, to access food and to care-take, protect and respect all of life, land, water and air. It allows for all Inuit to obtain, process, store and consume sufficient amounts of healthy and nutritious preferred food – foods physically and spiritually craved and needed from the land, air and water, which provide for families and future generations through the practice of Inuit customs and spirituality, languages, knowledge, policies, management practices and self-governance. It includes the responsibility and ability to pass on knowledge to younger generations, the taste of traditional foods rooted in place and season, knowledge of how to safely obtain and prepare traditional foods for medicinal use, clothing, housing, nutrients and, overall, how to be within one's environment. It means understanding that food is a lifeline and a connection between the past and today's self and cultural identity. Inuit food security is characterized by environmental health and is made up of six interconnecting dimensions: 1) Availability, 2) Inuit Culture, 3) Decision-Making Power and Management, 4) Health and Wellness, 5) Stability and 6) Accessibility. This definition holds the understanding that without food sovereignty, food security will not exist.

From here on, this is what we are discussing when we say food security.

Summary and Technical Report

A summary report and technical report have been created from this project. The summary report was created for those who are looking for a quick glimpse at what food security means to us, what it means to apply a food security lens to assessments and recommendations for strengthening food security. For a deeper understanding and more in-depth discussion, a technical report has been created. Within both reports you will find: 1) recommendations, 2) key barriers, 3) the Food Security Conceptual Framework, and 4) drivers of food security and insecurity.

Photo courtesy of Jacki Cleveland

Following the introduction of this report, we present the Alaskan Inuit Food Security Conceptual Framework. The framework is the product of semi-directive interviews and analysis of information conducted through community meetings, regional workshops and at times with assistance of computer software to pull out themes. These themes were further analyzed and evaluated through regional meetings. During this process, IK holders and the project's Food Security Advisory Committee provided continuous guidance, feedback and direct involvement in the development of the conceptual framework. The framework provides an understanding of all the components that make up our food security and further begins to demonstrate the relationships that exist between all that is in the Arctic.

To discuss Alaskan Inuit food security, it is important to understand the connected nature of the Arctic. To aid in illustrating this point, we provide two conceptual maps that demonstrate connectivity, cumulative impacts and shows how to apply a food security lens to understanding the Arctic.

The report ends with recommendations to strengthen different parts of our food security. Additionally, we provide a list of key barriers identified throughout the process of completing this project. The recommendations may include components that are familiar – points that we have made for many years. Through this report, we have another opportunity to express the need for particular actions, to define how we are involved in research, management and policymaking and to lay out what is needed to support our culture and overall food security.

We expect the results of this project to be useful to multiple audiences, such as national decision-makers developing policies and programs to ensure community-level food security and the support of ecosystem resiliency through disturbances; local Indigenous organizations in communicating with outside interests, such as mining companies or environmental organizations; and international institutions, such as the Arctic Council, that are interested in understanding the Arctic and the changes that are occurring. Though this report is the product of Alaskan Inuit, it is hoped that Indigenous Peoples from across the Arctic will find it of use.

Photo courtesy of Malja Lukin


Photo courtesy of Jacki Cleveland

Indigenous Knowledge

Indigenous Knowledge (IK) is a systematic way of thinking applied to phenomena across biological, physical, cultural and spiritual systems. It includes insights based on evidence acquired through direct and long-term experiences and extensive and multigenerational observations, lessons and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation.

Under this definition, IK goes beyond observations and ecological knowledge, offering a unique "way of knowing." This knowledge can identify research needs and be applied to them, which will ultimately inform decision-makers. There is a need to utilize both, Indigenous and scientific knowledge. Both ways of knowing will benefit the people, land and animals within the Arctic.

*Note: Inuit at times may refer to their knowledge as Indigenous Knowledge, Inuit Knowledge or Traditional Knowledge. The definition provided above is understood by ICC to apply to all three terms.

INTRODUCTION

Food security is a term being used more often in research, politics and media to describe the associated consequences of food insecurity and whether a group of people is obtaining enough food. There is a growing appreciation for the complexities of the concept of food security, and the hundreds of definitions developed in the last 40-plus years are evolving to account for this understanding. Today, the multiple food security definitions and assessment mechanisms do not necessarily match the Arctic ecosystem or our culture. For example, most of the world considers food security in terms of purchasing power, nutrients, caloric intake and access to food and a lot of research has concentrated on land use changes in agricultural development. [1]

There is a deep connection between our Alaskan Inuit food systems and the understanding of the Arctic. We have developed a rich culture, shaped by the dynamic environment in which we live and centered on the obtaining, processing, storing and consumption of Arctic flora and fauna. Traditional foods, such as caribou, waterfowl, salmon, seal, salmonberries and sura (diamond-leaf willow), provide spiritual, cultural and traditional values, shelter, medicines, energy, identity and more. Over time immemorial, the obtaining, processing, storing and consuming of these foods have involved storytelling, dancing, drumming, art, education, language, traditions and ceremonies. All of these components play a part in defining our food security. After all, our traditional foods are much more than calories or nutrients; they are a lifeline throughout our culture and reflect the health of the entire Arctic ecosystem.

The Arctic environment is changing at an unprecedented rate. Where ice and cold temperatures once acted as a barrier, today, shifts in sea ice coverage and thickness, increasing temperatures and other factors are issuing in a new Arctic, one filled with possibilities. How we react to these changes will influence levels of adaptability, resiliency and health in our communities. To understand the rapidly occurring changes, there is a need to apply a food security lens. Doing so will provide a deeper understanding of the interconnections and relationships between all within the Arctic ecosystem and reveal the cumulative impacts occurring.

