

Alaska Food Security and Independence Task Force 2023 Report



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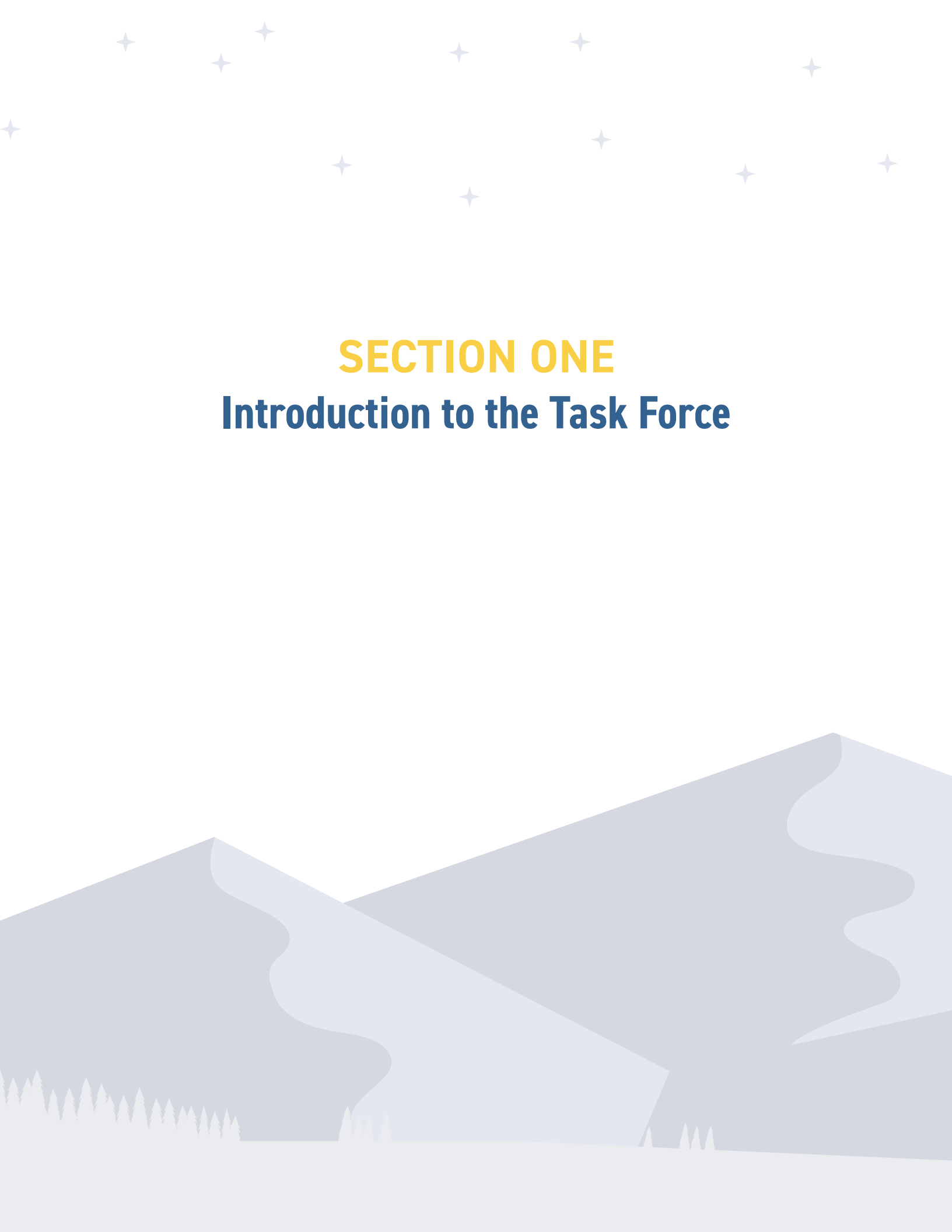
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We have created an accompanying website to provide additional resources.

Please view it here: alaskafoodsystems.com



SECTION ONE

Introduction to the Task Force



Welcome from the Co-Chairs

A Message from the Co-Chairs

The Alaska Food Security and Food Independence Task Force presents this report to Governor Dunleavy and his administration by mandate of Administrative Order No. 334 which established the Task Force.

Since 2018, Alaska has seen a major earthquake, wildfires, typhoons, and a once in a century pandemic. These events interrupted supply chains and strained current food systems in ways that have highlighted Alaska's dependence on others for the health and well-being of our citizens. At the request of Governor Dunleavy, 22 Alaskans (20 of whom were voting members) from throughout the state volunteered their time to convene and discuss recommendations for improving Alaska's food security and independence. The Task Force members came to the discussion with differing backgrounds and experiences but worked together to offer recommendations and highlight where further discussions should continue to occur.

From the beginning, this group recognized that in order to make progress, the broader subject of food security would need to be broken into seven subtopics: Wild Foods, Production, Processing, Distribution and Aggregation, Access, Preparation and Consumption, and Waste and Recovery. Throughout the discussions on each subtopic the underlying sentiment of the group was an acknowledgment that while food security is both interwoven and complex, there remains a sense of urgency in the need to take action.

While the members of this Task Force worked diligently to bring a unified voice, there are instances throughout this report where the Task Force members recognized we would not be able to reach a consensus without additional conversations. As a group we grappled with whether it was best to only put forward the ideas and concepts that could be agreed upon. In the end, we recognized that our conversations were a perfect example of the rich diversity that exists in our great state; regionally, culturally, and individually. Our hope is that the ideas, conversations, and recommendations included in this report, will serve as a jumping off point for others that will continue the work towards improving Alaska's food security and independence and benefiting the lives of all Alaskans.

—Julie Sande and John Anderson

Land Acknowledgment

Our University of Alaska campuses reside on the unceded territories of the: Dena People of the lower Tanana River, Eklutna Dena'ina, Tlingit, Central Yup'ik, and Iñupiaq,² however, the scope of this task force report pertains to all Indigenous peoples of Alaska.³ We acknowledge that Alaska Natives have been stewards of the land on which we work and reside since time immemorial, and we are grateful for that stewardship. We recognize the series of unjust actions that attempted to remove Indigenous peoples from their lands, and we honor the sovereign relationships that exist between Alaska Native peoples to their lands, their languages, their ancestors, and future generations. We aspire to work toward healing and liberation, recognizing our paths are intertwined in the complex histories of colonization in Alaska. We acknowledge that we arrived here through deep listening and in the spirit of reconciliation, and will continue to do so as we work together towards a healthier world for future generations.



About the Task Force and Report Process

BACKGROUND

Alaska's supply chain is vulnerable and in turn, our food supply is unstable, of which 95% of purchased foods are imported. This was most recently highlighted by the 2018 earthquake in Southcentral Alaska and the ongoing COVID-19 global pandemic with its associated supply chain breakdowns. Extreme weather events and seasonality make rural communities, far beyond the end of the road, susceptible to weeks without food delivery and the food that arrives often has a high spoilage rate due to long travel time and poor storage conditions. Additionally, by importing most of our food supplies, around \$2 billion is sent out of state each year. Alaska is past due for activating a strategic approach to creating a more inclusive, equitable, and resilient food system for all.

A draft of the report was available for public comment. The task force read each comment received and took them into consideration for this final draft. A copy of the public comments received is available upon request.

TASK FORCE FORMATION

On February 9, 2022, Governor Mike Dunleavy issued Administrative Order 331¹ establishing the **Alaska Food Security and Independence Task Force**.² The task force was charged with being "responsible for recommendations on how to increase all types of food production and harvesting in Alaska, and to identify any statutory or regulatory barriers preventing our state from achieving greater food security." **Administrative Order 334** made slight changes to Administrative Order 331,³ expanding composition, extending reporting deadline, and reassigning the Task Force to the Department of Commerce, Community, and Economic Development for administrative support.

The Alaska Food Security and Independence Task Force was created via an application process and resulted in a team of 22, composed of 20 members and two non-voting legislators, with experience and expertise spanning Alaska's food system. The group began meeting during the summer of 2022 and organized into sub-committees, to address each Directive, specified in A.O. 334. starting with an overview of the various sectors of Alaska's food system.

TASK FORCE REPORT OVERVIEW

This report was drafted over three months by the **University of Alaska Fairbanks** and the **Alaska Food Policy Council** on behalf of the Alaska Food Security and Independence Task Force. This report was directly informed by Task Force member input, ideas, feedback and experiences. The report should be used as a tool for building policy and programs to strengthen and grow the state's food system for all Alaskans. Throughout the drafting process, Task Force members regularly revisited the Administrative Order's mission and discussed the balance and relationship between food security and economic opportunity. As such, this report should be used as a tool for evaluating and improving the food system beyond market-based dialogue.

“ Over the past two years Alaskans have walked into grocery stores and been greeted by row after row of empty shelves. One of the lessons the pandemic taught us is how vulnerable Alaska could be if the regularly scheduled shipments of food shipped up from Seattle were to suddenly stop—even a few days. The good news is Alaska has tremendous potential to grow, harvest and catch more nutritious food for in-state consumption. The recommendations from the task force will draw a roadmap for my administration, legislators and Alaska's food producers to make Alaska more food secure the next time the supply chain is disrupted.” ¹

—Governor Dunleavy, February 9, 2022

Understanding how Alaska's food system works and how different sectors interact is paramount to effective policy creation and decision-making to increase food resilience for all. The food system at its base consists of numerous parts—plants, animals, wild harvesters, producers, fishers, processors, distributors, transporters, retailers, marketers, consumers—the list goes on. Each part of the system directly or indirectly affects every other part. At every scale—community, town, region, state, etc.—food is a web, interconnected and, to some degree, dependent on each other. Much like a natural ecosystem, changes in one area affect others and unintended consequences may occur with significant impact to consumers, the economy, and the environment.

Administrative Order 334 included eight specific Directives for the Task Force to address. Task Force members were responsible for making recommendations under each of the eight directives on how to increase all types of food production and harvesting in Alaska, and to identify any statutory or regulatory barriers preventing our state from achieving greater food security.

Section Two of this report provides a broad overview of the following sectors, laying a foundation for exploring solutions to improving Alaska's food system:

- Wild Foods
- Production
- Processing
- Distribution and Aggregation
- Access
- Preparation and Consumption
- Waste and Recovery

Section Three distills the ideas and discussion of the Task Force, exploring the following directives:

- Institutional Procurement of Locally Harvested and Produced Food
- Producer Barriers to Launch, Scale, and Access Markets
- Wild Foods and Increasing Abundance
- Fishery Shortfalls and Disaster Response
- Preparing for Disaster: Food Caches
- Alaska Food System Research Needs

Please note that the Task Force did not reach consensus on every issue discusses and food systems improvements require an iterative and collaborative approach. We have included a list of items requiring further discussion at the beginning of the Directives Section.

Section Four provides additional resources for exploring food system solutions. This section includes information on emergency feeding plans, cooperative research management in Alaska, food freedom and cottage food laws, food system indicators, recommendations on infrastructure, a community-sourced food system action plan, and a list of various agencies and organizations working in Alaska to build the food system.

RESEARCH APPROACH

To fully address food issues and challenges, a systems-based approach is necessary- an interdisciplinary, multi-sectored framework for research and policy aimed at sustainable solutions for a healthy food supply. This approach acknowledges the relationships between the different parts of the food system and the social, economic, and environmental outcomes of activities within the food system. Systems thinking sheds light on non-linear processes in the food system, offering integrative perspectives to policy solutions. A systems approach also expands the perspective when seeking to understand and ameliorate the root causes of problems such as poverty, malnutrition, and the impacts of climate change, in which food sits at the crossroads.

Each food Sector Summary and Directive section can stand alone as a resource—there will be redundancy, as many topics could fall under a number of sections. Additionally, the recommendations found in this report are in no particular order and it is advised that should this plan become actionable, the timeline and methodology for implementation be co-created in consultation with stakeholders. This report is not prescriptive, rather intended to be exploratory and serve as a basis for more in-depth dialogue and intentional action.

HOW TO USE THIS REPORT

This report is intended as a launchpad, rather than a conclusive resource. As this Task Force will sunset in late 2022, HB 298⁴ will establish an Alaska Food Strategy Task Force to continue the work of this group. Additionally, the legislative Alaska Food and Farm Caucus and the myriad of Alaskan food groups, producers, and advocates will certainly add to the discussion. This report should be a living document, to be built upon in subsequent food security discussions and policy development.

To explore this report's accompanying website, please visit alaskafoodsyste.ms.com.

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Background and Context

On February 9, 2022, Governor Mike Dunleavy issued Administrative Order 331⁴ establishing the Alaska Food Security and Independence Task Force.⁵ Currently, Alaska imports 95% of its food supplies (excluding wild foods/ subsistence foods), sending around \$2 billion out of state each year. The task force was charged with being "responsible for recommendations on how to increase all types of food production and harvesting in Alaska, and to identify any statutory or regulatory barriers preventing our state from achieving greater food security."

MEMBERSHIP

All voting members are appointed by and serve at the pleasure of the Governor. The Governor shall select a Chair and Vice Chair from the members. The Task Force will consist of 20 voting members, and two ex-officio members as detailed below:

Five voting members who are State of Alaska officials:

- The Commissioner of the Department of Natural Resources or the Commissioner's designee.
- The Commissioner of the Department of Fish and Game or the Commissioner's designee.
- The Commissioner of the Department of Environmental Conservation or the Commissioner's designee.
- The Commissioner of the Department of Military and Veteran's Affairs or the Commissioner's designee.
- The Commissioner of the Department of Commerce, Community and Economic Development or the Commissioner's designee.

Fifteen voting members, who are not state officials, who are appointed by, and serve at the pleasure of the Governor identified as follows:

- One member who represents a city, borough, or municipality in managing the community's access to food.
- One member who represents an organization that is a representative of Alaska Natives in the State.

- Five members who are active farmers or stock growers in the State.
- One member who is an active commercial harvester of seafood in the State.
- One member who is an active commercial harvester of mariculture in the State.
- One member of the Alaska Farm Bureau or a similar organization that represents agricultural producers in the State.
- One member of the Alaska Food Policy Council or a similar organization that represents food security advocates in the State.
- One member who has an academic focus on food security, soils, mariculture, or affiliated subject matter.
- One member of the General Public.
- Two members who represent an Alaska-based organization, one for-profit, one non-profit that provide Alaskans with food to either purchase or donate.

Ex-Officio members:

The Governor requests two ex-officio members, one who is a member of the Alaska State Senate appointed by the Senate President, and one who is a member of the Alaska House of Representatives, appointed by the Speaker of the House. Though not required, it is requested that the ex-officio members be part of the Alaska Grown Legislative Caucus.

ADMINISTRATIVE SUPPORT

The Task Force is assigned to the Department of Commerce, Community and Economic Development for administrative purposes.

GENERAL PROVISION

Task Force members receive no compensation or other remuneration from the State. Members of the Task Force who are not state or federal employees are entitled to per diem and travel expenses in the same manner permitted for members of state boards and commissions. Per diem and travel expenses for members of the Task Force who are a representative of a state or federal agency are the responsibility of that agency.

The Task Force may create advisory-only subcommittees.

The Task Force will meet monthly, at a minimum. Additional meetings may be called by the Chair. The Task Force and its subcommittees will use teleconferencing and other electronic means, to the extent practicable, in order to gain maximum public participation at minimum cost.

