

Tanana Chiefs Conference Regional Food Assessment and Recommendations

Prepared for TCC by Agnew::Beck Consulting | September 2021



Photos: Jennifer Probert



Contents

- 1. Introduction 1**
 - Tanana Chiefs Conference and the TCC Region..... 1
 - The TCC Regional Food System Overview..... 2
 - Food Assessment Methodology..... 3
- 2. Assessment..... 4**
 - Subsistence Foods..... 4
 - Subsistence Foods Assessment 6
 - Regional Strengths and Vulnerabilities..... 7
 - Recommendations and Best Practices..... 8
 - Suggested Additional Research and Data Collection..... 8
 - Farming and Local Food Production..... 10
 - Regional Strengths and Vulnerabilities..... 11
 - Recommendations and Best Practices..... 12
 - Suggested Additional Research and Data Collection..... 13
 - Retail and Commercial Food..... 14
 - Regional Strengths and Vulnerabilities..... 14
 - Recommendations and Best Practices..... 15
 - Suggested Additional Research and Data Collection..... 16
 - Institutional Food..... 16
 - Regional Strengths and Vulnerabilities..... 18
 - Recommendations and Best Practices..... 18
 - Suggested Additional Research and Data Collection..... 19
- 3. Conclusions 20**
 - Summary of Key Findings 20
 - Assessment Summary..... 21
 - Priority Actions..... 22
- 4. Bibliography..... 23**
 - Works Cited..... 23
 - Other Resources 24

I. Introduction

A community food assessment offers a unique opportunity to look at the current conditions of an area's food environment. The assessment process includes primary and secondary data sources to establish a context for an area's food availability, quality, affordability, and whether or not the community faces any barriers to eating healthy foods. Understanding the context of food access within a geographic region is a critical step in developing successful policies and programs around health and nutrition.

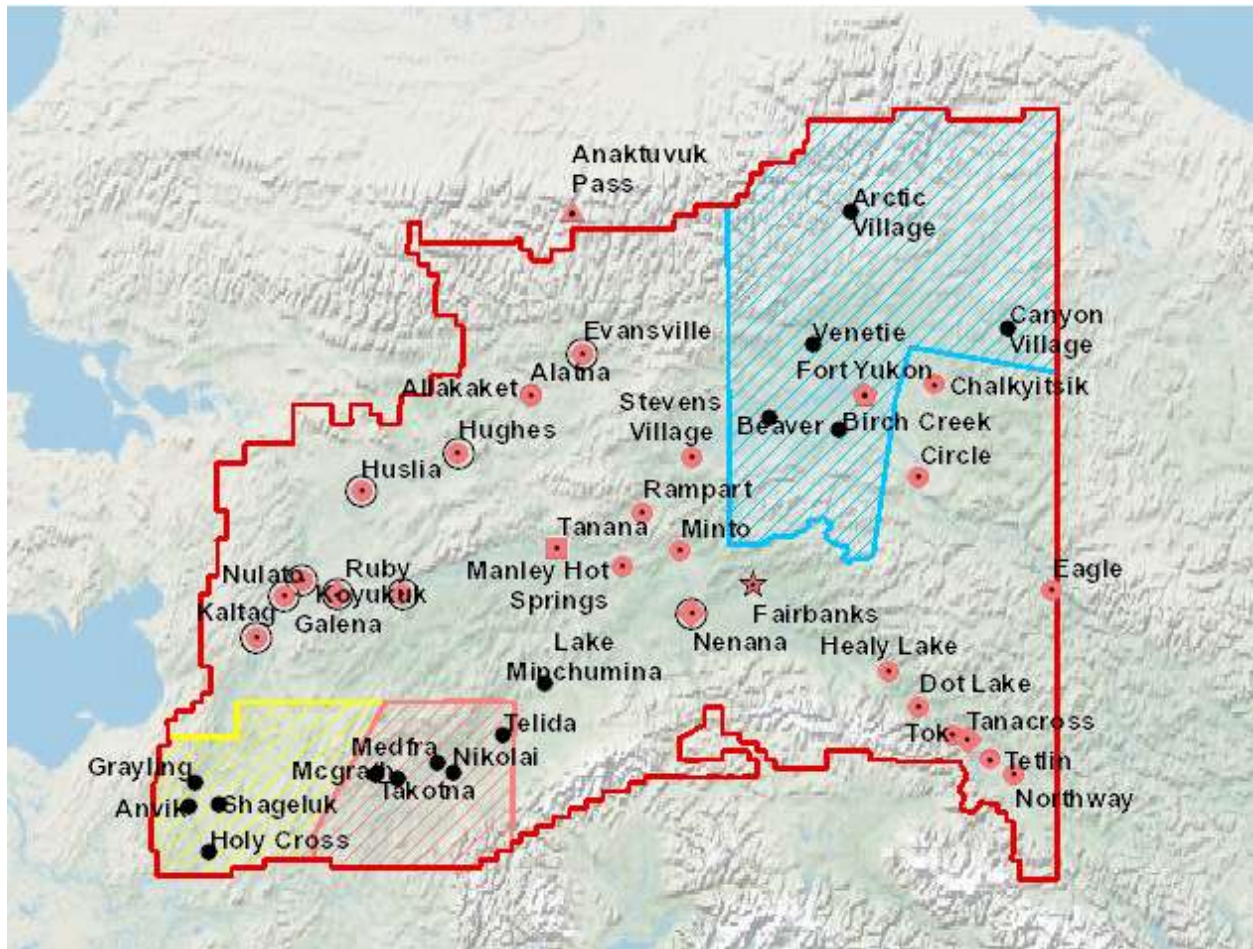
Food assessments offer a number of potential benefits for planners, public health officials, and community champions for improved health outcomes.

- A food assessment process can lead to place-based projects that address the actual needs and desires of residents.
- An assessment can help increase the efficiency of (often limited) funding by highlighting critical food access barriers within the community.
- Assessments have been used in many communities to serve as the foundation for project design and to pilot innovative ideas such as the conversion of vacant lots into community food centers, the creation of mobile markets, or opportunities for community infrastructure improvements.
- A food assessment process can be used to help inform legislators and policy makers about the issues local residents are facing and which investments should be made to promote public health in the communities these leaders serve. By identifying the current conditions of a neighborhood or community environment, one can rally advocates, leverage funding, and lobby for change toward healthier communities.
- A community food assessment can open up opportunities for individuals and residents to increase their access to healthy foods. Healthy food consumption has been linked with many positive benefits including decreased rates of chronic diseases (such as obesity, heart disease and diabetes), increased school performance, decreased medical and insurance costs, as well as longer, more active lifespans.
- Improving access to traditional foods can also improve spiritual, mental, and physical health outcomes and foster a deeper connection with the land, animals, birds, and fish.