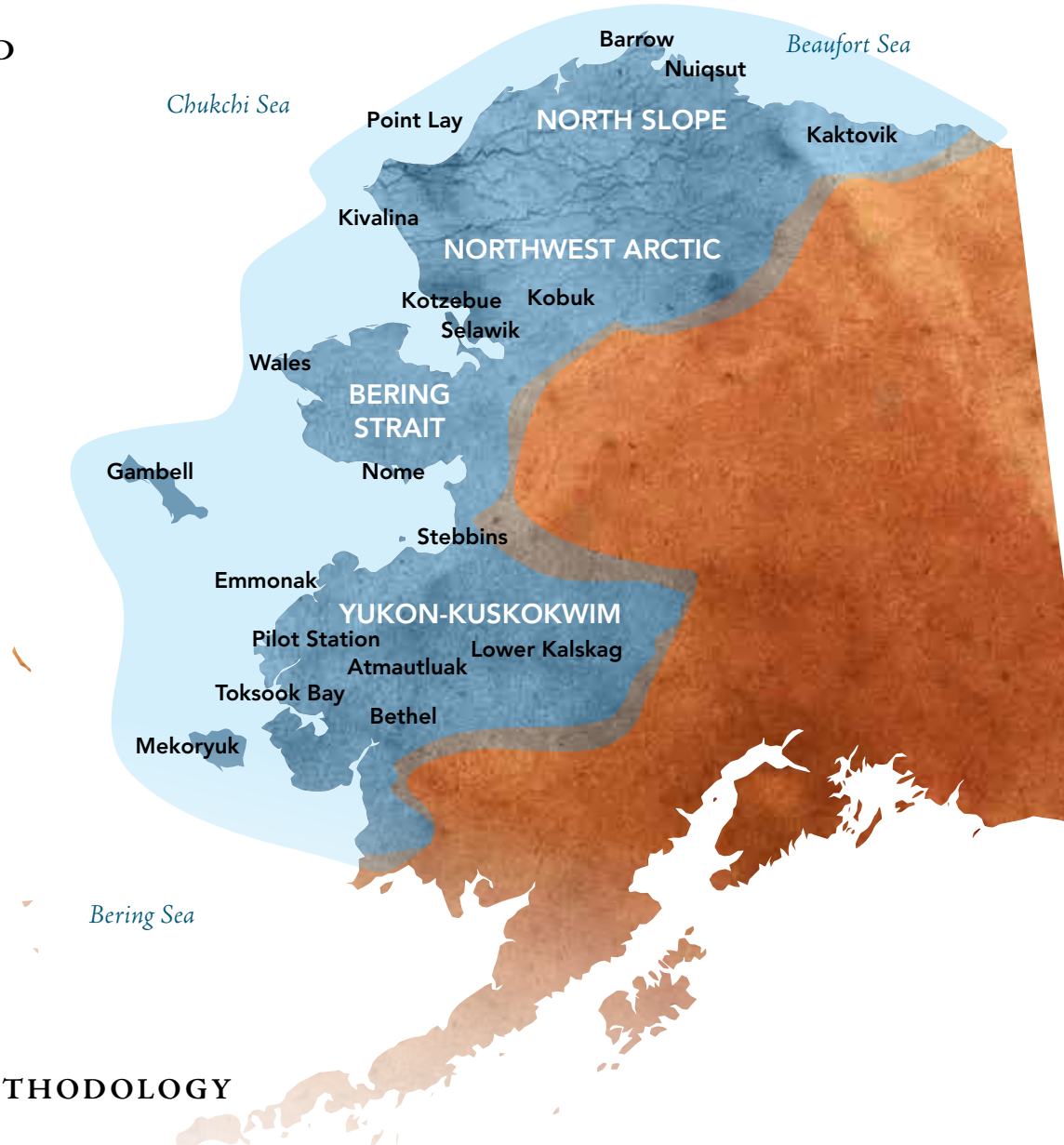
The following summary report focuses on sharing the collective efforts of ICC-Alaska, 146 Inuit contributing authors, an 12-member Food Security Advisory Committee and many other Inuit, who provided input and guidance. Here we aim to illuminate what food (in)security through our way of knowing.

This project has been ongoing for three-and-a-half years. Since the beginning of the project in 2012, the impacts resulting from rapid changes have escalated. Where before we discussed changes that had never seen, today, these changes are persistent, and inconsistency is becoming a new norm. For example, before people mentioned having less meat to dry, and today some have no meat to dry.

There is no time to waste; we must begin to make changes today, not just for the sake of our culture but also for the sake of the entire Arctic ecosystem. Using a food security lens, the tools provided through this project and applying the recommendations will help us be able to make the changes needed.

[1] Today there is a growing number of initiatives that expand upon previous work conducted. For example, work done by the Council of Canadian Academies, Tebtebba Indigenous Peoples' International Centre for Policy Research and Education, Nunavut Food Security Coalition, Alaska Food Policy Council and academic researchers, such as Michael Carolan and Philip Loring, seeks to expand the understaning or address the complexities of food security. This work is important and has a lot to offer. The products of this project come directly from us, Alaskan Inuit, to explain and share our own conclusions and our way of knowing. It is important to also acknowledge that our regional organizations, Kawerak, Inc., Bering Straits Native Corporation, Maniilaq Association, NANA Corporation, Northwest Arctic Borough, North Slope Borough, Inupiat Community of the Arctic Slope, Association of Village Council Presidents, Arctic Slope Regional Corporation and Caslista Corporation have historically all addressed food security through various avenues on a daily basis.

MAP OF VILLAGES VISITED



The four Alaska regions that ICC-Alaska advocates on behalf of and the 15 villages and hub communities visited throughout this project.

SUMMARY OF PROJECT METHODOLOGY

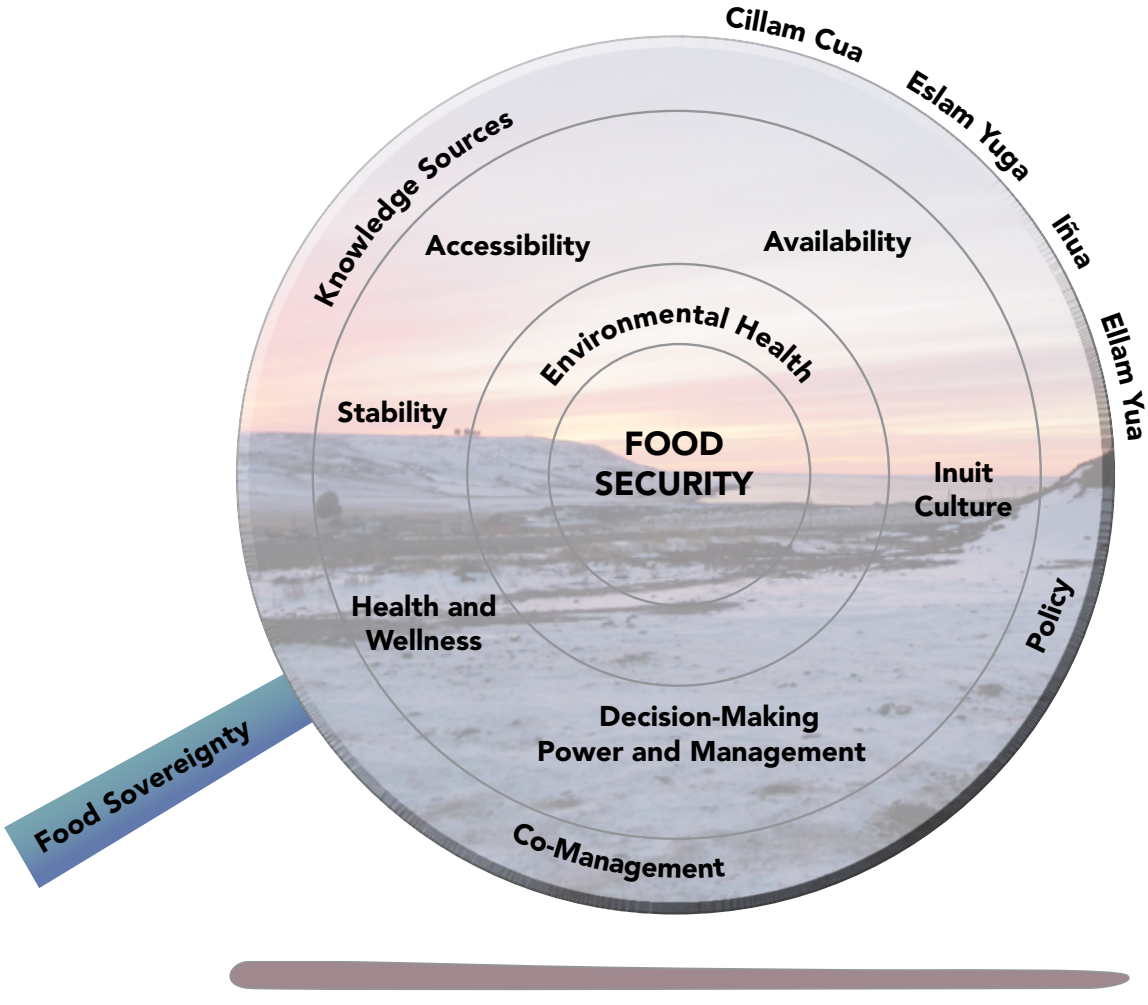
Since July 2012, ICC-Alaska has visited 15 Alaskan Inuit villages to collect information from IK holders on the topic of food security through semi-directive interviews and community meetings. The information gathered was then compiled and analyzed to obtain a greater understanding of food security and to identify drivers of food security and insecurity. Preliminary findings from the interviews were presented at four regional workshops held in Barrow, Kotzebue, Nome and Bethel. The workshops were part of the evaluation and validation process. Those attending the workshop (chosen by their respective Tribal Councils), analyzed, validated and approved information that had been provided by IK holders within villages. Additionally, they offered information that had been missing and provided further guidance on what needed to be communicated through this project. This process followed an IK methodology. Additional information on the project methodology and IK is in the project technical report.