At times and locations to be determined by the Chair, the Task Force may convene public meetings to present information and receive comments.

Meeting of the Task Force shall be conducted in accordance with AS 44.62.310 – 44.62.319 (Open Meetings Act).

Records of the Task Force are subject to inspection and copying as public records under AS 40.25.110 – 40.25.220.

This Order takes effect immediately. The Task Force will sunset on November 30, 2022.

The full version of Administrative Order 334 can be found here: <https://gov.alaska.gov/admin-orders/administrative-order-no-334/>

Task Force Information

TASK FORCE DUTIES AND RESPONSIBILITIES DIRECTIVES

Governor Dunleavy listed the following “Duties and Responsibilities” of the Alaska Food Security and Independence Task Force, outlined in Administrative Order 334⁷:

The Task Force shall deliver a report to the Governor by October 1, 2022, as defined below:

- Provide recommendations that increase the procurement and use of Alaska-sourced foods within State and local agencies, institutions, and schools, including any administrative and statutory changes that are required.

- Identify barriers that farmers, stock growers, fishermen, mariculture professionals, and others engaged in the growing, harvesting, or raising of food face when starting a business or getting their products into the Alaska market. Provide recommendations on how the State can address those obstacles, including through administrative or statutory changes.
- Assess the levels of wild game and fish harvests in Alaska. Suggest measures that would increase the abundance and harvest of wild game, fish, and food by Alaskans.
- Recommend a program to assist communities and households impacted by fishery shortfalls and disasters.
- Identify factors, including regulatory or statutory burdens that might discourage or prevent locally harvested and produced food from being purchased by federal, state, and local agencies, institutions, and schools.
- Identify research needed to support and encourage increased consumption and production of Alaskan foods sourced within the State.
- Engage with the public to seek additional input on ways to promote the above-listed goals.
- Assess the need for disaster food caches within the State; and how the caches can be developed utilizing Alaskan-sourced foods.
- Provide a report and summary of findings and recommendations, including what administrative and statutory changes would be needed to accomplish the recommendations of the Task Force.
- The Chair of the Task Force shall report regularly to the Office of the Governor on activities conducted and issues that arise under this Order.

TASK FORCE FORMATION

A public call for applicants began in late February 2022. The process was managed by the Boards and Commissions Office, which “actively recruits, interviews, and vets board candidates throughout the year.” While they “often reach out to civic and community organizations, businesses, industry associations, legislators, and others,” the board welcomes “ALL Alaskans to apply for service on a board or commission.”⁸

Initial application prompts were:

- List any professional licenses, certifications, or registrations and dates obtained that may be used as qualifying criteria
- List both formal and informal education and training experience
- List any community service, municipal government, and state positions held, and any awards received
- Employment work history including paid, unpaid or voluntary

Applicants were then invited to interview, though not all selected task force members completed an interview process. Questions included thoughts on improving Alaska’s food system, viewpoints on regulatory burdens, whether or not an applicant had a social media presence, and an applicant’s favorite public figure.

On April 26, 2022, Governor Dunleavy announced the selection of the first thirteen Alaskans to the Alaska Food Security and Independence Task Force:

“One of the lessons we learned from the pandemic is that Alaska is situated at the end of the west coast supply chain, and that puts us at great risk if a disaster or national emergency strikes,” said Governor Dunleavy. “The task force will review Alaska’s food production capabilities and make recommendations on what steps Alaska can take to increase food production and overall food security. I look forward to taking those recommendations and turning them into state initiatives that make Alaska more food secure.”⁹

Task force members John Anderson and Alaska Department of Commerce, Community and Economic Development Commissioner Julie Sande were chosen by Governor Dunleavy to serve as chair and vice-chair respectively. Additional members were named to the Task Force in the following month, rounding out with 20 members, with two non-voting positions assigned to legislators Senator Peter Micciche and Representative Liz Snyder. Meetings were held from June through September, 2022.

TASK FORCE NAMES AND AFFILIATIONS

The Food Security and Independence Task Force is composed of members with experience and expertise spanning Alaska's food system. Members and their organization affiliations are:

- **John Anderson (Co-Chair)**, 907 Livestock/Producer, Livestock
- **Ronalda Angasan**, NOVARUPTA Fisheries/Commercial Fisherpersion
- **Jim Baldwin**, Food Bank of Alaska, CEO
- **Christina Carpenter**, Alaska Division of Environmental Health, Director
- **Casey Cook**, Mat-Su Emergency Services, Manager
- **Todd Elsberry**, Mt. McKinley Meats & Sausage/Producer, Livestock
- **Bryan Fisher**, Alaska Division of Homeland Security and Emergency Management, Director
- **Kelli Foreman**, Heritage Farm & Ranch/Dairyperson, Livestock
- **Jeff Fortune**, US Foods, District Sales Manager Southeast, AK
- **Tikaan Galbreath**, Intertribal Agriculture Council, Technical Assistance Associate Director
- **Mia Kirk**, Alaska Division of Agriculture, Interim Director
- **Anthony Lindoff**, Central Council of the Tlingit & Haida Indian Tribes of Alaska, Food Security Manager/Kaawu Shellfish Co, Owner
- **Kimberly McCourtney**, Alaska Mill and Feed, Senior Vice President
- **Tim Meyers**, Meyers Farm/Producer, Vegetables
- **Sen. Peter Micciche (Ex-Officio)**, Alaska State Senator
- **Mike Mosesian**, Bell's Nursery/Producer, Vegetables
- **Comm. Julie Sande (Co-Chair)**, Alaska Department of Community & Economic Development, Commissioner
- **Rep. Liz Snyder (Ex-Officio)**, Alaska State Representative
- **Fred Villa**, General Public Member
- **Comm. Doug Vincent-Lang**, Alaska Department of Fish and Game, Commissioner
- **Eric Wyatt**, Blue Starr Oyster Co./Producer, Mariculture
- **Dr. Mingchu Zhang**, University of Alaska Fairbanks, Soil Scientist/Agronomist

ALASKA FOOD SECURITY AND INDEPENDENCE TASK FORCE

This report is the culmination of work completed by the Alaska Food Security and Independence Task Force and a team of researchers and writers organized by the University of Alaska Fairbanks (UAF). The UAF team provided the Task Force with organizational resources, such as report format and contents suggestions and sub-committee formation recommendations, as well as foundational resources pertaining to both food system sectors and Administrative Order 334's Duties and Responsibilities. The Task Force created sub-committees, with cross-sector representation, to explore how to address the directives.

REPORT AUTHORS AND COLLABORATORS

The Governor's Office provided UAF Institute of Agriculture, Natural Resources and Extension (UAF IANRE) funding to write the Task Force's final report. Given the short timeline and the need to develop a report to further guide food security in Alaska, UAF IANRE contracted the Alaska Food Policy Council (AFPC) to organize, research, and write the final report. UAF IANRE also contracted with the GIS and website development expertise of Dewberry Associates to build a public online resource for the Task Force's final report. The lead authors were selected based on their extensive Alaska food systems expertise and networks.. They contributed writing and resources to support the final report, in addition to collecting feedback and information directly from Task Force members that directly respond to the Governor's directives from AO 334.

PROJECT MANAGER AND TASK FORCE LIAISON:

- **Jodie Anderson**, Director, UAF Institute of Agriculture, Natural Resources and Extension
Director, Alaska Agricultural and Forestry Experiment Station
Director, Alaska Cooperative Extension Service

WEBSITE DESIGN & GIS SERVICES:

- **Hillary Palmer**, Dewberry Alaska, Inc.

LEAD AUTHORS INCLUDE:

- **Melissa Heuer**, *SPORK Consulting*
- **Glenna Gannon**, *University of Alaska Fairbanks—Institute of Agriculture, Natural Resources, and Extension; AFPC Governing Board Member*
- **Rachael Miller**, *Alaska Pacific University; AFPC Governing Board Member*
- **Robbi Mixon**, *Executive Director Alaska Food Policy Council and Alaska Farmers Market Association*
- **Sundance Visser**, *Sustainable Food Systems and MBA Graduate Student*
- **Kyra Wagner**, *Homer Soil and Water Conservation District*
- **Evie Witten**, *Regeneration North; AFPC Governing Board Member*

ABOUT THE ALASKA FOOD POLICY COUNCIL

The Alaska Food Policy Council (AFPC) is a non-partisan 501c 3 non-profit organization with over a decade of work aimed at improving the food systems for the benefit of all Alaskans. Their goal is to create a healthier, more secure, and more self-reliant Alaska by improving our food system. The AFPC serves as a resource and potential partner to any person or organization interested in improving Alaska's food systems—agencies and individuals representing federal and state agencies, tribal entities, schools, university programs, farmers, fisheries, and food systems businesses.

ADDITIONAL ACKNOWLEDGEMENTS

- **Victoria Caltagirone, Christine Childers and Michaela Fowler**, *Alaska Department of Commerce, Community, and Economic Development*
- **Melissa Clampitt**, *University of Alaska Cooperative Extension Services*
- **Micaela Fowler**, *DCCED Deputy Commissioner*
- **Glenda Grawe**, *former employee, Alaska Division of Agriculture*

SEPTEMBER 2022 UPDATE: CREATION OF THE OFFICE OF FOOD SECURITY

On September 16, 2022, through Administrative Order No. 338, Governor Dunleavy Announced the creation of the Office of Food Security.¹⁰ The Office of Food Security "will operate within the Office of the Governor and has a number of duties and responsibilities, including coordinating the state's efforts related to food security and serving as the first point of contact with agriculture, mariculture, food processing, and other related industries. Additionally, the Office of Food Security will be responsible for creating marketing materials and presentations that describe the state's food security efforts and opportunities."¹¹

Additionally, the Office of Food Security will coordinate the state's efforts related to food security and serve as the first point of contact with agriculture, mariculture, food processing, and other related industries. Additionally, the Office of Food Security will be responsible for creating marketing materials and presentations that describe the state's food security efforts and opportunities.

The stated purpose of the Office of Food Security is to:

- Enhance access to, availability, affordability, and quality of food for all Alaskans
- Set policies and identify resources to build a strong, sustainable, and healthy food system in the state to ensure food security for all Alaskans.

- Identify or expand economic opportunities for the state in food production, food processing, and food distribution businesses.

This new office will utilize existing resources and staff, and will operate within the Office of the Governor. Existing agencies and groups that will be involved in the functions of this office will include:

- The Division of Agriculture in the Department of Natural Resources to protect, preserve, and develop the state's farmland and agricultural industry
- The Department of Fish and Game to protect, preserve, and develop the state's subsistence, personal use, commercial fisheries, and grazing land leases.
- The Department of Commerce, Community and Economic Development to improve and expand existing incentive grant and loan programs as relates to the food supply chain, identifying Opportunity Zones that can be utilized to expand the food production supply chain, and facilitate economic diversification of the food production supply chain
- The Department of Health to develop strategies and educational programs to inform state residents of the nutritional value of locally-harvested seafood, proteins, and produce
- The Department of Education and Early Development to develop curriculum covering subjects such as nutrition, gardening, and food preparation, and to include locally produced food in school meals
- The Department of Military and Veterans' Affairs to develop a method to use state food resources as part of the Governor's disaster and emergency preparedness food supply program, including food storage depots
- The Department of Corrections to develop a program to use state food resources as part of the Department of Corrections' institutional food service programs
- The University of Alaska to research and develop a sustainable supply of locally produced food and workforce development programs and public-private research partnerships
- The Department of Environmental Conservation to enhance the health, safety, and welfare of state residents and their overall economic and social well-being by developing programs that encourage the development of the state's food resources
- Nonprofit organizations, including local food banks and associations of food producers, to develop and use the state's food resources
- The United States Department of Agriculture to develop programs that encourage the growth and use of the state's food resources
- Alaska Native regional and village corporations, Tribes and Tribal organizations, to preserve, enhance, and expand the traditional uses of the state's food resources and to encourage the development of locally produced food resources in the corporations' regional communities

¹ <https://gov.alaska.gov/newsroom/2022/02/09/governor-dunleavy-establishes-alaska-food-security-and-independence-task-force/>

² University of Alaska Campuses: <https://www.alaska.edu/alaska/campuses.php>

³ Map of Indigenous Peoples and Languages of Alaska (2011). Alaska Native Language Center https://www.uaf.edu/anlc/images/ipla-map-20130712_sm.jpg

⁴ <https://gov.alaska.gov/admin-orders/administrative-order-no-331/>

⁵ <https://gov.alaska.gov/newsroom/2022/02/09/governor-dunleavy-establishes-alaska-food-security-and-independence-task-force/>

⁶ <https://gov.alaska.gov/admin-orders/administrative-order-no-334/>

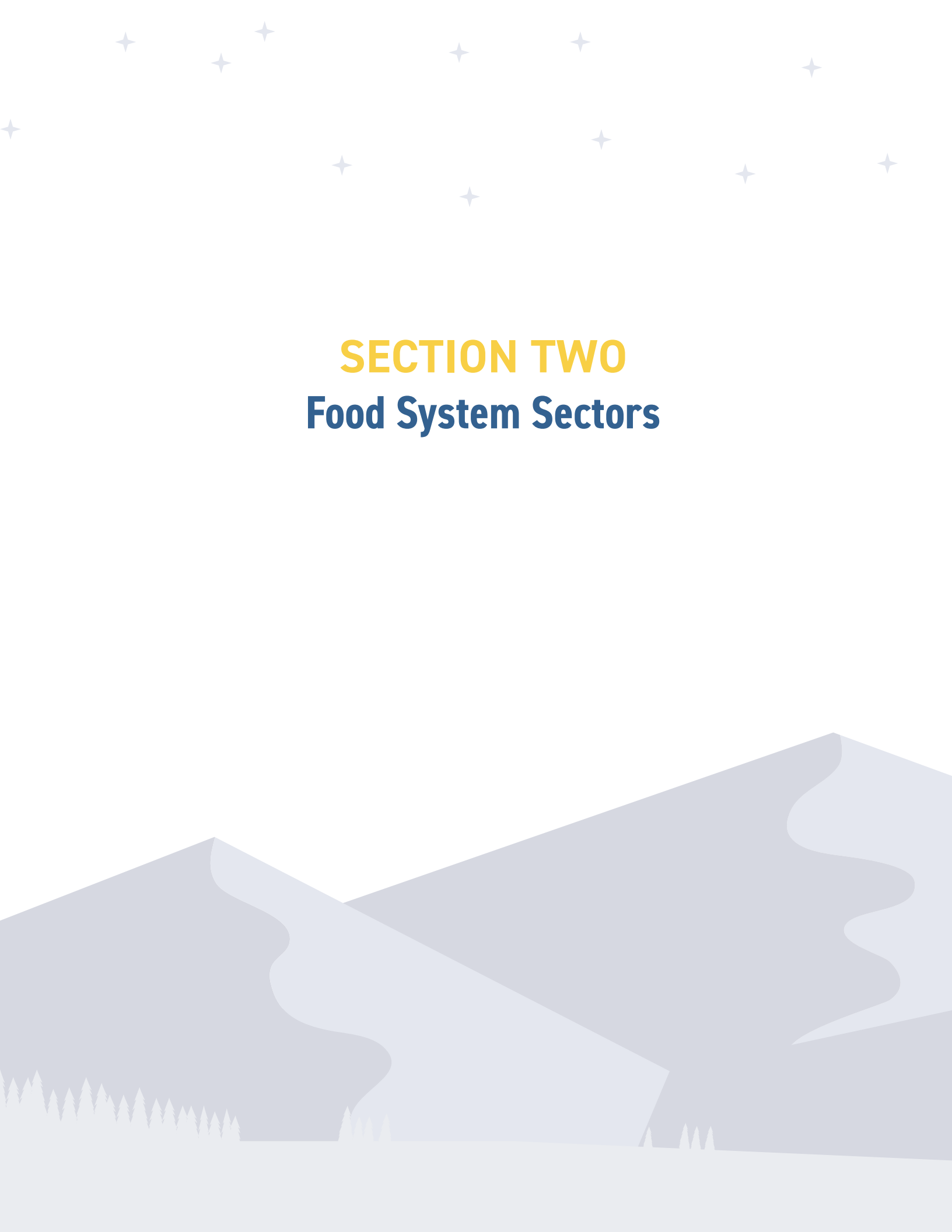
⁷ <https://gov.alaska.gov/admin-orders/administrative-order-no-334/>