Tanana Chiefs Conference and the TCC Region

Tanana Chiefs Conference (TCC), also organized as Dena' Nena' Henash or "Our Land Speaks," is the Alaska Native non-profit that serves the health and social service needs of Tribal members and beneficiaries throughout our region. TCC's region covers an area of roughly 235,000 square miles (about 37 percent of Alaska's landmass); it includes the interior urban hub of Fairbanks and 41 communities, many of which are small interior villages that are not accessible by road system. The TCC region is broken out into six sub-regions, which are often referred to in the administration and implementation of various funding sources and actions. The TCC Region is home to approximately 86,000 individuals, which equates to a very low population density of 0.3 people per square mile (for comparison, Anchorage has a population density of 166 individuals per square mile).

Figure 1. The Tanana Chiefs Conference Region



The TCC Regional Food System Overview

The TCC Regional Food System represents a diversity of communities, each with its own local food environment. As the region's major urban hub, Fairbanks serves as the heart of the regional food system, receiving a majority of the area's shipments of fresh produce and packaged goods from distributors located outside of the region. The greater Fairbanks area is also home to a number of farms that produce and distribute food products to the 41 communities in the TCC region. Outside of Fairbanks, the communities in TCC's region are mostly small, remote villages with food environments that revolve around locally harvested wild foods (generally referred to as 'subsistence foods'), supplemented by limited gardening, small scale farming and store-bought foods that can be shipped to the community through bush orders from grocery retailers or Community Supported Agriculture (CSA) subscriptions. These communities also rely on community institutions and programming to provide food for their youth, elders and general community through sources including school lunch programs, elder nutrition programs, and health care facilities.

It is difficult to assess health of the TCC regional food system as a whole because the data that are currently available are limited, and each community faces a unique set of challenges, whether it be a lack of fresh produce, difficult supply lines or the consumption of unhealthy foods. What *can* be said about the regional food system is that each community relies heavily on subsistence harvests and traditional foods, with the

smaller villages harvesting over 2.1 million pounds of subsistence foods annually¹. Regional food costs are not tracked at the community level. However, according to the 2018 Alaska Food Cost Survey, a family of four in the Fairbanks area spends \$179 per week on food, which is 38 percent greater than the U.S. average of \$129 per week.

Food provided by local institutions (including schools, WIC programs, elder care facilities and other medical providers) is a critical part of the regional food environment. At least 24 schools in the TCC Region qualify for and distribute free and reduced school lunches as part of the National School Lunch Program (NSLP).² The Administration for Community Living provides federal funding through the Older Americans Act (OAA) Title VI Services for Native Americans. In Fiscal Year 2020, these funds supported Elder Nutrition and related programs throughout the TCC service area.



Salmon on crackers. Photo: Jennifer Probert

Food Assessment Methodology

The TCC Regional Food Assessment provides foundational information about the existing conditions of food and food distribution throughout the region. Data and informational sources assessed in this analysis include population-level demographic information, local-level and community-oriented planning documents, statewide subsistence and harvest information, as well as available health data from State and regional programs.

Information related to food security, food affordability, and food access in the TCC region is not widely collected. The data that are available are often outdated by magnitudes of up to twenty years and do not paint a representational image of the food environment today. Because of this data-poor environment, this assessment relies heavily on recommendations for improving the quality of information available, while implementing best practices related to improving access and consumption of healthy and traditional foods. This assessment is intended as a first step toward gaining a deeper understanding of the TCC regional food system and recommends that additional resources be devoted to studying both the quantitative and qualitative conditions of food for the people living in the TCC region.

¹ Data represent an aggregation of annual village subsistence harvests, as reported by the Alaska Department of Fish and Game. Data are not available for all communities and not collected regularly, so there is likely to be a wide margin of error associated with this number.

² Based on information self-reported by schools.

2. Assessment

A Food Systems Assessment provides information about the existing food environment for a particular geographic area or community. A food systems assessment looks at many factors including food security, access, quality, and community food culture. Each of these factors looks different in each community. For instance, in the TCC region, subsistence food practices play a large role in determining food security and food culture; in many places in the Lower 48, subsistence is not a consideration in the food system at all. Below is a short description of each of these factors and contextual information about how each category relates to TCC's overall food system.

Food Security – Defines the health of a local or regional food environment and assesses whether community members have reliable access to foods throughout the year. Food security includes aspects of availability, affordability, quality, and culture.

Food Availability – Represents the wholistic view of food that exists within the community; includes food that is commercially available, locally produced, acquired through subsistence harvests, or is provided through institutional programming.

Food Affordability – Represents the cost of food within a community in relation to the overall purchasing power of its residents. Affordability plays a key role in a community's ability to access and eat healthy foods. A community can have easy access to healthy foods and fresh produce; however, if the prices are unaffordable for most residents, the community may still be facing some degree of food insecurity.

Food Quality – Represents the nutritional value of foods that are available within a community. A community with high food quality has a variety of fresh produce, meats, grains, and other items that help create a balanced diet. A community with low food quality may experience a food environment with many processed foods that have low nutritional value, or it may face challenges when the freshness of produce is lost as it is shipped long distances to reach the community.

Food Culture – The representation of the attitudes, beliefs and practices around food within a community. Food culture defines the community's relationship with food, healthy eating habits and understandings of nutrition as a critical aspect of health.

Understanding these conditions in the TCC region will help advance implementation of programming to help increase the number of people who have access to healthy and traditional foods.

Subsistence Foods

Subsistence ways of life (including hunting, fishing, foraging, food preservation and traditional medicinal practices) are a key element of the food system within the TCC region. A core assumption around subsistence ways of life is that they are generally healthy, centered around fresh and preserved foods (meats, fish, vegetables, and berries), and that they closely align with the traditional practices of the villages in the TCC region.

Table 1. Subsistence Indicators for the TCC Region, 2021

Indicator	Findings	Notes
Percent of households utilizing subsistence ways of life:	Between the years 1987 and 2017 an average of 87% of households used at least some form of subsistence foods. At least 2,000 households throughout the 40 TCC villages utilize some amount of subsistence harvest to supplement their food needs.	The year in which data were collected varies by community. Four of the TCC region communities have no reported data. Because this data has been collected over a long period of time, it is likely that the total harvests and percentage of households using subsistence foods has changed.
Average annual subsistence harvest per capita:	Calculations accounting for village population and subsistence harvest amounts indicate that the per capita subsistence harvest is 335 pounds, averaged from data collected between the years of 1987 and 2017.	Calculations are based on an aggregation of available data from the U.S. Census and the Alaska Department of Fish and Game. Because these numbers represent information from numerous years, they should be used only as a rough estimate of current per capita harvest.
Satisfaction with current household subsistence ways of life:	61% of respondents to the Interior Alaska Communities Harvest Practices Survey (2017) indicated that they were satisfied or very satisfied with the health of their household's traditional practices, while 26% indicated that they were unsatisfied or very unsatisfied.	The survey question asked about perceptions of subsistence ways of life over the last 10 years (2007 to 2017).
Decline of traditional harvest practices:	49% of respondents to the Interior Alaska Communities Harvest Practices Survey indicated that they believed their household's traditional harvest practices have declined or significantly declined over the last 10 years. A 2021 analysis of subsistence activity in Interior Alaska revealed that, of the communities studied, there was a significant decline the total geographic area these communities used for subsistence ways of life. ³	Responses provide a window into understanding the perceptions of traditional subsistence ways of life, indicating that there might be an ongoing decline in subsistence ways of life within interior Alaska Communities.
Impact of Climate Change on Subsistence ways of life:	67% of respondents the Interior Alaska Communities Harvest Practices Survey indicated that climate change is impacting their ability to conduct traditional harvest practices.	Because longitudinal data around subsistence harvests has not been consistently reported, this is perhaps the most important qualitative information around the impact of climate change on the ability for interior Alaska communities to continue traditional harvest practices. It should also be noted that climate change impacts are variable by geographic location, and some changes in the ecology may coincide with climate changes without being directly caused by them (i.e., correlation of climate change and ecological change does not necessarily indicate causation).