Photo courtesy of Jacki Cleveland

UNDERSTANDING ALASKAN INUIT FOOD SECURITY

The Alaskan Inuit food security definition is provided on page 5. The definition states that food security is characterized by environmental health. We understand the Arctic environment to encompass all. As an Elder explains, the Arctic environment is like a puzzle, with all pieces having a place and all pieces necessary to make up the entire picture. These pieces include Inuit languages, retention of IK, animal health, oceans and rivers, etc. This description of the environment helps explain how the Arctic ecosystem is made up of multiple parts. Scientists may also understand this explanation in terms of systems. Each puzzle piece can be envisioned as a system that together makes up the entire ecosystem. The Inuit culture is a system within this larger ecosystem, just as the hydrologic system is part of the same ecosystem. And just as the Arctic ice system is interlinked within that system, so is the Inuit culture interconnected with all aspects of the larger ecosystem.

Figure 1. Image of Arctic interlinking puzzle pieces. (**systems**). *Note that the puzzle pieces may have multiple systems nested within one piece and that all demonstrate an interlinking between social and natural phenomena.*



ALASKAN INUIT FOOD SECURITY CONCEPTUAL FRAMEWORK

The development of a conceptual framework provides a platform for understanding the pieces that make up the Arctic ecosystem and the interconnections between the many pieces that make up food security. The framework provides direction for what information is needed and how to interpret that information in order to assess food security.

The conceptual framework is provided through an image of a drum and explains that food security is characterized by environmental health; environmental health is achieved with the stability of six dimensions: 1) Availability, 2) Inuit Culture, 3) Decision-Making Power and Management, 4) Health and Wellness, 5) Stability and 6) Accessibility. Three tools support the stability of the six dimensions: policy, knowledge sources[2] and co-management. All of this is held together by the spirit of everything[3] (Cillam Cua, Eslam Yuga, Iñua and Ellam Yua). The drum is held up by food sovereignty – a requirement for food security.

[2] Both IK and science are needed.

[3] The spirit of all spoken in all four of our languages. Cillam Cua is from the Cup'ik language, Eslam Yuga is from the St. Lawrence Island Yupik language, Iñua is from the Iñupiaq language and Ellam Yua is from the Yup'ik language.

The six dimensions of food security are defined as follows:

Inuit Culture – Food is the cornerstone of our culture and self- and shared identity. Harvesting of traditional foods is how cultural values, skills and spirituality are learned – this is how all learn to be within their environments and to be part of the ecosystem. The relationship between Inuit and all else that makes up the Arctic environment aids in the maintenance of cultural and environmental integrity.

Availability – The ability of the Arctic ecosystem to maintain a high variety of life (biodiversity), allowing adequate transfer of nutrients and energy. It is the knowledge of seasons and how to collect, process, store and consume traditional foods, allowing for Inuit to eat what has been gathered from the previous season and harvest a variety of medicines.

Accessibility – The ability to live off the land, ocean and air and to obtain sufficient access to a diverse source of healthy food, water, animals, plants, fish, ice, etc. The ability to maintain Inuit traditional economic practices, such as trading, sharing and providing foods and medicines. It is the ability to access and maintain an economic system based on cash in connection to an Inuit traditional economic system. It is the ability to obtain skills, tools and technologies needed to collect, process and store traditional foods.

Health and Wellness – Physical health of all life within the Arctic and of the land, water and air; adequate passage and absorption of nutrients throughout the Arctic ecosystem; mental health related to community and household relations and self- and cultural identity; environmental integrity and productivity to withstand pollution, habitat destruction and other disturbances.

Stability – The ability of the puzzle pieces (systems) to adjust to each other as shifts within the ecosystem occur. The ability to maintain sustainability through the management of human actions that support and ensure younger generations will have sufficient healthy food to harvest and that all pieces of the puzzle maintain connected. Stability is obtained through a level of Alaskan Inuit mental security and is in reference to the legal protections for the environment against harm caused by pollutants. Mental security is also in reference to legal protection against forced assimilation, which allows for the maintenance of a level of cultural confidence and hope.

Decision-Making Power and Management – The Alaskan Inuit ability to use and value IK to manage daily activities; to build and rely on self-governance across space and time; for Alaskan Inuit to use their knowledge system in synergy with other knowledge systems, such as Western science, to equitably manage human activities within the Arctic environment and to better understand changes occurring; to apply holistic knowledge to understanding the Arctic environment through IK philosophies and methodologies; to manage activities within the Arctic in a way that ensures younger generations will have healthy and nutritious foods to harvest; for Alaskan Inuit to have control over their own fate and to use their cultural value system.

Food Sovereignty – The right of Alaskan Inuit to define their own hunting, gathering, fishing, land and water policies; the right to define what is sustainable, socially, economically and culturally appropriate for the distribution of food and to maintain ecological health; the right to obtain and maintain practices that ensure access to tools needed to obtain, process, store and consume traditional foods. Within the Alaskan Inuit Food Security Conceptual Framework, food sovereignty[4] is a necessity to supporting and maintaining the six dimensions of food security.