⁸ <https://gov.alaska.gov/services/boards-and-commissions/apply-for-a-board-appointment/>

⁹ <https://gov.alaska.gov/newsroom/2022/04/26/governor-dunleavy-names-thirteen-alaskans-to-the-alaska-food-security-and-independence-task-force/>

¹⁰ Office of Governor Mike Dunleavy (2022 September 16). Administrative Order No. 338. <https://gov.alaska.gov/admin-orders/administrative-order-no-338/>

¹¹ Office of Governor Mike Dunleavy (2022 September 16). Governor Dunleavy Announces Office of Food Security. <https://gov.alaska.gov/newsroom/2022/09/16/governor-dunleavy-announces-office-of-food-security/>



SECTION TWO

Food System Sectors



Food System Sectors Introduction

Alaska's supply chain is vulnerable to disruption and in turn, our food supply is unstable. This was most recently highlighted by the 2018 earthquake in Southcentral and the ongoing COVID-19 global pandemic with its associated supply chain breakdowns. Furthermore, extreme weather events and seasonality make rural communities, far beyond the end of the road, susceptible to weeks without food delivery and the food that arrives often has a high spoilage rate due to long travel time and poor storage conditions. Understanding how Alaska's food system works and how different sectors interact is paramount to effective policy creation and decision-making to increase food resilience for all.

Our food system at its base consists of numerous parts—plants, animals, wild harvesters, producers, fishers, processors, distributors, transporters, retailers, marketers, consumers—the list goes on. Each part of the system directly or indirectly affects every other part. At every scale—community, town, region, state, etc.—food is a web, interconnected and, to some degree, dependent on each other. Much like a natural ecosystem, changes in one area affect others and unintended consequences may occur with significant impact to consumers, the economy, and the environment.

A systems approach examines both the whole and the individual parts. By studying each part through a holistic lens, a picture emerges showing how each individual, industry, community, and environment is affected. One can identify the strengths and weaknesses of systems and examine how a decision in one area affects a community at another end of the system. A systems approach also looks at all dimensions, from access to education and health, to environmental impacts and who is affected most, and illuminates interdependence and relationships. From here, the system can be evaluated to uncover problems these solutions may cause, taking into account each perspective and their related perceived costs and benefits. A systems approach can help create clear visions for achieving tangible, sustainable, and lasting changes.

The movement of food is often portrayed in a linear model:

Production > Distribution > Processing > Storage > Sales > Purchase > Consumption > Waste

Some models take this a step further and connect waste to production, alluding to the concept of waste to energy, which can happen through composting and anaerobic digestion.

To fully address food issues and challenges, a systems-based approach is necessary—an interdisciplinary, multi-sectored framework for research and policy aimed at sustainable solutions for a healthy food supply. This approach acknowledges the relationships between the different parts of the food system and the social, economic, and environmental outcomes of activities within the food system. Systems thinking sheds light on non-linear processes in the food system, offering integrative perspectives to policy solutions. A systems approach also expands the perspective when seeking to understand and ameliorate the root causes of problems such as poverty, malnutrition, and the impacts of climate change, in which food sits at the crossroads.



The food system spans the activities, people, and resources involved in getting food from field to plate, from agriculture through nutrition and beyond. Along the way, it intersects with aspects of public health, culture, society, policy, and the environment."

—The Johns Hopkins Center for a Livable Future,
Food System Primer³

Section Two of this report provides a summary of various components of Alaska's food system, including:

- **Wild Foods**
- **Production**
- **Distribution and Aggregation**
- **Preparation and Consumption**
- **Processing**
- **Access**
- **Waste and Recovery**

There is significant overlap between some sections... *because food is an interconnected web.*

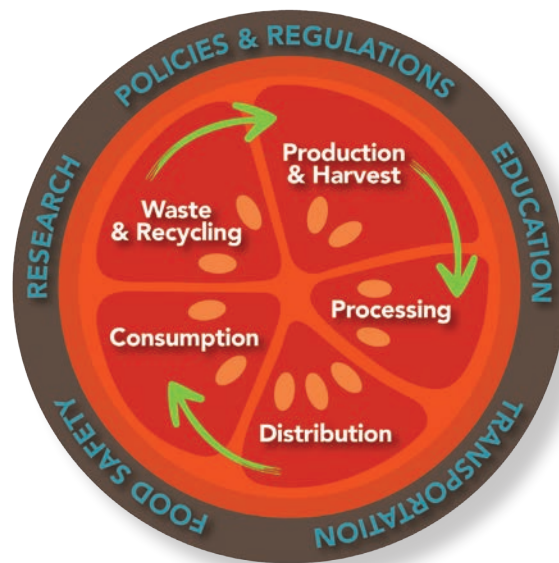


Image: Alaska Food Policy Council,
by Kari Odden/Moontide Design

¹Tenenbaum, D.J. (2008). Food vs. fuel: diversion of crops could cause more hunger. *Environ Health Perspect.* 116(6). DOI: 10.1289

² *Electronic Application for State Benefits* [HB168]. Retrieved September 2022 from <https://www.akleg.gov/basis/Bill/Detail/32?Root=hb168>

³ Food System Primer, Johns Hopkins. Retrieved August 2022 from <https://www.foodsystemprimer.org/>

⁴ Ackerman-Leist, P. (2013). *Rebuilding the Foodshed*. Santa Rosa, CA.



The work ahead of us is not easy. It requires us to move from a sense of individual resignation to a spirit of collective resolve.... Building resilient local food systems is a remapping of our expectations. It is a cartography of hope."

—Philip Ackerman-Leist, *Rebuilding the Foodshed*⁴





Wild Foods

Introduction

Subsistence, personal, and sport harvest of wild foods are crucial aspects of food security, culture, and economic stability among all user groups in Alaska. When addressing issues around wild foods, it is critical to understand the complex land, regulations, access language, and user management aspects of wild hunted, fished, and harvested foods, and the various means by which they are utilized. Presently, the primary source of local food in the state of Alaska is from the harvesting of wild foods.^{1,2} In Alaska wild food species are harvested by both rural and urban, and both Indigenous and non-Indigenous populations to provide for their food security, through processes legally categorized as subsistence and non-subsistence hunts and fisheries.³ Urban residents harvest wild foods through personal use, sport fisheries and general hunts, and rural Alaskans, including Alaska Natives, through subsistence hunting and fishing. Subsistence and personal use-harvested fish and game cannot be commercially sold or used for trade or barter, but may be gifted.⁴

Alaska's rural residents each harvest an average of 295 pounds of wild foods yearly, or about 18,000 tons, under state and federal subsistence regulations. This "dual-management" approach means state fishing, hunting, and trapping regulations apply on non-federal lands, and, in general, all Alaska residents are eligible to hunt under the state regulations. State regulations apply to federal lands unless they are specifically closed to non-federally qualified users.⁵

Subsistence hunting and fishing has different legal definitions and ramifications according to Alaska State and federal laws. Both State and federal laws recognize subsistence uses as the "customary and traditional uses" of wild resources for food, clothing, fuel, transportation, construction, art, crafts, sharing, and customary trade.^{6,7} Primarily, the term subsistence is used in a legal context, and does not capture the multiple social, cultural, economic, and spiritual dimensions of Indigenous food systems.^{8,9} Subsistence harvest activities are practiced widely by Alaskans throughout the year and for many rural Alaska residents, subsistence hunting and fishing is critical to their food and economic-security due to remoteness of communities, the high costs of transportation and imported goods, and limited agricultural potential throughout the year. The section below outlines the regulatory bodies and legislation pertaining to the legal definitions of "subsistence" harvesting in Alaska.

Regulatory Agencies Responsible for Managing the Harvest of Wild Food in Alaska

Presently, subsistence activities taking place in federal public lands and federally reserved navigable waters are regulated by federal agencies (e.g. migratory waterfowl, halibut, seals, whales, walrus, etc.). The State-Federal Subsistence Liaison Office was created to oversee the cooperation between State and Federal agencies that manage subsistence resources.¹¹ According to Alaska State law, subsistence resource governing bodies

(the Board of Game and Board of Fisheries) are obligated to provide reasonable opportunity for subsistence uses first, before providing for other uses of any harvestable surplus of fish or game populations [AS 16.05.258 (b)]. This is also referred to as the subsistence “preference”, or “priority.”¹² Alaska Native Federally Recognized Tribes, advocacy groups, and scholars alike have been critical of the shortcomings of how subsistence preference has been managed by the State and federal governments alike and have argued for increased prioritization for Indigenous harvesters, and for Indigenous peoples as Sovereign Tribes (Nations) to play a greater role in resource management.^{7,8} State management of federal lands has implications as it relates to the federal trust responsibilities with Federally Recognized Tribes, specifically as it pertains to subsistence rights guaranteed by ANILCA. With the signing of Alaska Housebill 123,¹³ the legal recognition of Tribes by the state, there are potential implications for alignment of state and federal management practices.

State Fish and Game Boards

There are two main public bodies that oversee the management of public wild foods. These boards are important forums for public-to-government relations and determining future regulations for these public resources. The Alaska Board of Fisheries and the Alaska Board of Game consist of seven members appointed by the Governor and confirmed by the legislature, to serve three-year terms. The main role of both boards is to conserve and develop the fishery and game resources for the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The boards are charged with making allocative decisions, and the department is responsible for management based on those decisions.

The boards have a three-year meeting cycle, and generally hold meetings from October through March. The Board of Fisheries meets four to six times per year in communities around the state to consider proposed changes to fisheries regulations. The Board of Game considers changes to regulations on a region-based schedule, with meetings varying in duration from 5 to 11 days in communities around the state.

The boards use biological and socioeconomic information provided by the Alaska Department of Fish and Game, public comment received from 80 local advisory committees inside and outside of the state, and guidance from the Alaska Department of Public Safety and Alaska Department of Law when creating regulations that are sound and enforceable.¹⁴

Overview of Wild Foods Harvested by Alaskans

In Alaska, hundreds of species of wild fish, game, avian, marine mammal and plant species are used for subsistence purposes. Subsistence is a critical sector of the rural Alaskan economy and provides essential nutrition to rural communities.^{15,16} To replace the food-value provided by subsistence harvests alone, would cost anywhere from \$450–\$900 million dollars annually by different estimates,^{17,18} let alone the incalculable cultural values embodied in harvest activities. The most recent harvest records provided by the Alaska Department of Fish and Game (ADF&G) estimate approximately 36.9 million pounds (usable weight) of wild foods are harvested annually by rural residents (excluding wild plant products), and 11.4 million pounds by urban residents in all noncommercial fisheries and hunts.¹⁹

Notably, there is concern from some Alaska Native harvesters and scientists alike that the reported quantities of wild foods harvested and consumed by Alaska harvesters is severely under-estimated. The impact of urban harvests on traditional use areas has a disproportionate economical impact on rural harvesters, which results in food insecurity for individuals, households, and communities. When the harvest is underreported the advocacy for change around management practices has a more limited impact. This topic of concern relates to both the need for *accurate* amounts of wild foods harvested by traditional users to be adequately recorded for representation in management decisions,²⁰ as well as for health-related considerations and recommendations (e.g. exposure to methylmercury contamination in fish consumed by Alaska Natives).²¹

On a per capita basis, the estimated annual wild food harvest for rural and urban residents is approximately 295 pounds, and 19 pounds per person, respectively.²² According to a meta-analysis of food security in Alaska, an estimated 65% of all Alaska residents practice some form of subsistence activity.²³ In rural areas, as much as 98% of residents participate in some subsistence activity.

Composition of wild food harvest by rural Alaska residents, 2017

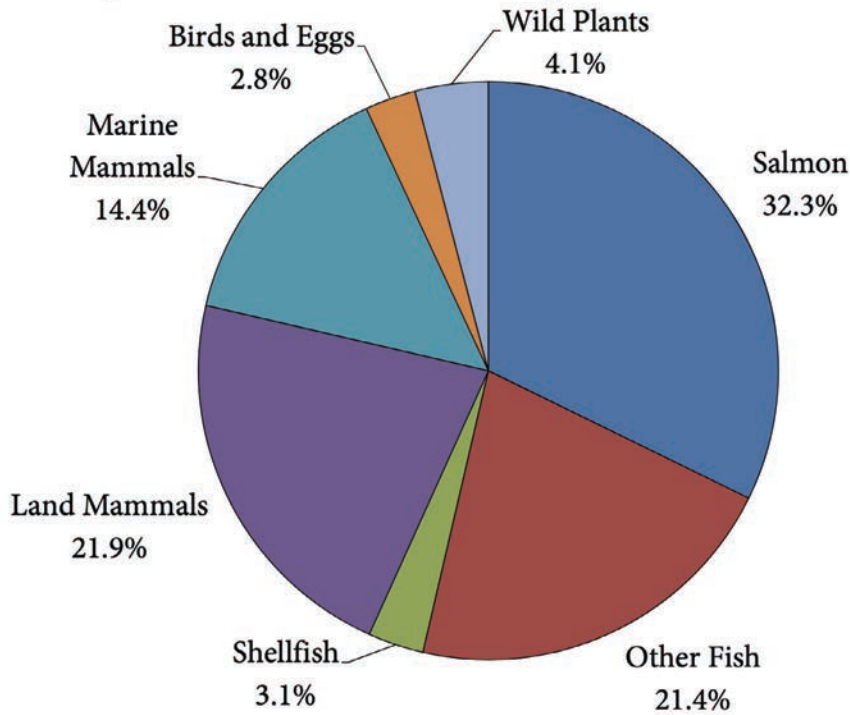


Figure 1: Composition of wild foods harvested by rural Alaskans in 2017, ADF&G

**Wild food harvests in Alaska by area, 2017
(pounds usable weight per person per year)**

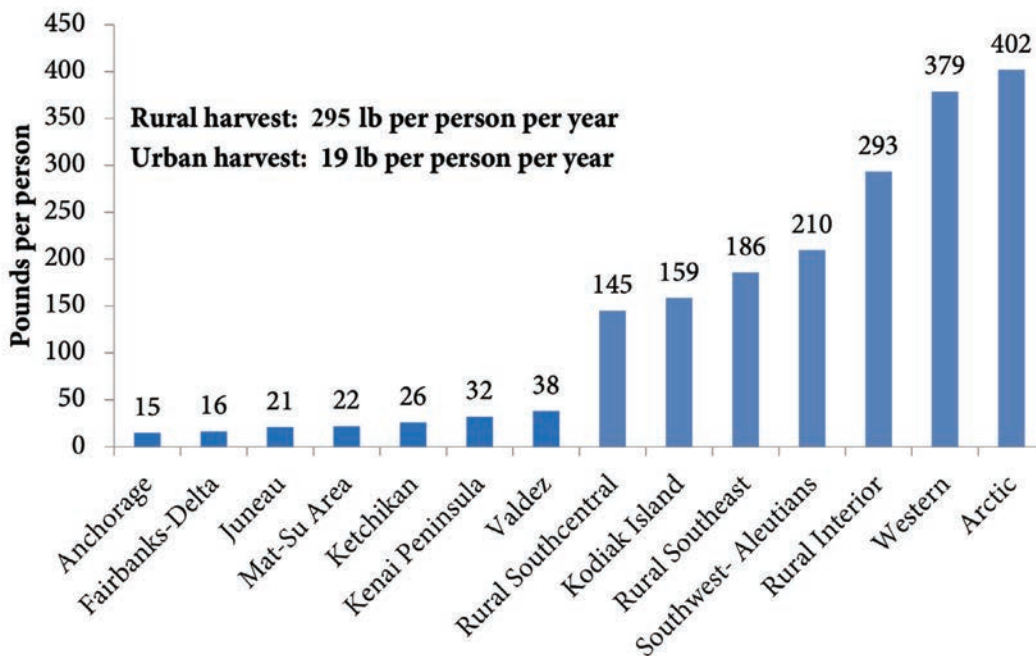


Figure 2: Alaskan wild food harvest per capita by region, ADF&G, 2017)