³ Contemporary and historical spatial data for subsistence use areas was analyzed for 11 communities in Interior Alaska, including the following communities in the TCC Region: Alatna and Allakaket, Evansville, Beaver, Dot Lake, Fort Yukon, Hughes, Minto, Nenana, Northway, Tanana and Tok. The highlight of this analysis is that the historical use subsistence areas are larger than the contemporary use areas with the exceptions of Nenana and Northway. *Nuefeld, Et. All, 2021.*

Subsistence Foods Assessment

Subsistence foods are a vital part of the TCC food environment and represent one of the most affordable and reliable ways for community members to access a wide array of healthy and traditional foods. Subsistence ways of life are a vital part of building food security in TCC's villages. By integrating more subsistence foods into their diets, residents may be able to decrease overall household food costs and ensure that more of their food is healthy and consistent with traditional diets for the region.⁴

1. **Food Affordability** – Every community in the TCC region benefits from subsistence ways of living that reduce the need to purchase non-local foods. Costs associated with harvesting, processing, and storing subsistence foods are mitigated by the overall food security benefit of being able to harvest and store locally available wild foods.
2. **Food Availability** – Subsistence ways of life directly increase the amount of available food within a village and the region as a whole. Food preservation and storage practices can increase the overall availability of subsistence foods outside of harvest seasons.
3. **Food Quality** – Numerous studies of dietary health in Alaska indicate the health implications of subsistence-based food consumption. Traditional foods are, on balance, of a higher quality than readily available packaged foods. Subsistence based foods provide a significant amount of nutrients to the diets of rural Alaskan populations and have been shown to have a correlative effect at reducing the incidences of chronic diseases and cancer for Alaska Native populations.
4. **Food Culture** – Subsistence ways of life and the presence of traditional foods in regional diets represent perhaps the single most important aspect of supporting a healthy food culture in the TCC Region villages. Participating in the harvest, processing and preparation of traditional foods can reinforce indigenous culture as well as healthier individual food choices in residents' day-to-day eating habits.



Kids pulling a setnet. Photo: Jennifer Probert

⁴ Calculating the costs and cost savings of subsistence ways of life is difficult to precisely calculate at the regional level. Hunting and fishing equipment, food preservation materials and storage considerations all have associated costs that vary widely based on the quality and demands being put on the gear.

Regional Strengths and Vulnerabilities

- Communities in the TCC region have a rich and continuing history of subsistence ways of life that are positively affecting residents today.
- Based on subsistence data collected from 1987 to 2017, per capita subsistence harvests amount to 335 pounds annually. This is a considerable amount of fresh food entering the food system for TCC communities, although some percentage of this amount will be subsistence harvests not intended for human consumption, such as chum/dog fish⁵.
- Legal and regulatory regulations for key subsistence activities (e.g., hunting, trapping, and fishing) may affect annual harvests and the amount of subsistence foods consumed by TCC-area residents.
- Ecosystem changes and the geographic and/or temporal population shift of critical subsistence species (such as Chinook and chum salmon) are affecting the ability for many in the region to access foods that were once plentiful and considered staples in their traditional diets.⁶
- Changing land ownership has the potential to limit or cut off traditionally used subsistence lands and harvest areas.
- Interest in and knowledge of subsistence ways of life must be sustained and adapted to changes in environment or species availability. Subsistence foods require considerable traditional environmental knowledge, as well as knowledge of harvest, processing, and food preservation techniques. If this information is not shared between generations and adapted to changing conditions, it can limit subsistence harvests and further increase reliance on outside food sources. For example, the 2017 Nome Tribal Climate Adaptation Plan includes food security initiatives related to climate adaptation (p23 of 32).
<https://www.cakex.org/sites/default/files/documents/Nome%20Tribal%20Climate%20Adaptation%20Plan%20%28Final-LowRes%29.pdf>
- Reliance on subsistence ways of living in settled communities requires storage infrastructure (e.g., freezers, electricity to power freezers when the air temperature is above freezing). Community food security measures should include the necessary space and/or equipment to store harvested food.
- Subsistence ways of life often require vehicles (e.g., ATVs, boats, snow machine), fuel for vehicles, permits, and other equipment (e.g., nets, hunting guns and ammunition, processing equipment) to participate. Investing in these items could be an undue financial burden for lower-income members of the community.

⁵ Amount of subsistence harvests varies between communities and does not represent actual subsistence food consumption on an annual basis. Data averaged from information collected by the Alaska Department of Fish and Game and is not available for the same time period for each community.

⁶ Some ecosystem changes (such as permafrost thaw that destabilizes a particular plant species in a specific geographic area) are clearly climate related. Other observed changes might be caused by other factors. For example, some studies monitor heat stress on Pacific salmon populations (e.g., <https://www.kuskosalmon.org/heat-stress>) to identify climate-induced population changes, while the decline in numbers of the largest and oldest Chinook salmon (individuals) has been attributed to increased predation by Orca in the Pacific Ocean, according to a study from the University of Washington and NOAA (<https://www.washington.edu/news/2019/12/16/resident-orcas-chinook-salmon/>). Regardless of the direct cause (or set of causes) for observed changes, significant changes are being observed among various species and aspects of the Alaskan ecosystem at the time of writing. The security of the subsistence-based food system depends on monitoring and adapting to these changes, as well as protecting and continuing a culture of land stewardship among resource managers and communities, alike.

Recommendations and Best Practices

Note: The Other Resources' section of the Bibliography also provides information and resources to support these recommendations.