[4] The food sovereignty definition presented here accounts for all points identified by Alaskan Inuit and has been adapted from the definition written by Hamm and Bellows in First Nations Development Institute's Food Sovereignty Assessment Tool, 2004 and in addition to the definition provided in the Declaration of Nyéléni (2007).

DRIVERS OF FOOD (IN)SECURITY

The conceptual framework aids us in seeing the underlying issues. We describe these issues as drivers. The term driver is used to communicate actions, components or causes of food (in)security because they are pushing food security in a particular direction. The six dimensions of food security are made up of a total of 58 drivers (Behe, 2013. Inuit Circumpolar Council-Alaska). Below the drivers are linked to food security (FS), food insecurity (FI) or both.

Inuit Culture

1. Value of food (FS)
2. Spirituality (FS)
3. Language and terminology (FS)
4. Education and transfer of knowledge (FS)
5. Sharing systems (FS)
6. Respect (FS)
7. Celebrations, games and feasts (FS)
8. Social interaction (FS)
9. Dance, art and music (FS)
10. Self- and cultural identity (FS)
11. Clothing and tools (FS)
12. Maintaining Inuit leadership and knowledge holders (FS)
13. How to be within the environment (cosmology) (FS)
14. Time constraints (FI)
15. Gathering, processing, storing and consuming traditional foods (FS)
16. Physical safety (e.g., navigation skills) (FS)
17. Knowledge of food systems of yesterday and today (FS)
18. Relationship with animals (socio-ecological system) (FS)

Availability

1. Variety – number of different animals and plants in the area (may also be referred to as biodiversity (FS)
2. Knowledge of how to obtain, process, store and consume traditional foods (FS)
3. Knowledge of seasonality – Inuit calendars (FS)
4. Being able to eat what has been gathered from last season (FS)

Decision-Making Power and Management

1. Ability to manage lands, waters and resources (FS)
2. Power dynamics – self-regulation (FS)
3. Perceived and actual reality of control over fate (FS)
4. Strength of co-management structures (FS and FI)
5. Loss of resource benefits and income (FI)
6. Federal and state regulations/jurisdiction (FS and FI)
7. User conflict (FI)
8. Burden of conservation (FI)
9. Increase in competition (FI)
10. Taxation without representation and representation with low understanding of Inuit culture and Inuit ecological regions (FI)
11. Respect for and equality of knowledge systems (IK and science)(FS)
12. Preparedness for large disturbances, such as preparedness for oil and emergency response (FS)
13. Meaningful, equitable involvement in research (FS)
14. Institutional racism (FI)

Health and Wellness

1. Environmental integrity and productivity to withstand pollution (noise and light pollution, garbage, contaminants, wastewater, etc.), erosion, habitat destruction, etc. (FS)
2. Increased vulnerability throughout the food chain (FI)
3. Degradation of healthy food systems and overall health (e.g., increases in chronic diseases such as cancer) (FI)
4. Nutrition – ability to access and absorb (FS)
5. Accessibility to traditional medicines and healers (FS)
6. Accessibility to Western medicine and health care professionals (FS)
7. Landfill system (FS and FI)
8. Sanitation system (FS and FI)
9. Mental health (FS and FI)
10. Housing structures (FS and FI)
11. Mixed diet of traditional and non-traditional foods (FI and FS)

Stability

1. Adapt to changes (FS)
2. Rapid speed of change (FI)
3. Inuit mental security – confidence in the legal protections for the environment from harmful actions, such as those that result from pollution. Legal protection for the Inuit culture against forced assimilation. (FS)
4. Integrity of interconnection systems – marine, terrestrial, cultural, etc. (FS and FI)
5. Change in sea ice thickness, timing of formation and break-up (FI)
6. Hope (FS)

Accessibility

1. Access to traditional territories (FS)
2. Ability to live off the resources of the land, water and air (FS)
3. Economics – (Inuit economy, cash [market] economy, government subsidies (FS and FI)
4. Water sources (e.g., multi-year ice, river ice, etc.) (FS and FI)
5. Access to tools and possessing the ability to access healthy animals, plants, fish, ice, water, etc. (FS)

Most of the drivers of food security may quickly become drivers of food insecurity when not adequately supported. For example, access to traditional territories is a driver of food security. However, lack of access to traditional territories is a driver of food insecurity. There are 37 drivers linked to food security; 11 drivers are directly linked to food insecurity; 10 drivers are linked to either food security or food insecurity.