Percentage of households participating in subsistence activities in rural areas

Area	Harvesting game	Using game	Harvesting fish	Using fish
Arctic	63%	92%	78%	96%
Interior	69%	88%	75%	92%
Southcentral	55%	79%	80%	94%
Southeast	48%	79%	80%	95%
Southwest	65%	90%	86%	94%
Western	70%	90%	98%	100%
Total rural	60%	86%	83%	95%

Figure 3: Number of rural households participating in subsistence activities, ADF&G, 2017

Hunting

Alaskans have a strong history with and reliance on hunting wild game for subsistence, personal use, and overall food security in addition to a vibrant guiding and big-game hunting culture. The Department of Fish and Game in conjunction with Federal and Tribal partnerships manage these state resources through management of population size, habitat health, take limits, species introduction, and predator control. Wild game animals and fowl play a key role in food security, culture, and lifestyle in Alaska and it is key that healthy populations are maintained and that access to them is available for the long-term.

Subsistence hunting in Alaska is available to Alaska residents only and managed by the ADF&G under the same regulations as general season, drawing, and registration hunts, and a hunting license and harvest tag are required. There are multiple classes of subsistence permits these include: Tier I, Tier II, and "Cultural and Subsistence Harvests". Tier I & II subsistence permits are available to any Alaskan. ADF&G regulations state that subsistence permits may be issued when there is not enough game for a "general season" when the population of animals is considered a historically important source of food (e.g. moose or caribou).

According to ADF&G, Tier I hunts "are allowed where it is anticipated that a reasonable opportunity can be provided to all residents who desire to engage in that subsistence use". Tier II permits "are used where it is anticipated that a reasonable opportunity to engage in the subsistence use cannot be provided to all eligible residents, and applications are scored to determine who is eligible for the limited number of permits". Under "Cultural and Subsistence Harvests" permits, certain subsistence hunts can be performed for cultural education or religious and/or ceremonial purposes.²⁴

Subsistence species hunted vary by region. Highly valued land mammal species include moose, caribou, deer, bear, Dall sheep, mountain goat, and beaver. In coastal regions, seal, sea otter, sea lion, walrus, and whales make up the marine mammal harvest. Subsistence hunting for marine mammals is managed by the National Marine Fisheries Service (seals, sea lions, whales) and the U.S. Fish and Wildlife Service (sea otters, polar bears, walrus).²⁵ Waterfowl are jointly managed by state and federal governments (as described above) and a board representing eligible Alaska Native Tribes. A state hunting license and state waterfowl stamp are required to subsistence hunt waterfowl.

Many households in rural Alaska report heavy dependence on subsistence hunting for their annual protein intake. For surveyed communities outside non-subsistence (rural) areas, 48–70% hunt/harvest wildlife species. Because subsistence foods are widely shared, a majority of residents of these communities reported use of subsistence foods during the course of the year (>79–92%).²⁶

Notably, subsistence harvesters depend on reliable storage facilities to store wild food caches safely for human consumption. One growing challenge in Alaska is the thawing of permafrost and consequent loss

of traditional ice cellars.^{27,28} As such, more and more harvesters (of both wild fish and game resources) are reliant on freezers, which add an increased financial burden to rural harvesters (upfront and for utility costs) when considering the many hundreds of pounds of wild foods each household harvests annually.



Alaska subsistence hunted foods. Images (from top left): Community distribution of walrus harvest in Togiak, [ADF&G](#); Point Hope seal hunters ca. 1950–60's, [Anchorage Museum](#); Sgt. Burt Paul, shows a freezer full of his subsistence harvest which includes moose, seal, walrus, and fowl at his home in Kipnuk, [U.S. Army](#); Kake residents and elders process moose meat to be distributed to the community, [Organized Village of Kake](#)

What follows is a synopsis of certain important wild game and fish populations in Alaska that significantly contribute to food security. This section is an overview of these species' and **should by no means be considered an exhaustive summary** of all the wild game and fish species populations important for harvesters, in decline, or being actively managed.

UNGULATES (CARIBOU, MOOSE, DEER)

Caribou:

Caribou are a critical food source for both rural and urban Alaskans and consist of 32 distinct herds from the Aleutian peninsula to the North Slope. There are five different harvest categories for caribou harvest in Alaska; these include:

- Draw Hunts which are available to residents and nonresidents. Drawing hunts require an application fee and are awarded by lottery;
- Tier II which are subsistence hunts and are only available for Alaska residents 10 years of age or older;
- Registration hunts which are available for both residents and nonresidents and do not limit the number of permits and seasons and are closed by emergency order if a harvest goal is met;
- General Season which is the basic hunt where an individual buys a license, receives tags or harvest tickets for big game, and follows the general season dates and bags limits, and finally;
- Community Subsistence Harvest (CSH) hunts which are Tier I subsistence hunts and are only available for Alaska residents. It should be noted some Alaska hunters have been critical of current hunting regulations that allow non-residents to kill anywhere from one to five caribou during the hunting season and allow the killing of females that might have calves depending on them.²⁹

Caribou are among the most abundant and harvested wildlife species in Alaska. Alaska Department of Fish and Game manages herd stock carefully, often with calls for predator control.³¹

Throughout Alaska caribou herds fluctuate significantly and some herds are in danger of population decline. Declines are associated with increased predation (including human hunting pressure), changing environmental conditions (e.g. wildfire), and disease (e.g. Brucella which can lead to miscarriage).^{32,33,34} Environmental factors like increasing wildfire, changing precipitation patterns, and overall higher seasonal temperatures will affect vegetation distribution which directly alter the composition, biomass, or quality of available caribou forage.³⁵

Several caribou populations have changed dramatically over the past decade. The Fortymile Caribou Herd (FMCH) is an important migratory herd of caribou, and perhaps the most accessible caribou herd for hunters in Alaska. It is also unique as it has increased from about 52,000 in 2010 to upwards of 80,000 in 2017. Combined

with the aforementioned environmental changes, this growing caribou herd has prompted concerns by federal and State natural resource management agencies about long-term risk of overgrazing of caribou ranges. If caribou are overgrazing their seasonal ranges, there is a real long-term risk of population collapse. This would also result in reduced harvest (hunting) potential for Alaskans.

Other herds are not growing, but rather declining from a mixture of factors which have proven difficult to attribute to one single cause.³⁷ For example, the Central Arctic herd, hit a peak of about 70,000 animals in 2010, fell to 50,000 in 2013, and in a 2016 survey by the Alaska Department of Fish and Game estimated the herd population dwindled to about 22,000.³⁸ Factors for this decline remain unclear but point to decreasing fertility rates due to cow mortality and increasingly challenging environmental conditions, like winter freezing-rain events. Likewise, the Western Arctic Caribou Herd population has declined dramatically according to ADF&G. It is down to an estimated 188,000 animals in 2021,³⁹ reflecting a 23% decrease over the past two years, and a 50% decrease from its population peak in 2003.⁴⁰ The WAC is of critical importance to more than 40 small communities within the range of the herd for subsistence purposes.

Harvest management of caribou is very complex as several herds move across two countries, and federal law (ANILCA) requires recreational and subsistence harvest to be separately managed by State and federal agencies. The management of these animals is reflected in a complex harvest management coalition structure that is composed of dozens of natural resource management agencies and autonomous First Nation and Native Alaskan governments. As a result, inter-agency working groups have been formed to inform sustainable, long-term harvest management for both recreational and subsistence harvest (e.g. the Forty-Mile Herd Harvest Management Coalition and the Western Arctic Caribou Herd Working Group).⁴¹

Moose:

Moose are another critical source of wild-harvested protein important for rural and urban residents alike. About 175,000 to 200,000 moose are widely distributed throughout Alaska. The ADF&G has stocked moose populations in certain areas of the state such as the Kalgin Island moose population which resulted from a transplant of calves during 1957–59. According to ADF&G the two most heavily harvested moose areas at present are those closest to Alaska's greatest human populations: the Nelchina and Upper Susitna River (GMU 13) and the GMUs around Fairbanks (GMUs 20A, 20B and 20).

Nelchina and Upper Susitna River (GMU 13): The population and harvest has fluctuated widely in this area over the past 50 years, due to severe winters, predation, and human harvest. Harvest has ranged from about 500/year to as high as 1,250/year. ADF&G IM is taking place in most of the unit, and the agency indicates the decline in moose numbers over the past 20 years has slowed and the population is growing. According to ADF&G the objective is to increase the yearly moose harvest to 1,200 to 2,000 animals and provide for a subsistence harvest of 600 moose per year.⁴²

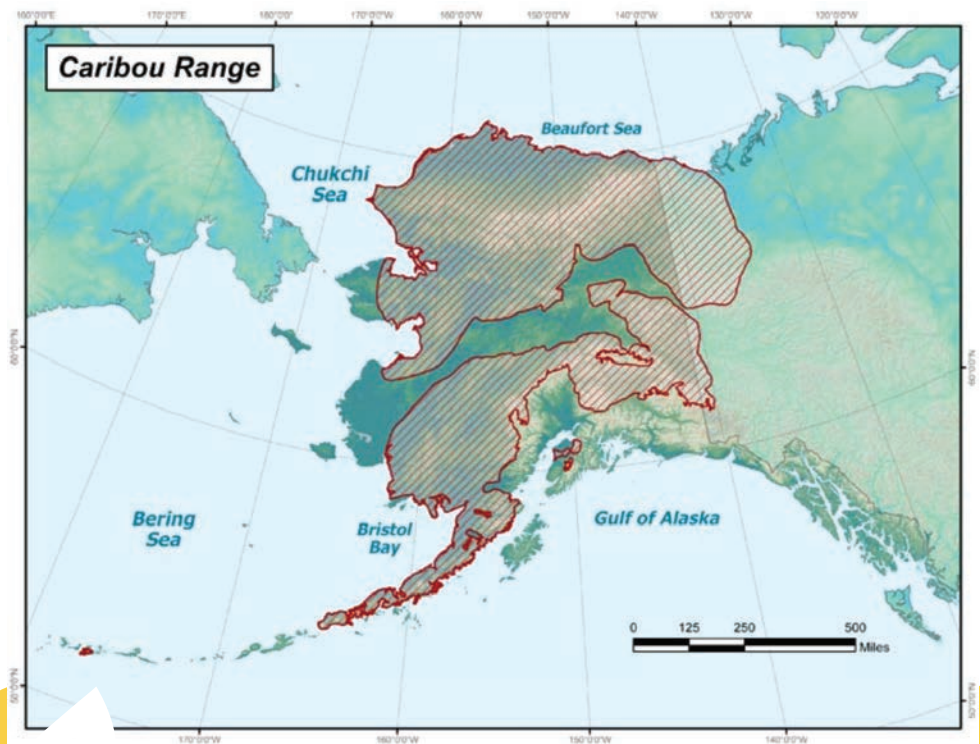


Image: *Caribou range in Alaska*, ADF&G

The Fairbanks harvest Unit attributes to about 30 percent of the entire Alaska moose harvest. In the 1970s, the moose population in 20A dropped from about 23,000 to just 2,800 in five years. A series of severe winters, increased predation, and an ill-timed liberal harvest contributed to the steep decline. The population in 20A is now estimated to be about 16,000 animals, and the population objective (before hunting season) is 10,000 to 12,000 animals. The recovery of this population highlights the combination of factors that work together to benefit moose. ADF&G notes concerns about the population exceeding the habitat carrying capacity and being vulnerable to severe weather patterns, as observed just this past winter (2021–2022).^{43,44} Moose in this region are showing signs of nutritional stress, and biologists are working to address the root causes.

There are many other critically important moose harvest areas through the state that support rural subsistence hunters and communities. Moose populations have varied in these regions as well with both examples of population booms and down-turns. For example, Management Unit 17 in Southwest Alaska, trophic changes from tundra to higher prevalence of woody shrubs have led to increased moose habitat and a growing population (of note—this trophic shift is proving to have an inverse impact on Caribou habitat and populations).^{45,46} Conversely, other management areas, such as Units 22 in Northwest Alaska and 15 on the Kenai Peninsula, where ADF&G has launched studies to better understand population declines due to nutrition and health indicators, respectively.^{47,48} Hunters in both these regions have indicated that with changing animal populations (and seasonal changes brought about by climate change) regulating agencies (e.g. the BOG) need to update harvest seasons and bag limits.⁴⁹

Another source of moose population stress is collision-caused-deaths. According to a 1995 study by the Alaska Department of Transportation, approximately 500–800 moose are killed in vehicular collisions across Alaska annually.⁵⁰ This number is likely higher with increased road traffic and environmental stress pushing animals onto roads and train tracks. Moose killed in these accidents are managed by the Alaska State Troopers Road Kill Program in which Alaska residents are called to salvage the undamaged meat and remove the carcass.⁵¹

Blacktail Deer:

Sitka Blacktail deer are the most frequently pursued species of big game in Southeast Alaska, and an important source of wild harvested protein for residents of Southeast, and Southcentral Alaska, however, hunting is also open to non-residents and bag limits range anywhere from one to six animals per individual.⁵² An ADF&G population estimate from circa 1970 suggests about 200,000 deer inhabited Southeast Alaska.⁵³ The Southeast Alaska region wide annual average harvest in recent decades has been about 12,300 deer annually.