1. Set measurable and achievable regional goals around subsistence foods. For example, "Increase the incorporation of subsistence foods into institutional programs by 10 percent by 2025."
2. Work with educational partners to incorporate subsistence knowledge or practices into curriculum design and/or offer subsistence focused trainings or community workshops to increase skills and knowledge among village populations, with a specific emphasis on creating intentional connections between youth and subsistence.
3. Seek funding for additional community food storage infrastructure, including freezers, refrigerators, and equipment used to preserve and keep harvested foods.
4. Explore the possibility of working with the EPA IGAP to increase food security in Tribal Environmental Work Plans.
5. Assess the viability of Tribal Conservation Districts (TCDs), funded by the USDA Natural Resources Conservation Service (NRCS), in the TCC region. For example, Tyonek Grown is operated through the Tyonek Tribal Conservation District. <https://ttcd.org/programs/tyonek-grown-program/>
6. Support the work of the Subsistence Regional Advisory Committee (RAC).
7. Work with institutional programs (e.g., school lunches, elder meals, hospital meals) to incorporate subsistence and traditional foods into menus and pantries.
8. Create a regional marketing campaign that links the importance of traditional foods to health outcomes and the celebration of traditional village culture(s).
9. Work with TCC village leadership to create or support existing regional harvest celebration events or programming.

Suggested Additional Research and Data Collection

The following recommendations can be implemented to help create a more data supported understanding of subsistence ways of life and their impact in the TCC region on health outcomes, such as the reduction of chronic diseases and cancer.

1. Continue to conduct/update a regular food system assessment with each community in the TCC region. As much as possible, coordinate with any other agencies, organizations, initiatives or TCC departments that are already involved in assessing or tracking data to support food assessment indicators. Where data are unavailable from other sources, a food assessment could be done through a community survey or key informant interviews. For traditional/subsistence food, the assessment could focus on:
 - a. Percentage of the typical regional diet that is made up of traditional foods, compared to a goal or target representing the community or region's desire for traditional foods.
 - b. Identify barriers and possible solutions to overcome the barriers that TCC communities face around harvesting, preserving, and preparing traditional foods.

- c. Identify changes observed in TCC communities around subsistence food practices over the last 10 years.
 - d. Track youth engagement in subsistence way of life and Indigenous knowledge related to traditional foods.
 - e. Expand data collection of traditional/subsistence foods to include traditional food available retail sales outlets and/or in institutional programs or facilities.
2. Continue to track indicators for traditional foods offered at retail establishments and through institutional food programs (e.g., school lunches, elder lunches, at hospitals).



Hunting moose by the road. Photo: Jennifer Probert

Farming and Local Food Production

Regional farming and local food production provide a direct source for fresh food and produce to many community members in the TCC region. Locally produced foods can dramatically reduce the costs that come with shipping imported food into remote communities, while also increasing access to fresh produce and local goods that are more likely to meet healthy nutritional requirements.

Table 2 Retail and Commercial Food Indicators for the TCC Region, 2021

Indicator	Findings	Notes
Number of Commercial Farms:	51 commercial farms are estimated to be in operation in the Interior Alaska region according to a 2017 report from the Interior Alaska Food Network.	Farms included in this estimate provide locally grown and produced goods either in a direct-to-consumer model or through wholesale markets.
Number of Community Gardens or Farms:	15 communities have community gardens	At least 15 communities have operational community gardens according to local area plans.
Number of Farmer's Markets:	There are at least five farmers markets in the region (with the greatest concentration being in Fairbanks), according to the mapping efforts of the Interior Alaska Food Network.	Additional resources and the food network map can be found at the IAFN website. ⁷
Golden Heart Grown Producers	22 Certified Golden Heart Grown producers (2017)	Golden Heart Grown Producers are certified participants in the program to encourage local food production while also encouraging the purchase of locally grown foods to create regional economic activity and to keep money circulating between local communities and producers.

1. **Food Affordability** – Many communities within the TCC region have limited access to locally grown and produced commercial foods. Foods that are imported to remote off-road communities have significantly higher consumer prices to account for the increased costs of shipping the items long distances in relatively small quantities. Increasing the amount of locally produced foods would increase overall food affordability in the region, assuming there is sufficient demand for the produce that is grown and sold. Fairbanks serves as a regional food hub, where larger grocery stores have inventory similar to many places in the continental U.S.; it provides an access point for those who can make their way into the city on a regular, albeit probably infrequent, basis.
2. **Food Availability** – Local food production, including community gardens and commercial agricultural operations, increases the total amount of food that is seasonally available in communities. Local food production can complement subsistence ways of living and provide a way for people in the TCC region to access fresh, local, and healthy foods. There may be occasional conflicts between the timing of farming and subsistence activities, when growing and harvesting foods compete for valuable time spent fishing, hunting, and gathering.
3. **Food Quality** – On balance, locally grown foods are of higher nutritional value when compared to imported or packaged goods, assuming no significant contamination from persistent organic pollutants or petrochemicals in soils or water.

⁷ <https://interiorakfoodnet.wixsite.com/iafn>

4. **Food Culture** – Locally produced foods create opportunities for community members to more closely connect with the food they are consuming. Selecting fresh vegetables, fruits and meats at a farmers’ market is more personal than buying packaged or processed goods at a grocery store. Like traditional foods, locally grown produce often requires more time to prepare, which can create or deepen a cultural connection to the food. Community gardens and associated activities can also serve as a social hub for communities, allowing people to build stronger relationships, while interacting with the land and fresh foods.



Garden greens. Photo: Jennifer Probert

Regional Strengths and Vulnerabilities

1. There is a growing network of individuals, organizations and partners who are actively innovating and improving the environment for local farms and growers. These partners are assisting with distribution channels, funding opportunities, and regional marketing around locally grown foods.
2. There is growing interest in creating community sustainability through locally produced foods. This is mirrored by increasing demand for some locally produced food products⁸
3. Fairbanks-area residents can subscribe to Community Supported Agriculture (CSA) subscriptions from local farms. Regional residents should be able to subscribe to Full Circle Farms (based in Seattle, Washington) to have produce boxes shipped directly to them.

⁸ As referenced by an aggregation of surveys from Interior Alaska vegetable farmers in the 2014 Market Study from the Fairbanks Economic Development Corporation. <https://www.uaa.alaska.edu/academics/business-enterprise-institute/center-for-economic-development/reports/documents/demand-for-local-produce-in-interior-alaska.pdf>

4. There are considerable transportation barriers to accessing fresh fruits and vegetables in many areas of the TCC Region. Not only do these foods need to be imported from other parts of Alaska, the continental U.S. or abroad, shipping barriers exist within the region as well. Many villages and communities in the region are not accessible via roadway during parts or all of the year. These communities rely on transporting goods from the road system by small boat, ATV, snow machine or by expensive bush plane deliveries.
5. The TCC Region has a very short viable growing season for fruits and vegetables compared to other parts of the nation. This short growing season limits the type and amount of food that can be produced locally and requires that farmers invest in often expensive season extending equipment, including hoop houses, green houses, and row cover.
6. Climate change and shifts in seasonal weather patterns are highly likely to change the growing season in Interior Alaska. These shifts could create more intense weather events and less predictable growing environments, which could negatively impact regional farms and decrease the amount of produce entering the regional food environment.⁹ However, warming temperatures may also be extending the outdoor growing season in TCC's region.
7. Much like subsistence foods, locally cultivated foods are available for harvest only during specific parts of the year and require preservation and storage if year-round consumption is desired. If local storage and preservation equipment are limited, so will be the effectiveness of growing locally produced food to improve regional food access.