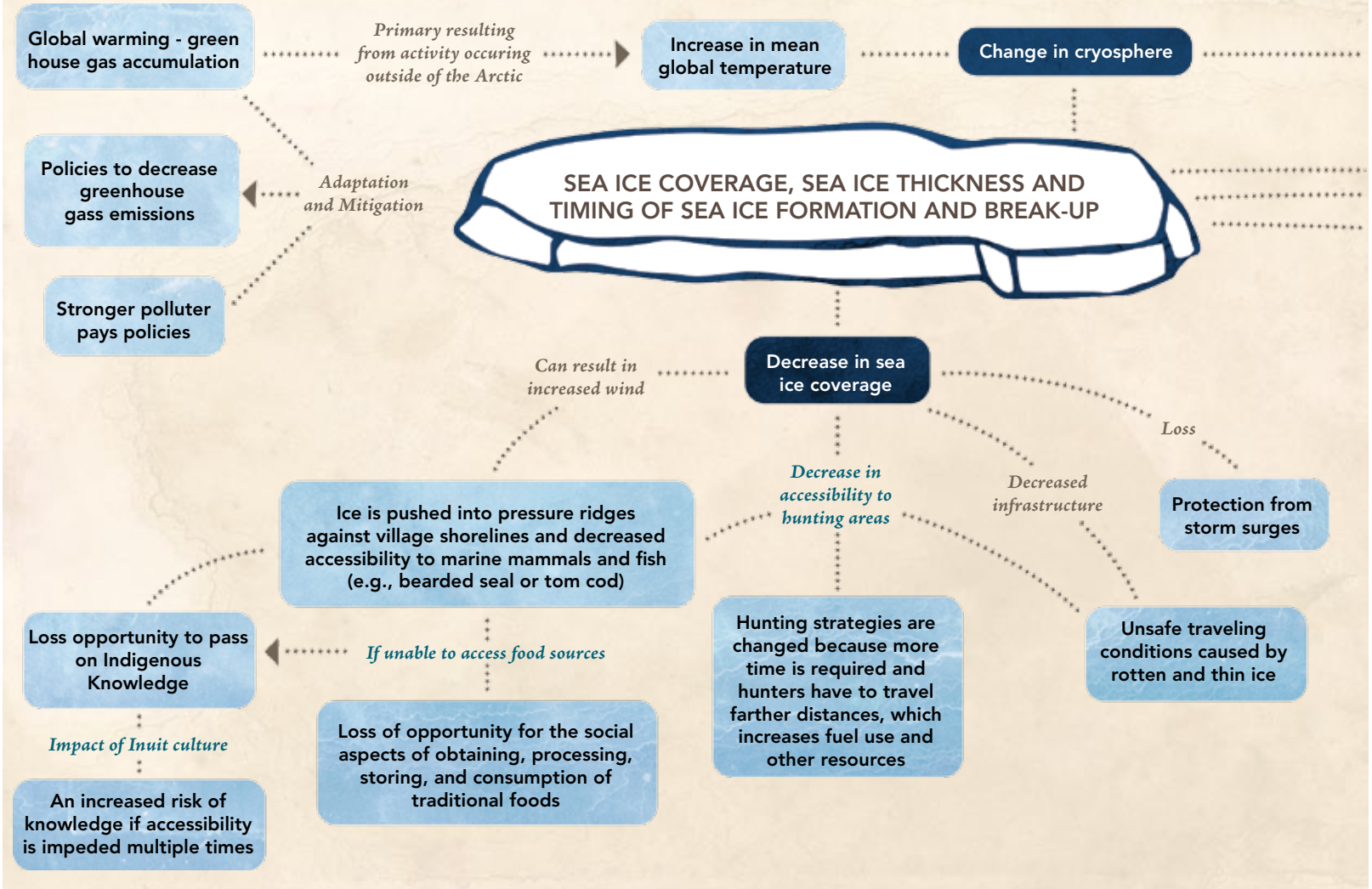
Photo courtesy of Jacki Cleveland

CONNECTIVITY AND CUMULATIVE IMPACTS

The connectivity of all food security dimensions, and subsequently all drivers, are key to understanding the Arctic ecosystems. Within our IK the interconnections of these systems are an indication of resilience to disturbances. It is important to understand the components and resiliency of each dimension. Of equal importance, our IK guides us to look closely at the relationship between the dimensions and between the drivers. This IK methodology allows for a greater understanding of cumulative impacts.

Consider the rapid changes resulting from climate change and the many connections that may need to be considered when determining points of vulnerability. Within the physical world there is a change in sea ice coverage, thickness and timing of formation. There is a decrease in multi-year ice and melting permafrost. Erosion is increasing freshwater lakes and ponds drying up. There is a change in water and atmospheric

Figure 2. Changes in sea ice coverage, thickness and formation: cumulative impacts on interconnected dimensions of food security



temperatures. Many areas are experiencing an increase in shallow waterways, narrowing and widening of streams, change in precipitation rates, an increase in storm surges and an increase in flooding. There are changes in salinity levels, shifts in saltwater lines, changes in ocean micro-current and shifts in sandbars. Many of these changes are interlinked with each other.

These changes in land, air and water contribute to changes in all of life found within the Arctic. For example, shifts in animal migration patterns and shifts in vegetation are occurring as a result to changes in temperatures, salinity levels, precipitation rates, snow coverage, erosion, ice coverage, etc. Such changes require adjustments in gathering, hunting and fishing strategies.

Additionally, we face new dangers as we attempt to navigate through storms, rotting ice, change in sea ice thickness and time of sea ice formation, and an overall shift season (Inuit Circumpolar Council-Alaska. 2014. Bering Strait). Many of these changes began to occur between 15 and 20 years ago. The rate and intensity of these changes have increased in recent years.