According to ADF&G deer populations tend to fluctuate seasonally, primarily in response to winter weather and wolf and bear predation. Studies of winters with exceptional high snowfall indicate population declines of varying severity throughout deer inhabited regions. The agency indicates that one of the greatest threats to deer populations is in logged areas, since the result is extremely poor deer habitat post logging activities.⁵⁴ Population models predict declines in deer carrying capacity in the Ketchikan area of 50–60% by the end of the logging rotation in 2054.⁵⁴ In some areas illegal hunting is also a factor contributing to population decline.⁵⁴

ADF&G has introduced deer to several areas throughout the Southeast/Southcentral region to increase access to hunters, including to: the Yakutat area in 1934; to Prince William Sound and North Gulf Coast (GMU 6); to Kodiak & adjacent islands (GMU 8) between 1924 and 1934; and the Cordova Chamber of Commerce introduced Sitka black-tailed deer to Hawkins and Hinchinbrook islands between 1916 and 1923.

Harvest numbers on all of the above species are collected/reported annually to ADF&G as part of ongoing management programs but even by the agency's own acknowledgement, these numbers are not always accurate (due to insufficient data collection, data collection methods available, or under-reporting of harvest).

OMNIVORES AND PREDATORS (WOLVES AND BEARS)

Wolves:

Wolves and bears are harvested most often under the category of “furbearers” or for large game “Trophy hunts” in Alaska, however both black and brown bears are harvested for subsistence use, most often by Alaska Native subsistence harvesters. In this subsection, these animal populations will be described primarily in the context of predator control programs administered by the ADF&G since this is the foremost reason their populations are managed with regard to “abundance of wildlife populations”—as a means of increasing

ungulate populations in the state.⁵⁵ The ADF&G estimates 7,700 to 11,200 wolves, 30,000 brown bears and 100,000 black bears populate Alaska, however, many of these estimates have not been systematically updated in over a decade.^{56,57,58}

Wolves are both hunted and trapped by Alaskan and non-Alaskans. According to ADF&G, approximately 1,300 wolves are harvested in the state, with an additional 200+ animals killed annually for intensive management (predator control) programs.⁵⁹

Bears:

- **Black Bears:** In recent years, statewide harvest of Black Bears has increased steadily from about 2,500 in 2003 to 3,250 in 2007.⁶⁰ Black bears are included in predator control programs on the West side of Cook Inlet (GMU 16), In the 20-mile radius of McGrath (in Unit 19D East), predator population manipulations and other management actions are being tested, including capture and removal of black bears, in order to provide more moose for subsistence needs.
- **Brown Bears:** Alaska has an estimated 30,000 brown bears statewide. In 2007, about 1,900 brown bears were harvested in Alaska. Of that figure, about 700 were taken by Alaska residents and roughly 1,200 (or 67 percent) were taken by nonresidents. During the last 10 years, the Alaska Board of Game has made a deliberate effort to reduce numbers of grizzly bears in a few Game Management areas (e.g. GM Unit 13-the Nelchina Basin) by increasing the bag limit and extending hunting seasons largely citing human-bear conflict reduction as the reasoning for this increase—not predator control.^{61,62}

As the primary agency charged with managing the state's wildlife populations, ADF&G, in conjunction with the Board of Game—a governor-appointed panel of seven voting members that holds regulatory authority for wildlife in the state—is responsible for managing Alaska's wildlife, for providing information to the public on the background and scientific justification for, and the purposes and progress of all management programs. The Alaska Legislature passed a landmark Intensive Management (IM) law in 1994 and other amendments to the Alaska statutes governing game management in the state. The intensive management law (now found in Alaska Statute 16.05.255 (e)-(g) and (k) with the implementing regulations for predator control programs in Alaska Administrative Code 5 AAC 92.106, 108, 110-113, 115-116, 118, 121-124 and 127) direct the state's BOG to review ungulate populations (deer, caribou, or moose) for human consumptive use and sets population and harvest objectives in specific Game Management areas throughout the state.⁶³

MARINE MAMMALS (WHALES, SEALS, POLAR BEAR, SEA OTTER, WALRUS, ETC.)

Marine mammals are extremely important to subsistence livelihoods and the cultures of virtually all coastal rural Alaska communities. While the ADF&G is not responsible for management of marine mammal species, the agency's research on marine mammals such as ice seals is beneficial in monitoring population health, identifying sustainable harvest practices, and access for subsistence hunters.⁶⁵ Currently the ADF&G subsistence division is working on several projects in collaboration with the Ice Seal Committee (ISC) Bristol Bay Native Association, Association of Village Council Presidents, and Maniilaq to collect ice seal harvest information in interested communities, and to summarize existing ice seal harvest numbers statewide into an annual "Ice Seal Harvest Monitoring Report."⁶⁶

Similarly, Pacific sea otters are protected under the Marine Mammal Protection Act which prohibits direct harvest of marine mammals with the exception of subsistence hunting (the US Fish and Wildlife Service is responsible for managing sea otter populations). Increasingly, Tribes have called for additional sea otter harvests, especially with regard to managing populations citing trophic shifts in shellfish (sea otter's preferred food).

Fishing

Fishing is the single greatest source of wild-harvested food providing for food security for Alaskans. Fish harvests through subsistence, personal use, and sportfish comprises approximately 50–60% of the annual wild food harvested by Alaskans (>32% were salmon species, >21% was other fish species).⁶⁹ Many species of fish have experienced dramatic declines causing fishery disruption, closures, and in some cases, collapse leading to the declaration of fishery disasters.⁷⁰ (*Note: please see Directives Section "Fishery Shortfalls &*

Disaster Response” for additional information on specific stocks of concern and fishery disasters.) The causes of the population disruption and declines vary between regions and fishery and are not fully understood, but it’s generally recognized that for many fisheries commercial bycatch^{71,72} and environmental change⁷³ due to warming waters are both contributors, and that some combination of factors is likely at play.⁷⁴ In some areas of the state, like Cook Inlet, urbanization and habitat loss is also generally recognized as a contributing factor.⁷⁵

The harvesting of wild fish species is central to Alaska’s subsistence, personal use, and commercial economies. Wild harvesting of fish for household food security in Alaska is divided into subsistence and personal categories (as described above). Personal use fishing requires a valid fishing license, and is similar to subsistence fishing, except that it is available to Alaskans living in urban (non-subsistence) areas and utilizes more efficient gear, like dipnet and setnet, than sport fishing.⁷⁶

Under the Alaska state subsistence statute, the Alaska Board of Fisheries is responsible for identifying fish stocks that support subsistence fisheries and, if populations of these stocks are healthy, adopting regulations that provide reasonable opportunities for subsistence uses to take place. According to Alaska Statute AS 16.05.258, whenever it is necessary to restrict harvests, subsistence fisheries are to receive a preference over other uses of the stock.⁷⁷

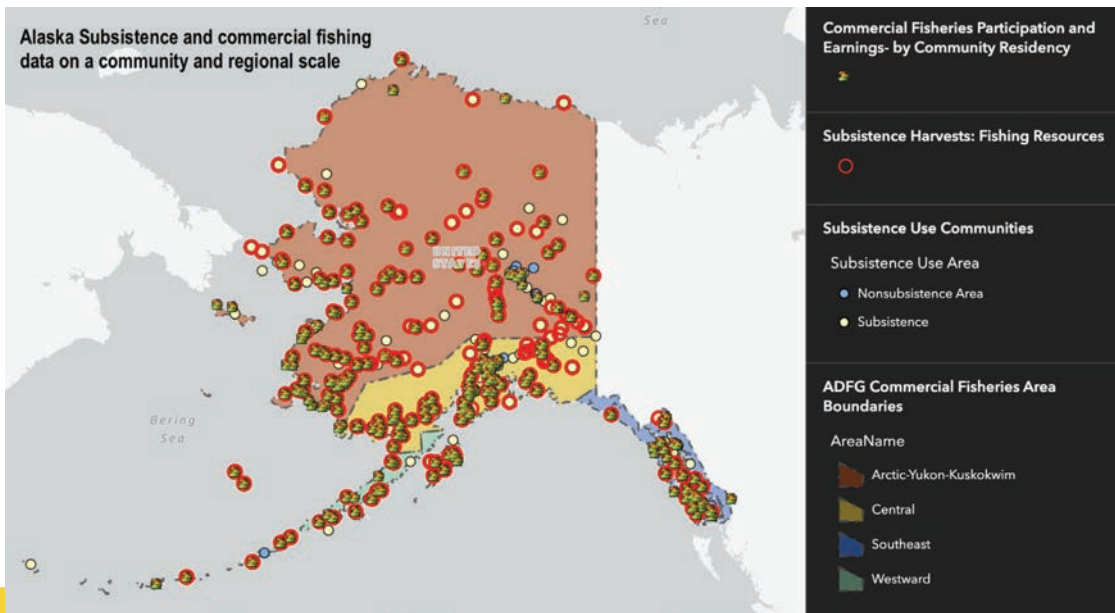


Image: Alaska subsistence fishing data app, [ADF&G Subsistence Division](#)

Most households in rural Alaska depend on subsistence fishing. For rural communities surveyed, 75-98% of sampled households harvested fish, and 92-100% used fish. As such, subsistence fishing in rural communities is such a major part of sustaining local life and providing for cultural and nutritional needs (food security) that disruptions in fisheries put rural communities' health and wellbeing in serious danger.

While many fisheries perform well annually, such as in Bristol Bay, there are several areas of concern at the time of this report. A poignant example of the fallout associated with declining keystone subsistence species in Alaska is the population collapse of Chinook (King) salmon. Since 2007, Chinook runs have been so poor that even with complete fishery closures not enough fish returned to meet ADF&G escapement objectives. This loss of a critical food resource has greatly affected rural, predominantly Indigenous, populations across the state. Alaska Native people have relied on this culturally-significant species for a major part of their annual food security since time immemorial, and at this time, many communities along the Yukon River, in Norton Sound, and elsewhere around the state have not been able to harvest Chinook for over a decade; affecting both local food security and the cultural values and knowledge that are tied to this resource.^{79,80}

Another important factor affecting access and participation in subsistence and personal use harvest is the interrelated nature of those with commercial fisheries. It is well documented that rural subsistence and/or personal use harvesters also participate in commercial fisheries by using the same equipment for commercial fishing as for subsistence activities. This model supports the stability of the mixed-cash-subsistence economy of rural Alaska, whereby harvesters make their cash income through commercial fishing and provide for their household's food security through subsistence fishing. As such, an often overlooked aspect of rural Alaskan food security provided by subsistence/personal use fishing is access to, and participation in commercial fisheries.⁸¹

The declines that occurred in 2020 and 2021 in the Yukon and Kuskokwim River salmon returns have been the most dramatic in the state, with the Yukon Chum salmon fishery seeing its lowest runs ever in the summer of 2021. These declines are part of a trend in Western Alaska rivers, where some runs have been in decline since the late 1990s, and all have below average and/or hit historic lows for the past three years. The Western Alaska chum salmon run size in 2021 was roughly one-third as large as the previous record poor abundance seen in 2000, by far the lowest abundance ever documented.⁸⁵

Western Alaska Chinook salmon runs have also been chronically diminished for over a decade to the point of near collapse.⁸⁶ Run sizes in 2020 and 2021 were the poorest observed over the past 40 years leading to missed escapement goals and many commercial and subsistence fisheries closures.

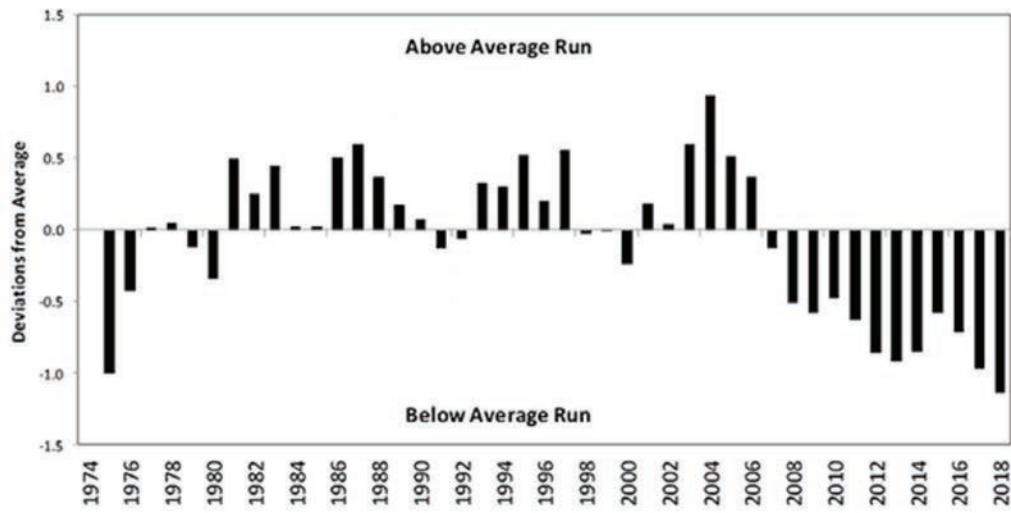


Image: Chinook salmon runs across Alaska from 1974 -2018, [ADF&G](#)

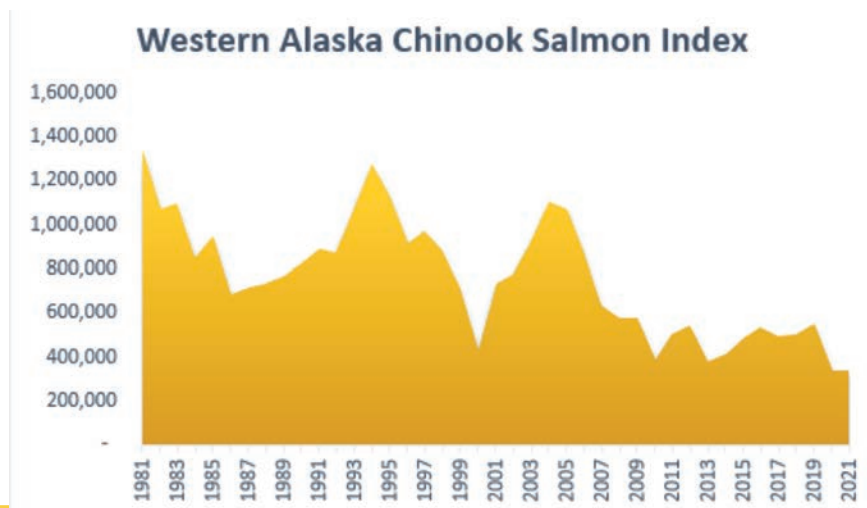


Image: Chinook salmon index abundance estimates for Western Alaska stocks, [ADF&G](#), June 2022

Stock	Total run size?	Escapement goals met? ^a	Subsistence Fishery?	Commercial Fishery?	Sport Fishery?
Nushagak River	Below average	0 of 1	Yes	No directed Chinook Fishery	Limited
Kuskokwim Bay	Below average	2 of 2	Yes	No directed Chinook Fishery	Yes
Kuskokwim River	Below average	3 of 3	Limited	No	No
Yukon River	Below average	0 of 4 ^b	No	No	No
Norton Sound	Below average	0 of 2	Yes	No directed Chinook Fishery	No

^a Includes performance for the subset of goals that were assessed. Some escapement goals were not assessed for various logistical reasons, including funding and weather.

^b Includes 1 U.S./Canada goals.