Recommendations and Best Practices

The following recommendations and actions can be implemented to help create a more data-supported understanding of the retail and commercial food environment in the TCC region. Not all recommendations would be directly implemented by TCC, but could be supported by partners at the local, regional, and state level. **Note:** The Other Resources' section of the Bibliography also provides information and resources to support these recommendations.

1. Monitor and support local or community gardens throughout the region, e.g., with funding or grant writing support for supplies, labor, and infrastructure. See the Other Resources
2. Support the Interior Alaska Food Network in their efforts to help establish a local food distribution center model for Interior Alaskan Communities. The local food distribution center model helps connect local growers to distribution markets and makes it easier for Interior-grown producers to safely increase their food production, knowing they have a variety of viable distribution channels. <https://interiorakfoodnet.wixsite.com/iafn/specialty-crop-block-grant-2018>
3. Partner with the Summer Youth Employment Program to help set up new community gardens or to help established gardens.
4. Partner with regional and local farms to extend the reach and availability of CSA and similar food distribution arrangements.

⁹ In *Alaska's Changing Environment* (2019), researchers at the University of Alaska Fairbanks (UAF) International Arctic Research Center (IARC) report that Alaska is warming faster than any U.S. state, and that since 2014, there have been 5 to 30 times more record-high temperatures set than record lows.

5. Look for grant funding opportunities to build innovative solutions, such as passive solar greenhouses and season extending equipment.
 - a. Private Foundations (local, state, and national)
 - b. County and State Government Grants
 - c. Federal Grants (USDA, Energy, Education, etc.)
6. Partner with schools and other community institutions to start or support small-scale community garden programs.
7. Explore the possibility of establishing local seed banks of vegetables, fruits and native plants that can be used in local and community gardens. This could be a strategy implemented by tribal centers, schools, or other community institutions.

Suggested Additional Research and Data Collection

The following recommendations can be implemented to help create a more data-rich understanding of the impact of locally grown and produced foods and overall food availability in TCC communities. TCC's role in many of these recommendations could be to provide support for regional and local initiatives that make it easier for producers and consumers to participate in the local food production markets.

1. Continue to conduct/update a regular food system assessment with each community in the TCC region. As much as possible, coordinate with any other agencies, organizations, initiatives or TCC departments that are already involved in assessing or tracking data to support food assessment indicators. Where data are unavailable from other sources, a food assessment could be done through a community survey or key informant interviews. For farming and local food production, the assessment could focus on:
 - a. Percentage of the typical regional diet that is made up of regionally or locally grown foods, compared to a goal or target representing the community or region's desire for locally grown foods.
 - b. Number of schools with gardens, agricultural education, or similar programming. The Alaska Farm Bureau lists partner resources for Youth programs: <https://alaskafb.org/partners/>
 - c. Support the mapping of regional farms, community gardens, farmers markets and other local/regional food assets. The Interior Alaska Food Network has mapped an inventory of farms in the greater Fairbanks area: <https://interiorakfoodnet.wixsite.com/iafn/map>.
2. Work with regional partners to identify existing programs that are already connecting people with locally produced foods, such as: CSA programs, produce stands, you-pick farms, locally grown food sales at community stores and institutional food distribution sites.
3. Identify opportunities to expand CSA programs that serve the region with locally grown produce or through bush orders from other parts of Alaska.
4. Support in-region research and information-sharing that would help communities and commercial farms realize more abundant harvests, longer growing seasons, and easier distribution methods, e.g., by the University of Alaska Fairbanks Cooperative Extension: <https://www.uaf.edu/ces/>.

Retail and Commercial Food

Retail and commercially available foods make up a significant portion of the TCC food environment. Retail and commercial foods are available in the region at local and regional grocery stores, convenience stores and through shipments to communities and residences. Identifying avenues to improve the retail food environment can have a significant impact to health outcomes in a region.

Table 3. Retail and Commercial Food Indicators for the TCC Region, 2021

Indicator	Findings	Notes
Community Grocery Stores:	There are 20 grocery stores listed as community resources in TCC Village plans.	Grocery store data is limited and may not be up to date with closures and new stores opening within the last few years.

1. **Food Affordability** – Foods available through retail outlets in the TCC region are considerably more expensive than commercially available foods in locations throughout the United States that do not import foods from such long distances. Retail food affordability has not been studied in the region in depth, but Alaska food costs in all regions are at least 15.6 percent higher than national food averages according to the Alaska Food Cost Survey conducted by the University of Alaska Fairbanks¹⁰.
2. **Food Availability** – The variety and availability of foods at commercial and retail locations may lack adequate produce and fresh foods throughout the year. Some communities have no convenient access to a local retail food outlet.
3. **Food Quality** – The current inventory of available foods at some retail locations in the TCC region could be improved with more regularly available fresh produce, meats, and higher quality items. With shipping and storage barriers to providing fresh foods throughout the year in some areas, local retail food distribution locations often stock primarily staples of processed and packaged goods.
4. **Food Culture** – The cost and availability of retail foods play a role in shaping the food culture in a given community. If preserved and highly processed foods are what is affordable and available in a community, food consumption will likely shift towards those items, as people spend less time preparing and preserving fresh and healthier alternatives.

Regional Strengths and Vulnerabilities

Key Findings

1. Fairbanks serves as a regional food hub with numerous retail and commercial food outlets, as well as farmers markets, local co-ops, and events with local foods.
2. Partners such as the Interior Alaska Food Network and the Alaska Food Policy Council are working to create improved distribution channels for locally grown and produced food items.
3. Some areas and communities in the TCC region have limited access to retail food opportunities, particularly stores that sell fresh produce.

¹⁰ <https://uaaf.edu/ces/files/fcs/2018q4.pdf>

4. The cost of food at many stores may be prohibitive to some members of the community. Bush orders may be one of the best ways to get fresh produce from retail outlets; however, this incurs additional expense.
5. Fresh produce can go bad before it is sold, leaving retailers with additional overhead and risk, which creates a negative feedback loop that further entrenches preserved and longer shelf-life foods at retail locations. To mitigate this risk, some retailers prepare foods onsite at a deli or prepared-food bar, using unsold food before it expires. These retailers have commercial kitchen facilities and work within state health and safety regulations for prepared foods.
6. If processed foods are a major food source for a community, the community may develop a taste preference for highly processed foods, negating long-term interest in healthier food consumption and preparation.



Jarred fish. Photo: Jennifer Probert

Recommendations and Best Practices

Improving the availability of food, particularly fresh foods including meats and vegetables, at retail locations outside the Fairbanks area is not a primary function of TCC. However, TCC can support the retail food economy by working with regional partners and businesses to improve food access and health outcomes. **Note:** The Other Resources' section of the Bibliography also provides information and resources to support these recommendations.