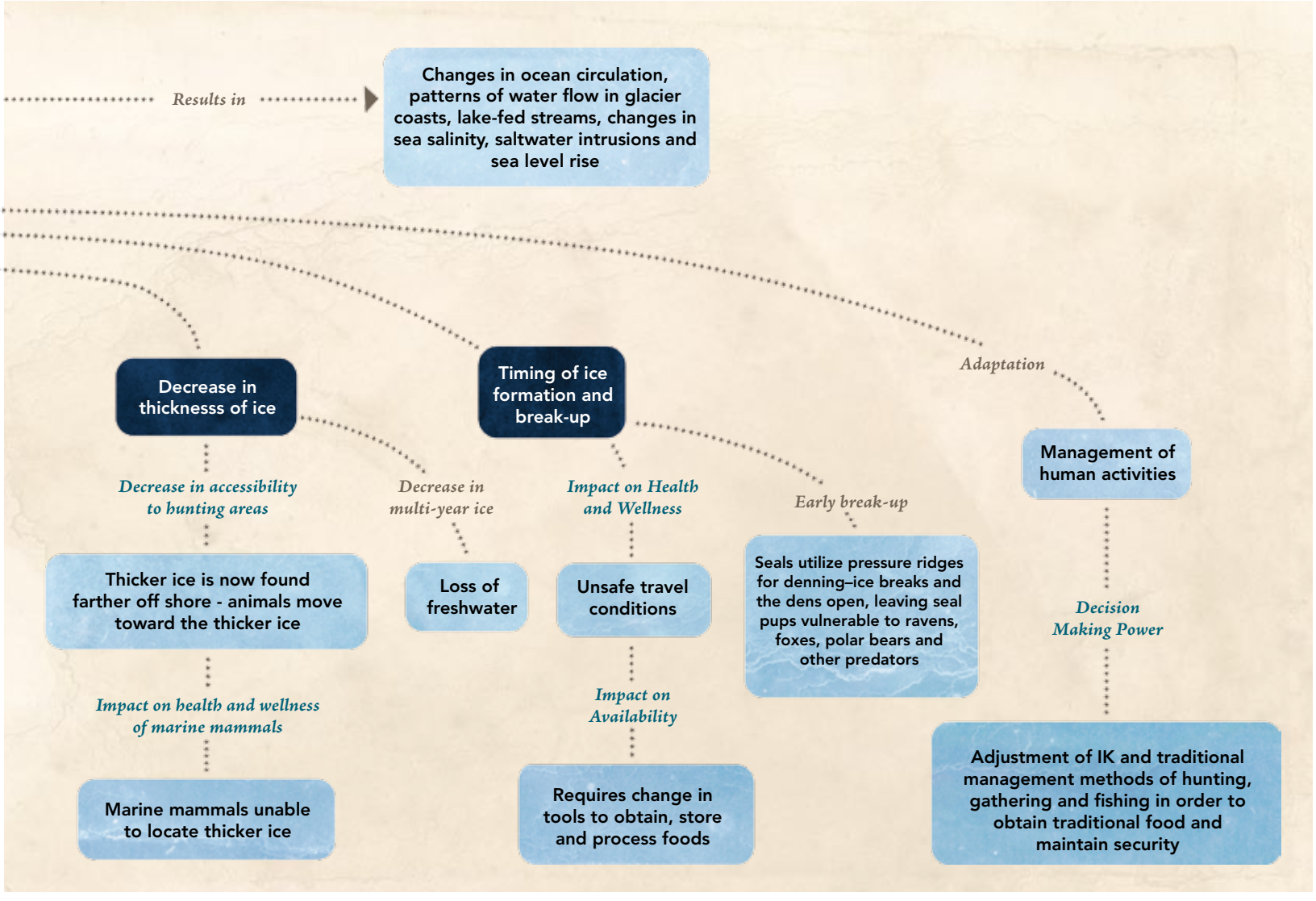


Photo courtesy of North Slope Borough

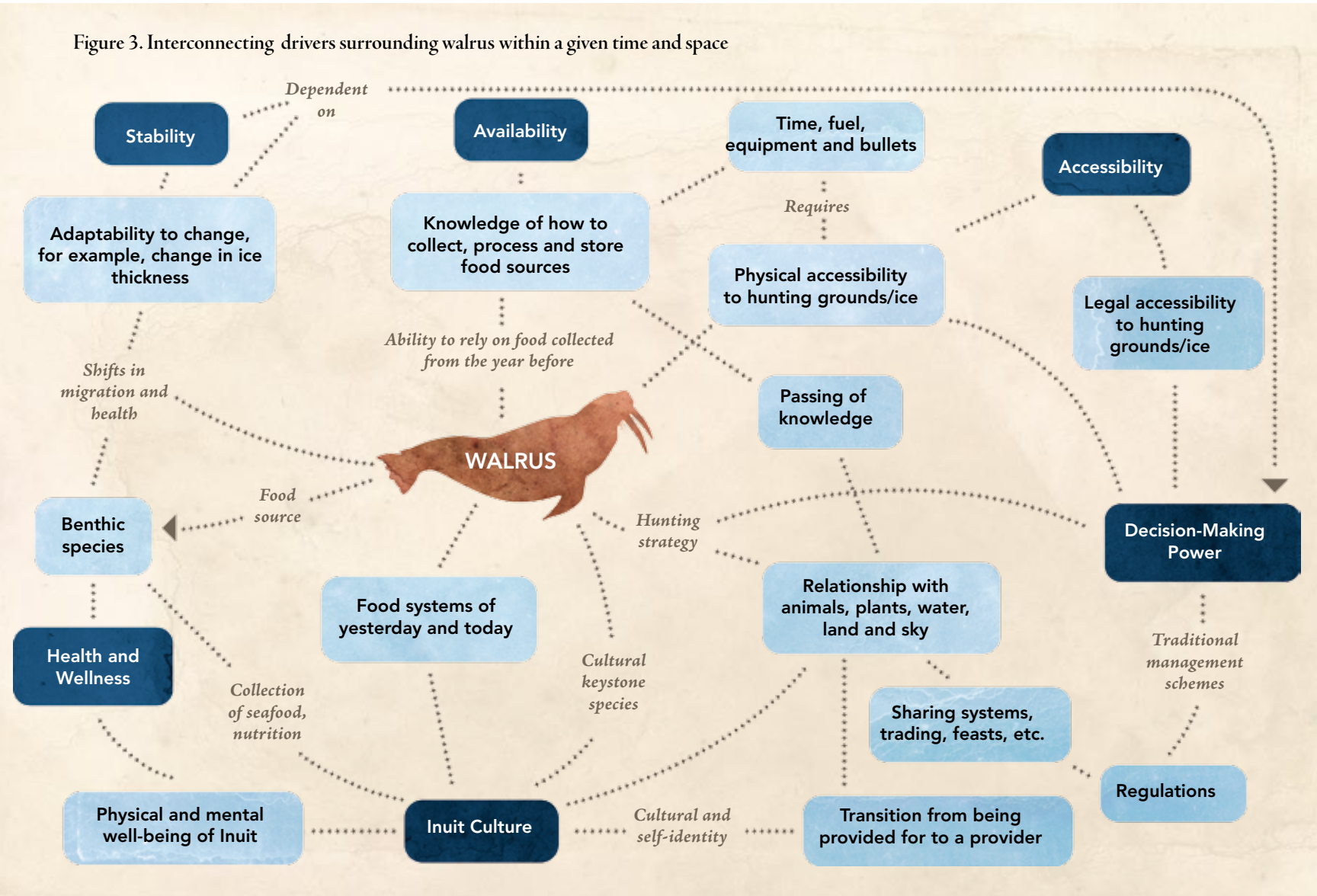
HOW WE SEE THE ALASKAN ARCTIC

In the previous section we stressed the connective nature of the Alaska Arctic. The Food Security Conceptual Framework aids in seeing the connections and cumulative impacts. To further the discussion, consider the relationship between humans and walrus health and sea ice thickness.

There is a strong link between sea ice thickness, walrus location and health; between benthic species distribution and health (a key food source for walrus); between a young person taken out to learn how to hunt for walrus, being taught his language, accessing knowledge from older generations, and providing a first catch to an Elder, becoming a provider. The connection continues between the self- and cultural identity rooted in these practices and sea ice thickness (Behe, 2013). And through the processing of the caught walrus, as community members come together to assist in the processing and storing of the food. Here again, education and language are passed to younger generations as youth learn how to make clothes and art. The feasts, celebrations and games that follow build social cohesion. The connections runs through our economic system and back to our ability to hunt. We rely on parts of this animal to make art. The art created is often sold, and the cash received supports the obtaining, processing and storing of foods through the purchase of items such as, fuel, tools and bullets.

The connections described includes the nutritional and overall physical health of the community. Many of us rely heavily on walrus for physical and spiritual nourishment. The monitoring of these connections helps inform an understanding of the environment, changes that are occurring through cumulative impacts and decision-making.

Figure 3. Interconnecting drivers surrounding walrus within a given time and space



RECOMMENDATIONS

Recommendations generated from this project are meant to inform possible actions that should be taken by Inuit organizations, state and federal agencies, environmental non-governmental organizations, policy-makers, resource managers and all others who engage in the Alaska Arctic. Some recommendations address large-scale changes needed in decisionmaking processes or information needed to build baseline data, while others address issues of inequality. Each recommendation is categorized under baseline data and research needs or under the dimensions and tools that make up the Food Security Conceptual Framework.

There are many positive examples throughout Alaska in which IK holders are engaged in a respectful and positive way, where equitable relationships lie between Inuit and those working with them to better understand the Arctic and address challenges faced today. With these recommendations, we support such relationships and actions and aim to make them the norm as opposed to the exception. All recommendations aim to strengthen food security.