Table: Summary of Western Alaska Chinook salmon stock status, 2021, ADF&G



Abundant Chum salmon traditionally constitute the majority of subsistence salmon harvest in the Arctic-Yukon-Kuskokwim region, accounting for up to 70% of the subsistence catch along the length of the Yukon, and have supported the most northerly commercial salmon fishery in Kotzebue Sound.⁸⁷ Chinook salmon are a critical component of the subsistence salmon harvest in the Arctic-Yukon-Kuskokwim region, because they tend to migrate earlier than other salmon species, when weather tends to be more conducive to traditional drying preservation methods, and because they tend to migrate farther upriver than many other salmon species. Yukon and Kuskokwim River Chinook salmon also build up tremendous fat reserves before their long migration with oil levels reaching more than 30 percent of their muscle weight making them a critically important food source.⁸⁸ In more interior communities of the larger river systems, Chinook and chum salmon are the only salmon species available.

Several Cook Inlet fisheries were also given disaster declarations by NOAA, including the 2018 Cook Inlet east side setnet fishery and the 2020 Upper Cook Inlet salmon fisheries. The harvest in Upper Cook Inlet was the lowest since 1971, with drift gillnet and east side setnet harvests 86% lower than their respective recent 10-year averages.⁸⁹

The Cook Inlet region supports a mixture of salmon uses: commercial, recreational, personal use, and subsistence. The different uses are primarily separated geographically, with the timing of commercial openings also used to provide opportunities for upriver user groups. In the Anchorage Non-Subsistence Area of Cook Inlet, people rely on recreational and personal use fisheries to access salmon for home consumption.⁹⁰

Stock	Abundance?	Escapement goals met? ^a	Subsistence Fishery?	Commercial Fishery?	Sport Fishery?
Nushagak River	Below average	0 of 1	Yes	Yes	Yes
Kuskokwim Bay	Below average	NS ^b	Yes	No	Yes
Kuskokwim River	Below average	1 of 1	Yes	Limited	Yes
Yukon River summer run	Below average	1 of 1	Limited	Limited	Yes
Yukon River fall run	Below average	1 of 4 ^c	Limited	No	No
Norton Sound	Below average	2 of 4	Yes	Limited	Yes
Kotzebue	Below average	NS ^b	Yes	Limited	Yes

^a Includes performance for the subset of goals that were assessed. Some escapement goals were not assessed for various logistical reasons, including funding and weather.

^b No survey, escapement goal was not assessed.

^c Includes 2 U.S./Canada goals.

Table: Summary of Western Alaska chum salmon stock status, 2020, ADF&G



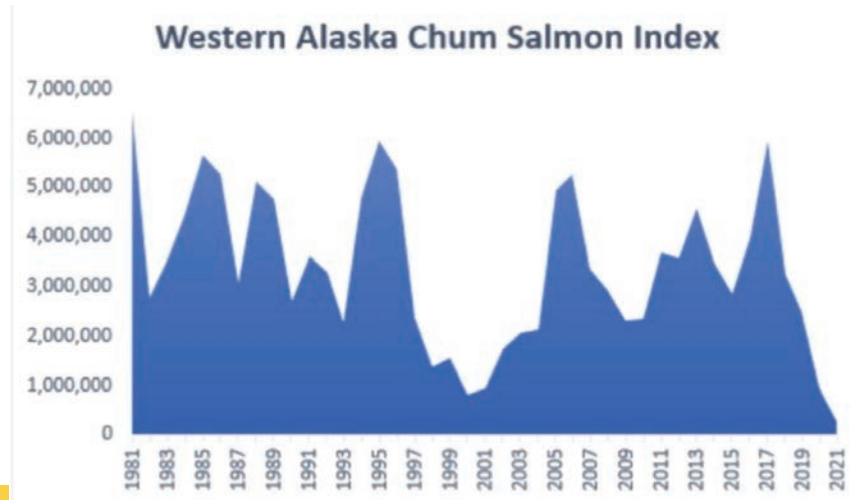


Image: Chum salmon index abundance estimates for Western Alaska stocks, ADF&G.

Commercial fishermen are also permitted to retain fish for home consumption.⁹¹ Over two-thirds of Kenai Peninsula residents reported salmon was an important part of their household's diet, and about three-quarters have someone in their household involved in salmon fishing.⁹²

Gathering (Harvesting Wild Plants)

Non-timber forest products (NTFPs) have been used for millennia as resources vital to the livelihoods and culture of Alaska Natives and, more recently, as subsistence resources for the welfare of all Alaskans. Many of these products are now being harvested and sold as additional income opportunities through harvest and manufacture of forest resources. Existing studies of NTFPs in Alaska are over a decade old and focus on commercial harvesting rather than traditional knowledge or sustainable harvesting practices.^{93,94}

No permit is required to harvest reasonable quantities of NTFP for personal use. Individuals harvesting NTFPs for commercial purposes are required to obtain a Limited Non-Timber Forest Products Commercial Harvest Permit. Commercial use is defined as harvesting NTFPs for the primary purpose of sale, resale, or use in a manufacturing process resulting in a product that will be sold or used for business activities. The official permit to harvest commercially on general or state forest lands is available through the Division of Mining, Land & Water's NTFP web page. This permit does not authorize harvest on private, Tribal, state park, University of Alaska, Mental Health Trust, Department of Transportation, Alaska Railroad, borough, or federal lands.⁹⁵

The lack of guidelines for personal use harvesting and limited-to-no data on the quantities of NTFP gathered makes it difficult to gauge the impact of harvesting on the resources themselves or how they impact food security or the economy. Plants are vulnerable to overharvesting and the surrounding ecosystems can be damaged by overuse as foraging gains popularity (see images below).



Images left to right: Healthy Fiddlehead fern stand regrows when harvested sustainably; what new growth looks like when harvested correctly, and; dead fern rhizome found entirely cut back to the ground, and unlikely to regrow (courtesy of Julie Rowland, Anchorage).

In Alaska, NTFPs are seen as non-rivalrous goods, resources where one party's use does not diminish the availability of the good to others, as indicated by the lack of management regulating NTFP harvest.⁹⁵ The ratio of human population to land area in Alaska is low, and NTFPs are plentiful. However, access is often restricted by limited road and trail access. This concentrates harvesters in certain areas. As foraging becomes increasingly popular, conflicts over resources and deterioration of what infrastructure may exist are inevitable. This issue is particularly relevant with regard to food sovereignty and subsistence rights for Indigenous groups in light of increasing commodification of NTFPs. Without baseline data on NTFP population health and harvest records (like those supplied by subsistence fish and game surveys), it is a challenge to assess the impact of harvest pressures on culturally and economically important wild plants or how these resources will change in light of changing environmental conditions. Proactively addressing these needs and bringing participants together around solutions will set the stage for sustainable NTFP resource use.

A demonstrative case in Alaska is the harvest of chaga—a mushroom fruiting body that grows only on mature birch trees—which, at this time in 2022, is one of the most heavily harvested NTFP for both commercial and personal use in Alaska. There is growing concern about the ability for natural regeneration of this resource as harvest has increased dramatically to meet growing national and international demand. As such different organizations and local food leaders have called for, and started to develop research and programming to aid in the sustainable harvest of chaga.^{97,98}

Relatedly, The Sitka Tribe of Alaska formed the Kayaani Commission in 1997 due to their concerns regarding the development of U.S. Forest Service monitoring guidelines for NTFP resources in the region.⁹⁹ The Tribes' position is that Traditional Ecological Knowledge (TEK) should be understood as intellectual property and as such, the property cannot be used to create commercial items intended for resale by people who do not possess the cultural birthright to such property. The sustainable harvesting practices developed by the Alaskan organization, Kaasei Training and Consulting was published in 2022 and promotes values of respect, reciprocity, care, and safety when harvesting NTFPs.¹⁰⁰

Cultivation

For generations, Alaska Natives have managed wild food populations for abundance.¹⁰¹ By definition, Indigenous populations have 'cultivated' (the act of caring for or raising food) wild food resources including: fish,¹⁰² shellfish,¹⁰³ game,¹⁰⁴ mushrooms,¹⁰⁵ and plants¹⁰⁶ for millennia. Over the past several decades, several innovative Indigenous-led agricultural projects have emerged across Alaska. To name just a few, these include: a Tribal Producer Training Program for rural residents developed in collaboration between young Tribal Leaders and Calypso Farm and Ecology Center in Fairbanks;¹⁰⁷ A biomass energy system and waste-heat-fed greenhouse in Tok; Alutiiq Grown, a collective of tribally owned farms and producers from all over the Kodiak Archipelago growing produce for distribution to tribal and community members;¹⁰⁸ Tyonek Grown—a program sponsored by the Tyonek Tribal Conservation District to develop an agricultural program aimed at enhancing food security and providing fresh organic vegetables to community members,¹⁰⁹ and; a greenhouse program in Juneau sponsored by the Tlingit and Haida Central Council focused on Tribal producer training, as well as, wellbeing and food sovereignty.¹¹⁰

Leaders of these Tribal-led grassroots food cultivation movements all emphasize that agricultural activities are not a replacement for wild foods, rather they provide a complimentary source of nutrition and is another step towards tribal sovereignty and self-management. Movements like these are reconnecting Youth with both cultivation and wild food harvest practices.

An important resource for Tribes looking to produce more food in Alaska is the Intertribal Agriculture Council (IAC). IAC is a national organization that was formed in 1987 to promote the Indian use of Indian resources and contracts with federal agencies to maximize resources for tribal members.¹¹¹ Alaska has an active IAC Technical Assistance program supporting individual Indigenous producers, Tribal enterprises, and projects that seek to increase nutrition and wellbeing through the Indigenous cultivation of food.

Another key agency involved in developing agriculture and conservation of wild species as part of subsistence practices in Alaska is the USDA Natural Resource Conservation Service (NRCS). NRCS supports the development of Tribal Conservation Districts (TCDs) in Alaska. There are currently 14 TCDs in Alaska, with more Tribes actively working to develop local conservation plans to implement in a formalized TCD presently.



Image: Children of Tyonek show off part of the harvest from the Tyonek Grown Program Courtesy of ADN, 2014



For purposes of participation in USDA conservation programs, the NRCS considers customary and traditional subsistence harvest of plants and animals as agriculture.¹¹²

Additional research and education/outreach for cultivation of traditional wild plant food/medicine is provided through the UAF Ethnobotany Program¹¹³ and the UAF Institute of Agriculture Natural Resources and Extension/Cooperative Extension Service. The Ethnobotany program is an extremely popular program for students in rural Alaska. The UAF IANRE has provided research and public outreach/education materials on the harvesting, cultivation, and nutrition of wild plant species which has greatly contributed to the scientific knowledge pertaining to the health benefits and growing techniques of wild Alaska food plants.^{115,116,117}

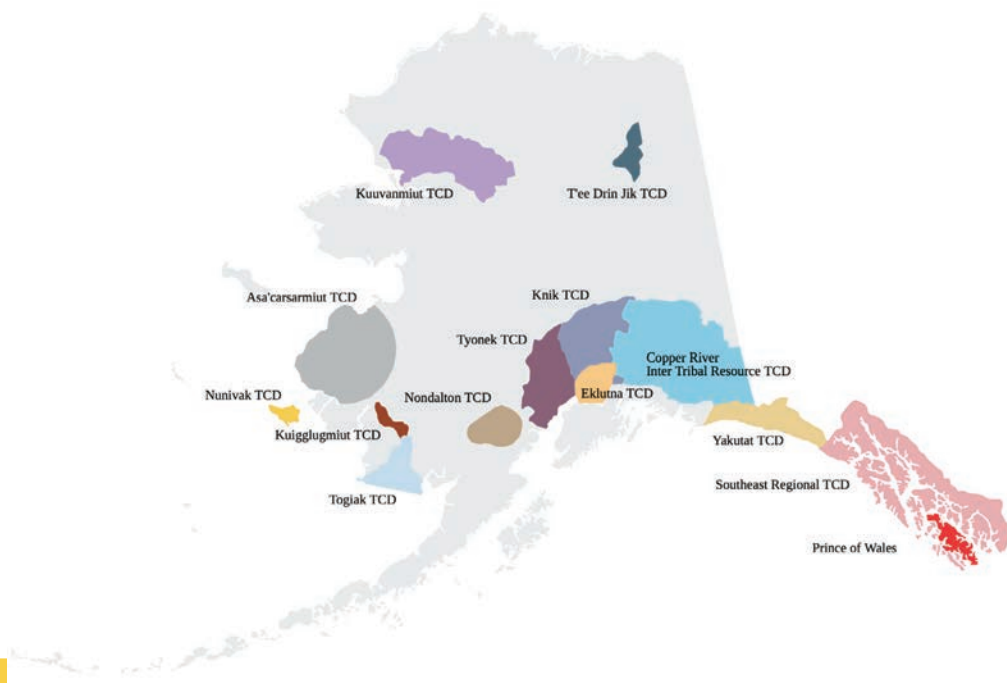


Image: Tribal Conservation Districts in Alaska, USDA NRCS, 2021



The combining of traditional ecological stewardship/harvesting and agricultural practices is often referred to as an Agroecological model. Agroecology is a model of agriculture that centers the relationship between humans and the environment, prioritizes long-term land stewardship over short-term yields, works within the unique landscape, and supports Indigenous sovereignty. To best support a healthy northern food system and people, it has been argued that any future development in northern agriculture should integrate values from agroecology in order to avoid the environmental and social ills that have resulted from industrial agriculture in the contiguous lower 48 states and elsewhere globally.¹¹⁸ Many of the principles and values practiced in agroecology are consistent with those that underpin Indigenous food systems in the North, making it a favorable model for agricultural development in Alaska.

“ *Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations.*”

—Declaration of Nyéléni, the first global forum on food sovereignty, Mali, 2007



TRIBAL FOOD SOVEREIGNTY

According to the United Nations right to adequate food, Indigenous peoples are among the most vulnerable to hunger and malnutrition. Hunger and malnutrition among them are largely the result of a long history of social, political and economic exclusion, including centuries of expropriation and despoliation of Tribal lands.¹¹⁹ Alaska is no exception to this trend. In fact, food insecurity rates in rural Alaska are often twice as high as those in urban areas of the state.

The United Nations Declaration on the Rights of Indigenous Peoples (Article 31) recognizes Indigenous peoples' right to maintain, control, protect and develop the manifestations of their sciences, technologies and cultures, including genetic resources, seeds, and knowledge of the properties of fauna and flora.¹²⁰ Food Sovereignty, which is defined as the right of all Indigenous peoples to define their own hunting, gathering, fishing, land, and water policies; the right to define what is sustainably, socially, economically, and culturally appropriate for the distribution of food and to maintain ecological health; and the right to obtain and maintain practices that ensure access to tools needed to obtain, process, store, and consume Traditional foods. Food sovereignty is framed within a larger rights discourse around Indigenous peoples' ability to independently produce, harvest and manage their own food resources in a political framework that recognizes their territorial autonomy.^{121,122}

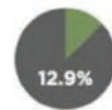
The Inuit Circumpolar Council (ICC) Alaska is a non-profit organization that works on behalf of the Inupiat and Yupik cultures of Alaska and is a national member of ICC International. The ICC is a leader in Indigenous Food Sovereignty and has created a conceptual framework for Inuit food security, that places food sovereignty as a requisite component in which all other aspects of food security are contained.¹²³

One of the key findings in the 2015 ICC report, *How to Assess Food Security from an Inuit Perspective: Building a Conceptual Framework on How to Assess Food Security in the Alaskan Arctic* (see image on next page), was that without food sovereignty, Alaskan Inuit cannot achieve food security. This takeaway acknowledges that the greatest threat to Indigenous food security is the lack of decision-making power and management authority for Indigenous communities over the food resources they depend upon.