1. Identify whether there are opportunities to increase healthy food inventory through community supports or additional funding/incentives.
2. Create and support partnerships with local retailers and regional food growers to stock a wider variety of fresh and regionally grown produce. The Golden Heart Challenge is one example of a successful marketing campaign and program that helps create easier distribution channels for local food producers to get their goods into retail locations.
<https://www.investfairbanks.com/5-golden-heart-grown-challenge/>

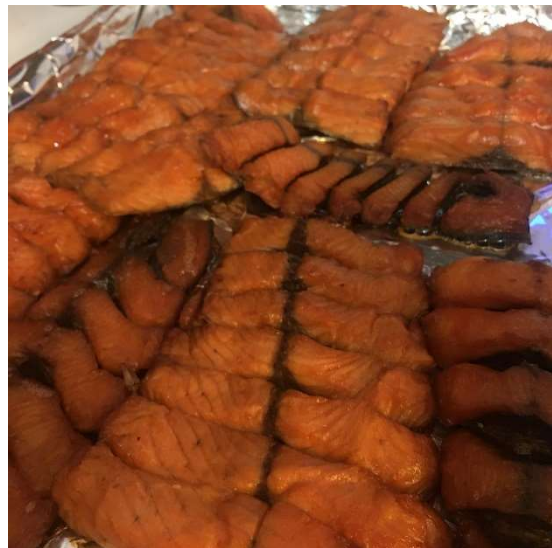
Suggested Additional Research and Data Collection

The following recommendations can be implemented to help create a more data-rich understanding of the retail and commercial food environment in the TCC Region.

1. Continue to conduct/update a regular food system assessment with each community in the TCC region. As much as possible, coordinate with any other agencies, organizations, initiatives or TCC departments that are already involved in assessing or tracking data to support food assessment indicators. Where data are unavailable from other sources, a food assessment could be done through a community survey or key informant interviews. For retail food sources, the assessment could focus on:
 - a. Percentage of the typical regional diet that is made up of foods obtained from retail outlets, compared to a goal or target representing the community or region's desire for retail-sourced foods.
 - b. Expand data collection of retail food outlets to include convenience stores, restaurants, and eateries.
 - c. Map all retail food locations and identify communities and populations that either cannot access a retail location by roadway or require a drive of over one hour to get to the retail location.
 - d. Work with TCC communities to conduct a bi-annual implementation of the Alaska Food Cost Survey. This would provide longitudinal price and inventory data that could provide a much deeper understanding of what is being sold and consumed within the region.
 - e. Track the percentage of foods being sold from retail locations that are locally grown and/or are traditional foods.

Institutional Food

Institutional foods represent all the foods distributed through local, regional, and state programming such as school lunches, elder lunch programs, health care facilities and through food supports such as food stamps, WIC, and Head Start Programs.



Half-dried salmon. Photo: Jennifer Probert

Table 4. Institutional Food Indicators for the TCC Region, 2021

Indicator	Findings	Notes
Head Start Program	17 communities served: Allakaket, Fort Yukon, Galena, Grayling, Holy Cross, Hughes, Huslia, Kaltag, McGrath, Minto, Nenana, Northway, Nulato, Shageluk, Tanacross, Tanana, and Tetlin.	TCC receives funding from the State of Alaska Department of Education and Early Development to administer the Head Start program for its region. The TCC website lists 17 communities as currently served by the TCC Prenatal to Five Head Start Program. Among other services, Head Start programs include distribution of nutritious foods that meet USDA guidelines in a home based or center based setting.
School participation in the Federal School Lunch Program	8 School Districts and 75 Schools	The Alaska Department of Education & Early Development reported participation in the National School Lunch Programs Free and Reduced Price Meals for Program Year 2020 by the number of students eligible for the programs by school and school district. In the TCC region, 6,322 out of 14,259 enrolled students (44%) were eligible for the programs. Village plans indicated that 24 out of 26 communities in the region participate in the programs.
Communities with Elder Nutrition Program (funded by Administration for Community Living Services for Native Americans (Older Americans Act Title VI))	FY2020 Title VI funding was awarded to three community and six regional tribal entities that collectively serve the entire TCC subregion.	Title VI funding can be used for congregate and home-delivered meals, information and referral, transportation, personal care, chores, health promotion and disease prevention, and other supportive services. It is assumed that some portion of these awards is used for nutritional support, but Tribal organizations have flexibility on resource allocation among the allowable activities under the grant. ¹¹
Health Care Facilities with traditional or healthy food program	Number Unknown. The Fairbanks Community Food Bank Service administers the Food Is Medicine program to improve the health of Tanana Valley neighbors the availability of healthy fresh foods for those who are medically referred into the program. ¹² The Yukon Koyukuk Elder Assisted Living Facility serves traditional foods to residents, visitors, and Galena Elders through the Loudon Tribe's Elder Meals Program.	Data collection for this indicator was limited during this study.
Farmers markets and farm stands participating in the Farmers' Market Nutrition Program (FMNP) and/or Senior FMNP	6 farmers' markets or farm stand locations in Fairbanks and Delta Junction (2017).	The Fairbanks Resource Center for Parents and Children lists farmers markets and farm stands participating in the Farmers' Market Nutrition Program (FMNP). ¹³ The FMNP was discontinued, then restored in 2020 as a Covid-relief measure. Currently participating markets in the Tanana Valley may be different from those listed for 2017.

¹¹ See: https://acl.gov/sites/default/files/about-acl/2020-03/Native%20Americans%20Grants%203-24-20%20%28002%29_0.pdf

¹² See: <https://www.fairbanksfoodbank.org/programs/food-is-medicine/>

¹³ See: <https://www.rcpcfairbanks.org/resources/wic-farmers-market-program/>

- **Food Affordability** – Institutional foods are one of the available channels to support individuals who may not otherwise be able to afford food throughout the year. Programs like SNAP/WIC/Free and reduced school lunches, and other social assistance programs directly impact the overall calculation of affordability in the region.
- **Food Availability** – Institutional based foods play an important supporting role in increasing the availability of accessible foods in the TCC region. By reducing the barriers to access food these institutional programs improve the availability of food to anyone who is using these services.
- **Food Quality** – Institutional foods are often supported by State or Federal funding that carries requirements that any food distributed or purchased with the program assistance meet USDA nutrition guidelines.
- **Food Culture** – Institutional based foods are not always culturally relevant to the people who consume them. Some institutional based foods rely heavily on frozen, dried, or highly processed foods that can be stored and packaged for easier distribution to larger numbers of people, and that have been chosen because of the lower costs associated with bulk purchases and government subsidies. At the same time, a number of communities and institutions in the TCC region are bringing fresh, locally grown produce and locally harvested traditional foods into food programs and celebrating healthy, tasty, and culturally appropriate food as medicine for the body, mind, and spirit.