Suggested Actions to Support Assessments, Creation of Baseline Data and Research

- Utilize the Alaskan Inuit Food Security Conceptual Framework to guide development of research questions and projects. Collection of needed baseline data should be generated through scientific and/or IK questions and methodologies.
- Establish a virtual clearinghouse to allow for easy access to previous and current work conducted within a given area. Utilize interoperability tools to establish such a virtual clearinghouse. Close attention will be necessary to review how IK is categorized and accessed to ensure that information is viewed and used under IK philosophies (e.g., avoiding cause and effect singular rationalizations).
- Develop regional research protocols. Protocols may include pathways to generate community-driven research, engagement of Inuit, involvement of Inuit in research activities, such as collection and analysis of information generated, and the development of a regional and/or Alaskan Inuit review board. Through the review board proposed research is reviewed, commented on and approved by Alaskan Inuit.
- Increase understanding of food security through the identification of combined variables. Allow for community-level identification of interconnecting stressors and drivers to identify level of vulnerability.
- Document IK methodologies and evaluation processes, key questions that drive IK decisions and IK monitoring methodologies throughout all six dimensions of food security.
- Document health and wellness indicators based on IK (flora, fauna and social) across scales (those addressing ecosystem, national, regional and community scales).
- Establish ecological baseline data rooted in IK. For example, there is a need to identify highly sensitive ecological areas through IK. Additionally, close attention needs to be given to how such information is categorized and shared.
- Move toward a co-production of knowledge approach, based on the use of both IK and science. Through this approach, IK and science are not translated into each other.
- Develop indicators through a co-production of knowledge approach, based on both IK and science, that cross over both natural and physical phenomena (e.g., identify keystone species important to both cultural and ecological processes).
- Enhance monitoring of pollutants throughout habitats.
- Enhance monitoring programs throughout all Alaskan Inuit communities; enhance monitoring programs based on both IK and scientific methodologies; enhance monitoring programs through the use of modern technology (e.g., recorders, cameras, etc.).

Photo courtesy of Amos Oxercok

Suggested Actions Listed Under the Inuit Culture Dimension of Food Security

Education System/Passage of Knowledge

- Give equal weight to IK within the formal education system.
- Fund Elders to continuously provide IK education within the formal education system.
- Provide traditional foods within formal education institutions.
- Promote the indigenization of education frameworks to more clearly align with Inuit ideologies (ICC-Alaska, 2015).
- Research, advocate for and promote the development, implementation and sharing of culture-based curriculum that focuses on students' identities as Inuit.
- Promote education of Inuit languages.

Sharing Systems

- Support the current Inuit sharing system through subsidizing the transport of traditional foods and medicines between villages, regions and across the state.
- Adopt and support regulations that reflect and account for the sharing of traditional foods and medicines across space.
- Develop community freezers to store traditional foods and medicines. It is suggested that such a program should provide youth with the responsibility of obtaining foods and medicines.

Cultural Activities

- Continue support of cultural activities, such as celebrations, feasts, dancing, drumming, singing and the creation of art through funding of programs that provide a platform for Elders and Youth and for Inuit of differing regions to come together.
- Encourage all within a given area to participate in cultural activities (including non-Inuit).

Suggested Actions Listed Under the Availability Dimension of Food Security.

Focus of the following recommendationsare on obtaining, processing, storing and consumption.

- Support documentation of traditional recipes and preparation processes. Note, such documentation cannot replace being taught by an IK holder and/or actively "doing" to learn but could be used as a tool.
- Support learning how to make tools and utilize flora and fauna to create clothing.
- Aggregate documentation of ways and methods for obtaining, processing and storing all food sources throughout the four Alaskan Inuit regions. Establish community programs for passing on this knowledge and encourage use of knowledge.
- Aggregate documentation of medicinal plants and foods throughout the four Alaskan Inuit regions. Establish community programs for passing on this knowledge and encourage use of knowledge.
- Encourage understanding of Inuit calendars (seasonality) within a given area and associated activities for the obtaining, processing, storing and consumption of traditional foods.
- Adopt and support regulations that reflect and account for the consumption of traditional foods and medicines within education institutions and hospitals.

Suggested Actions Listed Under the Accessibility Dimension of Food Security

- Provide culturally appropriate subsidies that support environmental health (e.g., providing bullets or fuel).
- Increase understanding of change in use patterns and ensure priority of access to traditional areas is maintained.
- Increase communication on potential disturbances, quick shifts in weather and information generated from scientific research within a given area and between scientists, decision-makers and IK holders.
- Document all that impedes accessibility (e.g., policies, limited access to traditional lands and waters, loss of knowledge, lack of economic resources, regulations, etc.).

Suggested Actions Listed Under Health and Wellness Dimension of Food Security

- Develop housing architecture in collaboration with IK holders and focus on cultural and village needs, energy efficiency and ventilation. For example, the University of Alaska Fairbanks Cold Climate Housing Research Center has developed a strong process for working with Alaskan Inuit communities through a participatory approach.
- Determine the location of sanitation systems and landfills in collaboration with IK holders.
- Continue to monitor contaminants associated with sanitation and landfill systems.
- Monitor flora and fauna using both IK and scientific methodologies.
- Implement an active communication of pollutants system.
- Mitigate persistent organic pollutants (POPs) and other contaminants generated from outside the Arctic but that have an impact on Arctic ecosystems.
- Develop indicators of health and wellness throughout an entire ecosystem as defined by IK holders.

Suggested Actions Listed Under Stability Dimension of Food Security

- Use the food security conceptual framework as a guide to document current and future impacts of increasing ship traffic in the Arctic.
- Support research focused on gaining a stronger understanding of the changes occurring within the physical elements of the ocean in association with changes in food web dynamics.
- Allow for flexible policies. There is a need for ecosystem-based policies and IK management utilization to support adaptability and the health of the ecosystem.
- Support and encourage an increased understanding of socio-ecological systems to provide a greater understanding of how to support the health of all within the Alaska Arctic.

Suggested Actions Listed Under the Decision-Making Power and Management Dimension of Food Security

- Document Alaskan Inuit traditional management practices across space and time. The following are two examples of Inuit traditional management practices that may be documented. In one region, five villages within a given area meet once a year to develop maps of the area and discuss potential safety needs and changes in hunting strategies. In another region, Elders from three villages come together to discuss and analyze information and decide on beluga hunting strategies for a given year.
- Create an Inuit food security board to address vulnerabilities identified through the drivers of food (in)security.
- In collaboration with Inuit, develop federal and state flexible regulations that are able to account for shifts in the environment, such as a shift in animal distribution or early ice break up.

Suggested Actions Listed Under Tools That Support the Six Dimensions of Food Security

Policy

- Adopt policies that recognize the connective nature of the Arctic and cumulative impacts within the Arctic.
- Involve IK holders directly in the interpretation of current policies.
- Review types of protected areas utilized by Indigenous Peoples to safeguard their food sovereignty and identify what practices may be utilized within Alaska air, land and waters.
- Uphold state and federal regulations that identify subsistence activities as a top priority. For example, obtaining salmon for food is a top priority, second only to escapement goals.
- Adopt policies and practices for the avoidance of expropriating Inuit food sources.