Food Insecure people in Alaska: 95,190

38%	Above Other Nutrition Program threshold of 185% poverty
15%	Between 130%-185% poverty
47%	Below SNAP threshold 130% poverty

FOOD INSECURITY RATE IN ALASKA



FOOD INSECURITY RATE IN THE UNITED STATES

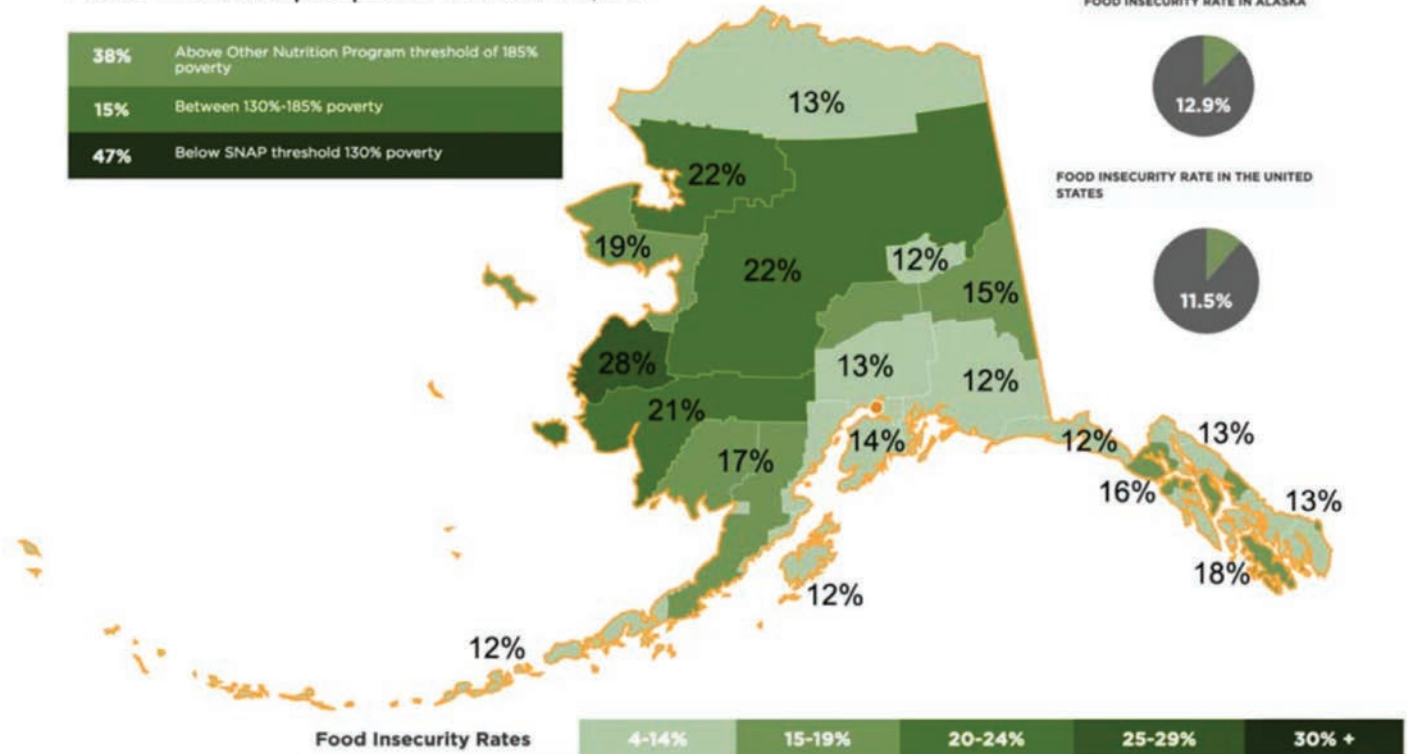


Image: Food insecurity rates in Alaska, Feeding America, 2018

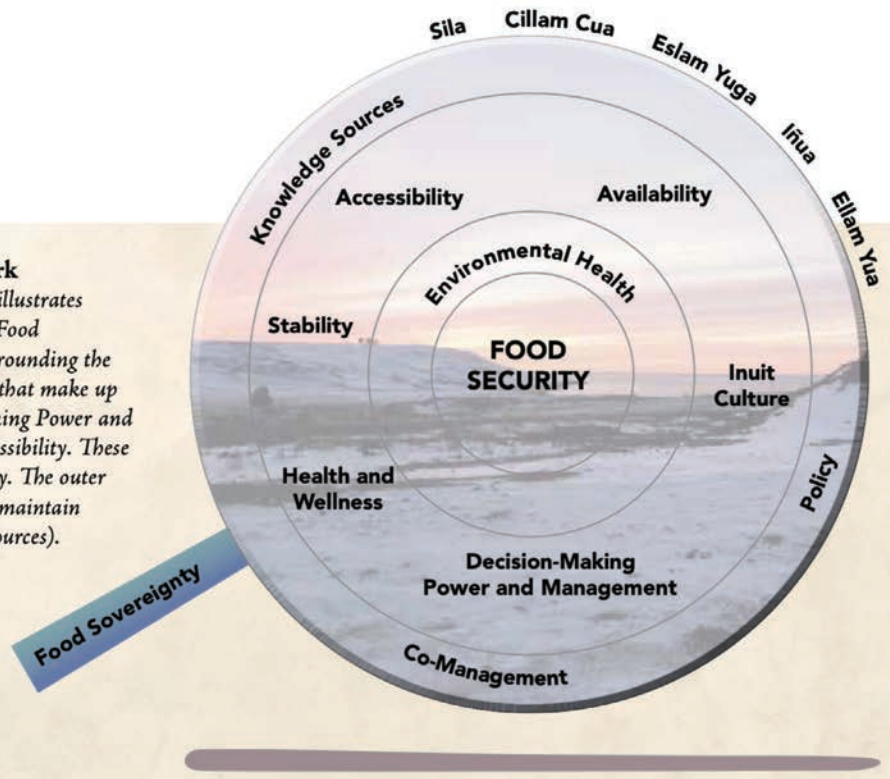
Conclusion

Subsistence and personal use hunting, fishing, and foraging activities and rights are critical to the majority of Alaskans, especially in rural communities. Market trends of rising food and fuel costs increase the necessity for these types of harvest and for some are the only way to sustain throughout a year. Market valuation of wild species is substantial, in the hundred of millions. However, that is not to recommend commodification of these plants and animals, but rather meant to quantify their largely invisible or implicit value. Indeed, commodification could devastate wild supply and reduce or eliminate access for local Indigenous and personal use harvesters.

Subsistence and wild harvest is not simply about available calories for Alaskans, but it is a cornerstone of Alaskan culture and ways of life. Calendars revolve around fish and hunt seasons, with some organizations in Alaska providing paid time off for subsistence and personal harvest. There are key thought and policy leaders in this space, who should be consulted for policy reform or creation. In Alaska, and North America more broadly, Indigenous peoples are exploring ways in which Food Sovereignty can be both defined and employed as a concept in creating dialogue and action around the revitalization of Indigenous food practices and ecological knowledge and cooperative management of food resources.

Figure 1. Food Security Conceptual Framework

The Conceptual Framework is shaped like a drum and illustrates the interconnecting components of Inuit Food Security. Food Security is characterized by a healthy environment. Surrounding the characterization of food security are the six dimensions that make up food security: Availability, Inuit Culture, Decision-Making Power and Management, Health and Wellness, Stability, and Accessibility. These dimensions are constituted by drivers of food (in)security. The outer ring of the drum shows the tools required to obtain and maintain food security (policy, co-management, and knowledge sources). Surrounding the drum is the spirit of all, written in Inupiaq, Yup'ik, Cup'ik, St. Lawrence Island Yupik, and Inuvialuktun⁴. The drum handle is food sovereignty. Food sovereignty is required to hold the drum together and to control actions, movements, and the beat of the drum. If any piece of the framework is missing or lacks strength, resiliency will decrease and food security will decrease – any disruption or interference to one piece has impacts for the whole.⁵



⁴ The Inuit Food Security Conceptual Framework was developed by Inuit in Alaska. For the purpose of this report, the Project Advisory Committee members from the Inuvialuit Settlement Region suggested to add the word 'Sila' to the words describing the Spirit of all surrounding the drum.

⁵ Inuit Circumpolar Council-Alaska. 2015. Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic From an Inuit Perspective. Technical Report. Anchorage, AK6 Inuit Circumpolar

Image: Inuit Food Security Conceptual Framework, ICC



Summary: SWOC Analysis, Infrastructure Needs, and Support Organizations

Note: Any one of the sectors covered in the above Wild Foods subsections could benefit from a dedicated SWOC analysis. What is compiled below is a general SWOC analysis pertaining to *the general entity of rural Alaskan wild food/subsistence harvesting, gathering, and cultivation*. As such, this SWOC analysis should by no means be considered exhaustive.



Wild Foods Summary

STRENGTHS:

- High diversity and general abundance of wild foods
- Many Alaskans harvesting wild food resources
- Both rural and urban populations have the opportunity to harvest wild foods and increase personal food security
- Long-term population monitoring data sets collected by regulatory agencies and long-term ecological data from Indigenous communities can help affect sustainable harvest practices
- Harvesting wild food resources is central to many parts of Alaskan culture and identity for both rural and urban populations

OPPORTUNITIES:

- Cooperative agreements of wild food resources with Indigenous resource stewards/users
- Mobile meat processing facilities to make healthful processing more accessible to rural communities
- Expanded community education/engagement to support sustainable harvesting/processing techniques— involving both traditional and western knowledge
- Increased protections for wild food populations at risk (e.g. Chinook salmon)
- Increased promotion of agroecology values and methodologies in Alaskan agriculture
- Expanded Intensive Management, including on federal lands, to provide expanded food security.
- Expanded transplant opportunities
- Expanded mariculture opportunities

WEAKNESSES:

- The lack of decision-making power and autonomy for Indigenous communities over the food resources they depend upon
- Increasing regulatory barriers to participating in the harvesting of some resources (i.e. fisheries, whale hunts, etc...)
- Increasing costs associated with participation in subsistence and personal use harvesting (i.e. Increasing cost of things like nets and ammunition due to inflation, cost of infrastructure and utilities required for processing and storage)
- Meat processing infrastructure and knowledge are very limited throughout the state
- Natural resources managed by multiple agencies can be subject to intra-agency conflict
- Limited transportation infrastructure puts extreme pressure on wild food resource populations easily accessed by road or trail systems

CHALLENGES:

- Environmental changes affecting access to wild food resources and the ability to process and store wild foods raise many concerns about food security in many of these communities.
- Limited options for preparing and storing food safely in both rural and urban settings
- Traditional/customary knowledge loss as elders pass away on how to harvest and process wild foods
- Lack of decision-making power and autonomy for Indigenous communities over the food resources increases food insecurity
- Contention between resource user groups (i.e. commercial, sport, and subsistence fishers)
- Fisheries bycatch
- Youth disconnected from wild food harvest practices

Wild Foods Summary



INFRASTRUCTURE NEEDS

- Appropriate storage and processing infrastructure for wild/Traditional foods
- Access to storage options for freezer/storage space
- Access to season extension and food production infrastructure

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Board of Fish
- Alaska Board of Game
- Alaska Department of Fish and Game
- Alaska Division of Forestry
- Alaska Economic Development Corporations (regional)
- Alaska Federation of Natives
- Alaska Food Policy Council
- Alaska Native Tribal Health Consortium
- Eskimo Walrus Commission
- Alaska Eskimo Whaling Commission
- The Federally Recognized Tribes Extension Program
- All Fisheries Councils/Commissions
- Intertribal Agriculture Council
- National Oceanic and Atmospheric Administration
- Natural Resource Conservation Service: Tribal Conservation Districts
- North Pacific Fishery Management Council
- Regional Alaska Native Corporations (12 in Alaska)
- Regional Tribal Non-profit Healthcare organizations (e.g. Aleutian Pribilof Island Association, Tanana Chiefs Conference Health Services, Maniilaq Association, etc.)
- Salmon State
- US Bureau of Land Management
- US Department of Agriculture
- US Department of Agriculture: Natural Resource Conservation Service—Alaska
- US Department of Forestry
- US Fish and Wildlife Service
- US Subsistence Board—Federal Subsistence Liaison Office

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Production

Introduction

Innovative and traditional growing techniques are materializing throughout the state. Traditional, soil-based agriculture is thriving along the road system, and smaller operations can be found throughout off-road Alaska. Hydroponic operations (also known as Controlled Growing Environments) and community farms and gardens are growing increasingly possible as education, infrastructure, and resources are made available to rural communities. Mariculture has seen enormous growth and innovation and an increased number of farmers are working not only to expand their crop and soil knowledge but also to understand markets and business models throughout Alaska and even for export.

Alaska is still very much a frontier in terms of what and how items are produced, understanding consumer behavior, and recognizing how to utilize both the land and ocean resources economically and practically, which incorporates balancing the benefits of and access to wild foods with the vast resources that remain available for local and worldwide food production.

2021 STATE AGRICULTURE OVERVIEW

Alaska

† Survey Data from [Quick Stats](#) as of: Aug/07/2022

Farms Operations[†]

Farm Operations - Area Operated, Measured in Acres / Operation	810
Farm Operations - Number of Operations	1,050
Farm Operations - Acres Operated	850,000

Livestock Inventory[†]

Cattle, Cows, Beef - Inventory (First of Jan. 2022)	7,800
Cattle, Cows, Milk - Inventory (First of Jan. 2022)	200
Cattle, Incl Calves - Inventory (First of Jan. 2022)	18,000
Hogs - Inventory (First of Dec. 2021)	1,900

Milk Production[†]



Image: *2021 State Agriculture Overview, USDA NASS, 2021*

Soil and Hydroponic Agriculture

Alaska agriculture can be a tough row to hoe and producers face a variety of challenges. Start-up challenges include buying affordable land, getting the land cleared and prepared for agricultural use, getting equipment and infrastructure shipped affordably to Alaska, and having access to post-production resources such as processing and storage facilities. Once up and running, farmers report the top challenges for sustainability and growth include access to labor and labor costs, cold storage and other infrastructure, and access to capital.¹ Marketing can also be a challenge for some, as well as building long-term relationships with customers and designing successful business plans. Successful farmers often do it all; from all on-farm manual labor to the administrative tasks such as marketing, accounting, and hiring. Some farmers are able to hire those skills, however this reduces profit in an industry that can have thin unit margins for the small and medium producers. Additionally, limited topsoil, poor soil indexes, limited access to affordable and adequate land, and limited capacity for in-state agricultural research has created a long-term challenging environment for growers.