Regional Strengths and Vulnerabilities

1. In the TCC region, some institutional food programs and providers are incorporating locally grown agricultural products or locally harvested traditional foods through programs such as the Farmers' Market Nutrition Program (FMNP), Senior FMNP, the Fairbanks Community Food Bank Service Food Is Medicine program, and by serving traditional foods in Elder meals as part of local Elder Nutrition programs, such as the Loudon Tribe in Galena.
2. A relatively substantial proportion of the population in the TCC region qualifies for income-based food support programs. For example, nearly half (44 percent) of enrolled students in TCC region school districts qualified for the National School Lunch Free and Reduced Price Meals Program in 2020. Such a large percentage of food program participation can be seen as a vulnerability *and* as a strength that the region can provide as much institutional support as it does. It is also a regional strength to the extent that institutional food programs succeed in helping participants develop healthy and culturally relevant food habits that they can continue if/when they no longer need the nutritional safety net these programs are intended to provide.

Recommendations and Best Practices

Note: The Other Resources' section of the Bibliography also provides information and resources to support these recommendations.

1. Increase outreach education at institutions (schools, hospitals, health clinics) around healthy nutrition and traditional foods. For example, the Alaska Native Medical Center Traditional Native Foods Initiative brings traditional foods to a hospital: <https://anmc.org/traditional-native-foods-initiative/>.

2. Utilize dieticians and nutritionists to advocate for nutritionally balanced, traditional, and subsistence-based diets. Offer trainings to organizations, such as for meeting State guidelines about processing traditional foods at institutional facilities:
<https://dec.alaska.gov/eh/fss/food/retail/traditional-foods/>.
3. Promote behavior change toward increased healthy food consumption.
4. Promote use of the WIC Farmers Market and Senior Farmers Market Nutrition Program.
<https://dhss.alaska.gov/dpa/Documents/Nutrition/FMNP-SFMNP-Farmer-Handbook.pdf>

Suggested Additional Research and Data Collection

The following recommendations can be implemented to help create a more data-rich understanding of the impact of institutional foods in the TCC Region.

1. Conduct an assessment of regional institutional food programs that identifies program vulnerabilities and resilience. This assessment might focus on the sustainability of funding sources, physical distribution locations, political supports, and operational viability in the face of disruptions/disasters. For example, how long could schools continue to provide lunches if an earthquake disrupted supply lines?
 - a. Expand data collection of institutional food sources to include:
 - i. Communities serving traditional foods through Elder Nutrition Programs;
 - ii. Schools serving traditional foods and participating in Farm to Cafeteria programs;
 - iii. Health care facilities serving traditional foods and participating in Farm to Cafeteria programs; and
 - iv. Percentage of the regional population accessing institutional foods.



Garden vegetables. Photo: Jennifer Probert

3. Conclusions

Summary of Key Findings

The TCC region has a strong foundation of traditional and subsistence ways of life that establish the foundations for a healthy and sustainable food environment. Barriers to healthy food access and consumption (including transportation, long-term food storage and high costs of imported foods) may pose threats to the overall health of the community food environment. However, these factors can be mitigated with strategic planning and community efforts.

Subsistence and Traditional Foods: TCC communities maintain strong knowledge and enjoyment of subsistence and traditional foods. Traditional foods are being incorporated into institutional programs and even some retail food outlets, in addition to household meals. Subsistence harvests may be challenged by climate and environmental changes, State and Federal resource management regulations, and/or (for some) household access to resources such as transportation vehicles, fuel, or equipment for harvesting and processing harvested meat, fish, etc.

Farming and Local Food Production: There is a strong agricultural network in the TCC region, centered around Fairbanks and Delta Junction, that includes local commercial farms, farmers' markets, and Community Supported Agriculture (CSA). Some TCC communities are also engaged in community gardening efforts to increase food security, food sovereignty and access to a variety of fresh local foods.



Fishing dog in boat. Photo: Jennifer Probert

Retail and Commercial Food: As a regional food hub, Fairbanks provides retail and commercial food outlets that serve local residents as well as residents of the smaller, remote communities in the region who come into the city periodically for medical care, shopping, education, and business. A strong network of organizations and businesses work to improve the distribution of locally grown and produced food in the Fairbanks area. Retail food sources generally make up a smaller portion of food sources in the smaller, more remote communities outside the Fairbanks area. Many of these communities are off the road system and have only one village store, which may stock mainly processed or packaged foods with a longer shelf life that can be more easily or reliably transported. Residents can also purchase food through bush orders from major retailers based in Fairbanks or Anchorage. Local stores and bush orders in these remote communities tend to have high prices because of the cost of transporting goods and the relatively low sales volume compared to urban centers.

Institutional Food: A fairly substantial proportion of the population in the TCC region qualifies for income-based food support programs. A number of communities and institutions in the TCC region are bringing fresh, locally grown produce and locally harvested traditional foods into these food programs and served at local institutions, such as schools and health care facilities.

Assessment Summary

The assessment examined quantitative indicators and qualitative factors that together describe the food environment in the TCC region. Broadly looking at the four dimensions of food access: affordability, availability, quality and culture, the food assessment summary (Table 5, below) reveals the strongest areas of improvement in the areas of:

- Increasing food availability from farming and local food production, especially in communities outside the Fairbanks area;
- Increasing food affordability, availability, quality, and culture in retail and commercial food outlets, again, especially in communities outside the Fairbanks area; and
- Increasing food quality and improving food culture around institutional foods.

Table 5. TCC Region Summary Assessment of Food Indicators

	Subsistence and Traditional Foods	Farming and Local Food Production	Retail and Commercial Food	Institutional Food
Food Affordability	Good	Good	Fairbanks: Good Region: Needs Improvement	Beneficiaries: Excellent Providers: Good
Food Availability	Good	Fairbanks: Good Region: Needs Improvement	Fairbanks: Good Region: Needs Improvement	Good
Food Quality	Excellent	Excellent	Varies	Varies
Food Culture	Excellent	Good	Varies	Varies

Priority Actions

As part of the Good Health and Wellness (GHW) Programming, TCC has identified the following objectives and tasks related to health, food, and obesity prevention in the region.

Goal 1: Good Health and Wellness (GHW): Obesity Prevention

Long-term Objective 1.1 Increase the number of places offering healthy foods and beverages by making sustainable changes to food and beverage systems or programs.

Annual Program Objective 1.1a: Develop a gardening toolkit that identifies opportunities for Tribes to implement or expand community gardens.

- Task 1.1. Establish or participate in an internal stakeholder group to support obesity prevention activities.
- Task 1.2. Identify internal and external programs working and/or supporting gardening.
- Task 1.3. Identify current community-based resources that support gardening, i.e., space, expertise/champion, labor, supplies, etc.
- Task 1.4. Assemble information into a community gardening toolkit.
- Task 1.5. Distribute toolkits to Tribes.
- Task 1.6. Evaluate Tribes' use of the toolkit.