Co-Management

- Investigate co-management structures of other Inuit countries to determine practices that may strengthen co-management.
- Increase IK holder input to decide what information is needed to make management decisions.
- Increase equality of IK within co-management bodies through the increased involvement of IK holders throughout all processes.
- Support the building of Inuit capacity to demonstrate the applicability of IK and allowing for equal footing in managing and developing policies for Arctic resources.
- Integrate strategic planning based on information generated through IK and science.

Knowledge Sources

- Recognize IK as a systematic way of knowing with multiple methodologies.
- Base decisions on the best available information generated from both IK and science.
- Involve IK holders in the identification of questions, research methods and analysis of information.
- Adopt a co-production of knowledge approach to gathering information through research.
- Develop protocols for the storage and ethical use of information derived from IK holders to ensure that intellectual and cultural property rights are maintained.
- Increase networking capability across Inuit organizations to allow for information to be easily shared and used.

BARRIERS

Fourteen key barriers that are limiting the understanding of the Arctic ecosystem and addressing food security were identified.

- Little synergy of information generated from natural and social sciences.
- Limited sharing of available scientific data with Inuit communities.
- Need for community-managed and accessible information from IK holders and/or scientific data.
- There is a lack of infrastructure and tools that allow for the sharing and analysis of information derived from community monitoring (based on IK and/or science) between Inuit organizations across villages, regions and the other Inuit countries.
- Need for a methodology and/or process to assess Alaskan Inuit food security.
- There is little attention given to connectivity and cumulative impacts in current assessment processes.
- There is little use or understanding of IK methodologies and evaluation processes outside of Indigenous communities.
- Current scientific research demonstrates limited understanding of socio-ecological systems.
- Research that only takes a scientific approach. Such research is commonly focused on the identification of singular attributes based on specific hypotheses and vulnerabilities and/or is centered on cause and effect correlation.
- There is little documentation of indicators of health and wellness throughout an entire ecosystem as defined by IK holders.
- There is a lack of Inuit-initiated and -defined research

protocols, Inuit research approval processes and Inuit guidelines to ethics in research.

- There is a lack of tools that support the ethical use of information derived from IK holders to ensure that intellectual and cultural property rights are maintained.
- There is a lack of tools to ensure that information generated from IK is appropriately categorized.
- There is a lack of biological and ecological significant areas defined by IK.
- There is a need to increase meaningful engagement with IK holders within national environmental reviews, such as environmental impact assessments, allowing for the time and resources needed to collect information through IK processes.

CONCLUSION

The Food Security Conceptual Framework aids us in sharing what our food security is by identifying the underlying drivers of food (in)security and stresses the importance of connectivity. Our IK guides us to understand the importance of relationships among the pieces that make up the Alaska Arctic in order to see the environment through a holistic lens (Inuit Circumpolar Council-Alaska. 2014. Bering Strait). By applying a holistic lens, we take a food security approach to monitoring and gathering information and understanding this environment.

The state of our food security today holds both encouraging and concerning points. The decision-making power and management dimension of food security is unstable within Alaska and is directly influencing the strength of all other dimensions. We are lacking in our ability to make daily adaptive decisions due to policies, regulations and other intervening factors. On the other hand, food security drivers are still working to maintain the wellbeing of our people. Many of these drivers are found within the Inuit Culture dimension of food security. For example, there is a large focus on the use and preservation of our languages; sharing systems are evolving to account for new tools needed to acquire traditional foods; education programs are being developed to provide an increased use of IK and engagement with Elders to support the transfer of IK; ways of obtaining, processing, storing and consuming traditional foods, feasts, games, celebrations, and dances continue on.

In taking the lead in defining our food security, identifying the drivers of food (in)security, creating a conceptual framework and outlining a food security assessment process we are taking a step toward food sovereignty. With this step we aim to increase communication between scientists and our communities, the involvement of our IK and provide the best information to carry out adaptive ecosystem-based management.

The Alaska Arctic is our home. Our food defines who we are. We need to make the commitment collectively to fight for food security.

Photo courtesy of Jacki Cleveland

GLOSSARY

Baseline - Reference for measurable quantities from which an alternative outcome can be measured, e.g., a non-intervention scenario used as a reference in the analysis of intervention scenarios (IPCC, 2007).

Biodiversity - The total diversity of all organisms and ecosystems at various spatial scales (from genes to entire biomes) (IPCC, 2007).

Conceptual Framework - A tool used for organizing and representing knowledge (Flavel, Miller & Miller, 2002) and allows for a mental grouping of different entities into a single category (a concept) on the basis of some underlying similarity.

Co-Production of Knowledge - The collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem (Armitage et al., 2011).

Cosmology - The branch of philosophy dealing with the origin and general structure of the universe with its parts, elements and laws, and especially with such of its characteristics as space, time, causality and freedom (Dictionary.com, 2015).

Disturbance - A large force upon a given area, such as the food security system of the Arctic. Such forces may be large-scale changes within the system of a given area that results in impacts across scales and time. This definition is adapted from the definition of ecological disturbance (Encylopedia Britannica.com, 2015).

Ecosystem - A system of living organisms interacting with each other and their physical environment. The boundaries of what could be called an ecosystem are somewhat arbitrary depending on the focus of interest or study. Thus, the extent of an ecosystem may range from very small spatial scales to, ultimately, the entire Earth (IPCC, 2007).

Erosion - The process of removal and transport of soil and rock by weathering, mass wasting and the action of streams, glaciers, waves, winds and underground water (IPCC, 2007).

Fauna - All the animals that live in a particular area, time period or environment (Merriam-Webster, 2015).

Flora - All the plants that live in a particular area, time, period or environment (Merriam-Webster, 2015).

Food Chain – All the pieces that make up a food system. The Alaskan Inuit food system comprises multiple food chains operating at the global, national and local levels (Dictionary.com, 2015).

Food Insecurity – The Food and Agriculture Organization of the United Nations defines food insecurity as the opposite of food security (Clay, 2002). This is also true for Alaskan Inuit food security. Food insecurity will occur when instability to any of the six dimensions or a combination of overarching drivers results in an accumulation of disturbances.

Food Security Assessment - A tool to identify the areas faced with the greatest vulnerabilities and measures a level of food security. Traditionally food security measurements have been based on ordinal scales (a scale on which data is shown in order of magnitude), such as those to gauge the level of hunger as severe or less severe (FAO, 2003). Within this project, contributing authors discuss what is needed in a food security assessment process that gauges level of strength across an entire ecosystem.

Food Systems – describes all that goes into the production, processing, distributing and consumption of traditional foods. An Inuit food system will be composed of items from the local, natural environment that are culturally acceptable.

Vulnerability – The degree to which a system is susceptible to, or unable to cope with, the adverse effects of change (IPCC, 2007). The IPCC (2012) has since changed the definition of vulnerability to the propensity or predisposition to be adversely affected.

Photo courtesy of Mary Sage

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