Annual Program Objective 1.1b: Partner with village-stores to assess current inventory, identify gaps and opportunities for improvement and provide technical support to improve the food environment in local stores

- Task 1.7. Establish or participate in an internal stakeholder group to support obesity prevention activities.
- Task 1.8. Identify village-based stores and contact owners to assess willingness and ability to partner with program staff. Goal is to select at least 1 store per subregion (4 total).
- Task 1.9. Assess current food options available in local partner store.
- Task 1.10. Conduct research to assess gaps and opportunities to improve local store environment, i.e., "wish list."
- Task 1.11. Compile results and share with store owners.
- Task 1.12. Partner with local stores to provide technical support to promote healthy food options, i.e., provide recipes, cooking demonstrations, signage, etc.

4. Bibliography

Works Cited

- ADF&G, Subsistence, Community Subsistence Information System – Harvest by Community
<http://www.adfg.alaska.gov/sb/CSIS/index.cfm?ADFG=harvInfo.harvestCommSelComm>
- Alaska Department of Fish and Game, Nuefeld, G., Brown, C., & Navarro, L. (2021, June). Regional Spatial Analysis of Subsistence Activity in Interior Alaska. Alaska Department of Fish and Game, Division of Subsistence. <http://www.adfg.alaska.gov/techpap/TP%20476.pdf>
- Melissa A Chlupach, MS RD LD. (2016, May). Alaska Traditional Foods Initiative and Movement. NANA Management Services.
<https://static1.squarespace.com/static/584221c6725e25d0d2a19363/t/58b602ef2994ca296d45369d/1488323340667/Traditional+Foods+Initiative+presentation+AK+Food+Policy+Conference+Webinar+5.26.16.pdf>
- Coggin, J. (2019, October 15). New report highlights Alaska’s last five years of dramatic climate change. Climate.Gov. <https://www.climate.gov/news-features/understanding-climate/new-report-highlights-alaska%E2%80%99s-last-five-years-dramatic-climate>
- Demand for Local Produce in Interior Alaska. (2014). Fairbanks Economic Development Corporation.
<https://www.uaa.alaska.edu/academics/business-enterprise-institute/center-for-economic-development/reports/documents/demand-for-local-produce-in-interior-alaska.pdf>
- FY2020 FFCRA Awards for Parts A/B of Title VI of OAA. (2020). Retrieved from FY2020 FFCRA Awards for Parts A/B of Title VI of OAA. <https://acl.gov/sites/default/files/about-acl/2020-03/Native%20Americans%20Grants%203-24-20%20%28002%29.pdf>
- Interior Alaska Food Network. (2017). Specialty Crop Block Grant 2017. Interior Alaska Food Network.
<https://interiorakfoodnet.wixsite.com/iafn/specialty-crop-block-grant-2018>
- Kintish, E. (2015, October 30). These Ice Cellars Fed Arctic People for Generations. Now They’re Melting. National Geographic. <https://www.nationalgeographic.com/science/article/151030-ice-cellar-arctic-melting-climate-change>
- Markon, C., S. Gray, M. Berman, L. Eerkes-Medrano, T. Hennessy, H. Huntington, J. Littell, M. McCammon, R. Thoman, and S. Trainor, 2018: Alaska. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1185–1241. doi: 10.7930/NCA4.2018.CH26
- Thoman, R. & J. E. Walsh. (2019). Alaska’s Changing Environment: documenting Alaska’s physical and biological changes through observations. H.R. McFarland, Ed. International Arctic Research Center, University of Alaska Fairbanks.
- U.S. Census Bureau (2019) ACS 5-Year Estimate Subject Tables
<https://api.census.gov/data/2019/acs/acs5/subject>

Other Resources

- Alaska Department of Fish and Game, Division of Subsistence (2019). *Food Production and Nutritional Values of Noncommercial Fish and Wildlife Harvests in Alaska*.
www.adfg.alaska.gov/static/home/subsistence/pdfs/Wild_Harvest_Notebook.pdf
- Alaska Farm Bureau. *Partner Programs*. <https://alaskaafb.org/partners/>
- Alaska Tribal Conference on Environmental Management (ATCEM). <https://www.atcemak.com/>
- Alaska Village Initiatives (agAlaska). agAlaska is a resource for Alaska Native farmers and ranchers, providing links to federal and state level organizations that revolve around land conservation for Alaskan tribes, as well as resources for existing Tribal Conservation Districts or help with forming TCD's. AgAlaska affords rural villages support and resources needed to begin community gardening farming and ranching. Information and links provide current grant opportunities, best garden practices, and resource links to government and non-government agencies. <https://agalaska.com/> and <https://agalaska.com/tcd-facts/>
- Chlupach, Melissa A. (2016). *Alaska Traditional Foods Initiative & Movement*. Alaska Food Policy Conference Webinar May 26, 2016.
<https://static1.squarespace.com/static/584221c6725e25d0d2a19363/t/58b602ef2994ca296d45369d/1488323340667/Traditional+Foods+Initiative+presentation+AK+Food+Policy+Conference+Webinar+5.26.16.pdf>
- Community Partnerships for Self-Reliance (CPS) at the University of Alaska Fairbanks.
<https://sites.google.com/alaska.edu/community-partnerships/>
- Slayton, Lisa J. (2014). "Documenting the Harvest of Alaska's Wild Food: ADF&G's Division of Subsistence." In *Alaska Fish & Wildlife News*, February 2014.
www.adfg.alaska.gov/index.cfm?adfg=wildlifeneews.view_article&articles_id=647
- Tanana Chiefs Conference and Community Partnerships for Self-Reliance, University of Alaska Fairbanks (2017). *Survey Results: The Health of Traditional Harvest Practices in Interior Alaska Communities*.
https://drive.google.com/file/d/1ZZcJAEcmvwk9XZSsGq33qOOHV_EM4l_a/view
- Tyonek Tribal Conservation District. *Tyonek Grown*. <https://ttcd.org/programs/tyonek-grown-program/>
- USDA Natural Resources Conservation Service. *Information for Alaska Native Groups – Growing Partnerships with Alaska Native Agricultural Producers*. <https://www.nrcs.usda.gov/wps/portal/nrcs/ak/people/>
- Forming Tribal Conservation Districts in Alaska.
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1359898.pdf
- US Environmental Protection Agency. *Alaska IGAP Workshop*. <https://www.epa.gov/r10-tribal/alaska-igap-workshop>
- US Environmental Protection Agency. *Region 10 Tribal Environmental GAP Funding*. <https://www.epa.gov/r10-tribal/region-10-tribal-environmental-gap-funding>
- US Environmental Protection Agency. *Tribal Coordinators/Project Officers*. <https://www.epa.gov/r10-tribal/forms/contact-us-about-tribal-programs-pacific-northwest-and-alaska#coordinators>