However many promising efforts exist around the state to alleviate some of these production burdens. One example is the nascent but growing seaweed supply, grown in-state. Seaweed and fish waste, if aggregated and processed appropriately, could serve as a local source of soil amendments. Another is the explosion of farmers markets and food hub activity, increasing direct access to markets for producers. There is a lot of room for growth and farm expansion as well. The state has some 15 million acres,² a land area the size of West Virginia of suitable soils.³

The Nenana-Totchaket Agricultural Project designated 100,000+ for agricultural land acres Governor Dunleavy proposed \$5 million to move the project forward, and the Alaska Legislature funded the first phase in the FY22 budget. The goal is to increase access to raw land that buyers can clear and turn into agricultural production space. However, this project is not without controversy. Local groups have called for additional soil and ecosystem studies as well as consideration for local priority rights to land access and subsistence foods located on those lands.^{4,5}

The number of farms in the state increased 30 percent between 2012 and 2017, while the rest of the nation saw a 3 percent decline.⁶ Successful programs to aid farmers or novice growers are leveraged by Alaskans if they are aware of the resources available. Two programs have had a notable impact on localized food production:

- The USDA EQIP program that subsidizes the cost of unheated greenhouses or high tunnels, which can create a microclimate here similar to that in Kansas.⁷
- The 2018 Farm Bill Microgrants program, administered by the Alaska Division of Agriculture. This program was new for the Division of Agriculture and the launch was significantly delayed due to administrative constraints. However, a staggering 2,300 people applied for funding to cover costs associated with fencing, gardening, and food education. This application rate demonstrated the real interest and need for small-scale funding for growers to learn and produce.

In the Southeast alone, economic impacts of home production were estimated from 11,034 Southeast Alaska households that grew food in 2016, producing roughly 800,000 pounds of fruits and vegetables. While there is no perfect way to estimate the value of this production, a replacement cost approach results in a value between \$1.4 million (replacing with standard quality produce) and \$2.8 million (replacing with a combination of organic and premium quality produce).⁸

Vegetables

Vegetable production and the adjacent cut flower sub-sector are often gateways crops into larger scale food production. In Alaska, 43% of growers produce on less than 10-acres and many begin with backyard or community gardens before scaling to commercial-level operations.

Farms by Size

	Number	Percent of Total ^a
1 to 9 acres	428	43
10 to 49 acres	236	24
50 to 179 acres	159	16
180 to 499 acres	89	9
500 to 999 acres	35	4
1,000 + acres	43	4

Market Value of Agricultural Products Sold

	Sales (\$1,000)	Rank in U.S. ^b	States Producing Item
Total	70,459	49	50
Crops	29,642	50	50
Grains, oilseeds, dry beans, dry peas	815	49	50
Tobacco	-	-	18
Cotton and cottonseed	-	-	17
Vegetables, melons, potatoes, sweet potatoes	5,925	48	50
Fruits, tree nuts, berries	(D)	50	50
Nursery, greenhouse, floriculture, sod	16,874	47	50
Cultivated Christmas trees, short rotation woody crops	(D)	49	50
Other crops and hay	(D)	47	50
Livestock, poultry, and products	40,817	49	50
Poultry and eggs	(D)	49	50
Cattle and calves	2,234	49	50
Milk from cows	(D)	50	50
Hogs and pigs	756	46	50
Sheep, goats, wool, mohair, milk	139	50	50
Horses, ponies, mules, burros, donkeys	112	50	50
Aquaculture	35,157	14	50
Other animals and animal products	(D)	48	50

Images: *2017 Census of Agriculture State Profile, USDA NASS, 2017*

While some large farms may be subject to the Food Safety Modernization Act (FSMA) Produce Safety Rule, including routine inspection, most. Farmers are not required to purchase permits or certifications to sell raw, whole produce. This is commonly known as the “first cut rule” since the only cut to the plant is the harvest cut. Once any more cutting or chopping or preparations of any kind are added, the Cottage Food rules come into effect. These laws govern “non-potentially hazardous” value-add foods or foods that do not require temperature control for safety such as sauerkraut, jams & jellies, or relishes.⁹ Farmers can sell value-added foods such as pickled and baked items direct-to-consumer without a DEC-approved kitchen, if their products fall under certain rules. (Note: please see the *Food Freedom & Cottage Food appendix*.)

Other Field Crops

Other Alaska field crop production is a nascent but growing subsector and includes barley, hay, wheat, alfalfa, oats, and potatoes. Critical for both human and domesticated animal consumption, additional infrastructure capacity is needed to grow this sector of agriculture, meaningfully. Needs include northern crop varietal development and seed drying and storage facilities.

Field Crop Area Planted and Harvested — Alaska: 2014-2021

Year	Potatoes		Oats		Barley		All hay
	Planted	Harvested	Planted	Harvested ¹	Planted	Harvested ¹	Harvested
	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)	(acres)
2014	650	620	2,200	1,000	5,400	5,100	18,000
2015	560	540	1,800	1,000	4,600	4,300	18,000
2016	550	530	2,000	1,200	5,000	4,700	22,000
2017	560	540	1,700	900	5,500	5,200	21,000
2018	500	500	(NA)	(NA)	5,000	4,000	22,000
2019	(NA)	(NA)	(NA)	(NA)	6,000	5,000	22,000
2020	(NA)	(NA)	(NA)	(NA)	6,000	5,000	22,000
2021	(NA)	(NA)	(NA)	(NA)	6,000	5,000	19,000

(NA) Not available.

¹Acreage harvested for grain.Image: *Alaska Agricultural Statistics 2022 Annual Bulletin, USDA NASS, 2022*

Alaska is well-positioned to become a circumpolar distributor of seed potatoes. In addition to optimal growing environments and relatively low labor requirements, Alaska is unique in that producers do not prophylactically spray pesticide or fungicide as widespread practice, as is the case in other potato-producing states like Idaho.¹⁰

Urban and Rural Community Gardens & Farms

Community gardens exist across Alaska, in varied states of formality. From guerilla gardening on vacant land parcels to for-profits entities, the common thread for this type of production is community well-being and hyper-local food security. Community food cultivation or what has been called “outpost agriculture” has ebbed and flowed in output and community impact since long before statehood, with documented mentions of gardens dating back to 1765 in historical documentation of Tlingit and Haida peoples.¹¹ Intentional food cultivation likely existed in some form long before that.

Today, resources abound in Alaska for gardener training, though equitable access is not always available. Some training and courses are not financially accessible, and because of the diversity of growing conditions across the state, local knowledge and local trainers are critical to sustained success. The Alaska Cold Climate Permaculture Institute, Master Gardeners Network, and University of Alaska Fairbanks Cooperative Extension Services offer training and skill-building. Increasingly Tribal Conservation Districts and Alaska Village Initiatives are also launching and/or supporting community garden projects through training, soil testing, and partnership facilitation. Related, the Alaska Food Systems Network is a digital, free network for community gardeners to connect and learn from one another.¹² The Alaska Native Media Group also launched the Garden and Gather Initiative in 2020, to increase Alaska Natives' access to Indigenous food and garden cultivation knowledge.¹³

Examples abound of different community garden models:

Gardens in the Arctic is a for-profit community garden in Anaktuvuk Pass. Their long-term goal is to be able to provide produce for the 335-person community, removing some of the need for external food imports.¹⁴

Stickleback Farm in Anchorage was born out of a collaboration between the Alaska Food Policy Council, the City of Anchorage, Alaska Seeds of Change, and community advocates. The one-acre urban farm is repurposing the former site of the Alaska Native Hospital. Since its conception in 2018, a mobile fruit orchard, raised beds, and fencing have been installed, with the goals to serve Anchorage's least food secure neighborhoods, provide workforce development opportunities to youth in the community, and demonstrate the possibilities for sustainable agriculture in northern climates.¹⁵

The Native Village of Tyonek and the Tyonek Tribal Conservation District established **Tyonek Grown** in 2010.¹⁶ This program addresses the community's strategic direction to improve food security through community agriculture. The garden has grown into a 1.5-acre operation with two NRCS-funded high tunnels (48'x22'), solar-powered irrigation and ventilation systems, 15 outdoor raised beds, over 2,000-row feet of potatoes, and mixed vegetable crops, perennial fruits, and plans for expansion in the coming years.

Hydroponics

Hydroponics, growing plants in nutrient-rich water without soil, is an example of Controlled Environment Agriculture (CEA). Others include aeroponics (misting plant roots with nutrients) and aquaponics (growing plants and fish together). Raising fish as food is illegal in Alaska, but some farms have obtained the same nutrient benefits by including ornamental fish such as koi and goldfish in their systems.¹⁷ Hydroponic systems in Alaska produce primarily leafy greens and herbs indoors year-round. Plants are oriented vertically, stacked in shelves or narrow towers to optimize space, and farmers precisely control variables such as lights, temperature, humidity, CO₂, pH, and nutrient levels.

Systems vary in size from smaller cabinet-sized installations to modified shipping containers and large warehouses. Vertical Harvest Hydroponics (VHH), operating since 2014, develops and sells turnkey systems designed for remote Arctic conditions.¹⁸ Small systems have been installed at Airport Heights Elementary in Anchorage, the Anchorage Museum, the University of Alaska Anchorage, and size locations on Kodiak Island. Shipping container systems were set up in Dillingham, Kotzebue, Unalaska, and Kodiak.

Hydroponic farms sell to restaurants, grocery stores, wholesale distributors, and farmers markets, and some use their own online and physical retail spaces. Other farms prefer a subscription model providing farm boxes or bags with a rotating selection of leafy greens and herbs.

Quality and year-round access are benefits of CEA in Alaska. Produce is harvested at its peak and can reach consumers within hours rather than days or weeks. Greens and herbs are particularly fragile and vulnerable to temperature extremes, such as being loaded into small aircraft for delivery to villages, so growing on-site both increases the quality of produce available and reduces food waste. Systems are customizable and scalable to meet community needs using a small amount of space. Hydroponic installations are visually appealing and, particularly when operated in partnership with community organizations, are a source of local pride. Year-round production allows students to participate in the local food system at times when soil farms cannot.

Challenges and barriers to participation in hydroponics include high start-up and operational costs, limited crop variety, and a lack of technical support and training.^{19,20} While crops are grown on-site, reducing transport costs, shipping heavy and bulky growing supplies to remote locations is expensive. Indoor systems require artificial lights and water pumps powered by electricity leading to high energy bills. In locations where renewable energy sources are limited, systems are powered by coal, diesel, or natural gas.²¹ Leafy greens and herbs are flavorful and nutritious, but they cannot meet the caloric needs of a community. Hydroponic systems are operationally complex and require constant monitoring, so training and technical support are crucial.

Examples of farms currently in operation:

- CityFarms, Anchorage²²
- Anchorage Greens, Anchorage²³
- Alaska Sprouts, Anchorage²⁴
- Juneau Greens, Juneau²⁵
- Alaska Seeds of Change, Anchorage²⁶
- Mal'uk Farms, Kodiak²⁷



Image: [CityFarm](#), June 22, 2018

Animal Husbandry

Many Alaskans raise animals, ranging from poultry, pigs, goats, and cows to game animals like elk, bison, and reindeer. Poultry is inspected by the USDA and is fairly easy to raise and sell commercially, relative to other meats. A person can process up to 20,000 birds without USDA inspection, however all sanitary rules must still be followed. All other meat falls under the USDA Food Safety and Inspection Service (FSIS) for commercial sale. To sell direct-to-consumer, producers may sell a whole or half animal. A meat packing facility that is not USDA-certified for slaughter can only commercially sell the meat they package if it was slaughtered in a USDA facility. For any portions smaller or to sell packaged and/or processed portions, the animal must be slaughtered in a USDA-certified slaughter facility, of which there are only three in the state at the time of this report, in Palmer, North Pole, and Delta Junction. There are also USDA-certified mobile processing units in Kodiak (for cattle) and Nome (for reindeer).

For example, a meat packing plant can import a whole or portion of a USDA slaughtered animal from the lower-48, cut and package it and sell it at grocery stores or to restaurants. That same meat packing plant cannot buy local meat slaughtered on the ranch to package and sell. They can only charge the rancher for the service of packaging his personal use meat.²⁹ The lack of USDA-certified slaughter facilities makes it difficult for producers to sell meat except to customers who are willing to buy large quantities at a time. Reasons for previous slaughter facility failure include lack of consistent demand, high fuel costs, and facility ownership disputes, and competition with imported meats.

Raising livestock in Alaska has challenges as well. Imported feed is expensive, so access to hay, hay-producing land, and grazing land is vital. Alaska has state agricultural land, as well as grazing leases designated for farmers and ranchers to either buy or lease with stipulations for how the land is used.³⁰

In 2022 Governor Dunleavy introduced House Bill 415, relating to the Alaska Food Freedom Act. This bill would allow producers to “sell homemade food products and encourage the expansion of homemade food sales at farmers’ markets, agricultural fairs, ranches, farms, and producers’ homes by providing Alaskan citizens with unimpeded access to healthy food from Alaska. ... If enacted, the Alaska Food Freedom Act will stimulate the growth of cottage industries, promote food security for all Alaskans, and allow the development of an authentic “farm to table” marketplace.”³¹ HB 415 did not pass and discussion ended with the legislative session in 2022. (*Note: Please see the [Food Freedom & Cottage Food appendix](#) for more information.*)

Dairy

In 1959, Alaska supported 525 farms and milk accounted for 49 percent of agricultural products.³² As of August 2022, there are only 2 FDA certified dairies, in Alaska—Alaska Range in Delta Junction and Heritage Farm & Ranch on Kodiak, which is solely a goat dairy. Producers earn FDA approval through State DEC certification. Agricultural boom and bust cycles hit dairy particularly hard in Alaska in recent years. Matanuska Maid creamery closed in 2007 due to financial challenges. The historical, 3-generation Havemeister Dairy in Palmer closed down in late 2021 after years of financial hardship. The proposed state budget cuts to DEC’s Grade A regulatory program in 2019 did not create producer confidence, with the single state dairy inspector’s budget line cut in the initial draft. While this was later reinstated, uncertainty in resources available to producers is a deterrent for new producers to launch and existing producers to scale.

The regulations around dairy products require milk to be pasteurized before it is sold commercially. The pasteurization process is expensive and prohibitive for small-scale producers. The DEC purchased and permanently loaned a batch pasteurizer to University of Alaska Fairbanks, which is stored in the test kitchen facility on the UAF Campus.³³ This was done specifically to support small milk producers in producing safe milk and milk products, however use has not been consistent, possibly due to challenges in advertising and distance from milk collection sites.

The only way for producers to distribute unpasteurized and non-certified milk is through direct-to-consumer “cow shares”, when a customer pays for a “share” of an animal for the right to get a portion of the milk from that animal. House Bill 22 passed in 2021 and enabled the herd share managers to create value add products like cheese from herd share milk and distribute it among shareholders. While herd shares are not a viable option for much the state, it does create space for nascent or extremely small-scale dairymen to test their local market. Raw milk is not without criticism, and its consumption comes with real food safety risks.³⁴ (*Note: Please see the [Food Freedom & Cottage Food appendix](#).*)

Mariculture

Currently, there are 78 permitted and operational aquatic farms and six mariculture hatcheries, for a total of 86 operations in Alaska, with others in the permitting or pre-operational stage. Alaska's DEC is the shellfish sanitation authority for the state. This involves certifying growing/harvest waters and regulating harvesters and dealers. Of those currently in operation, 37 farms produce only one species of shellfish, 23 produce only seaweed, and 18 produce some combination of shellfish species or shellfish plus seaweed.³⁵

The table below lists the number of farms and percent of production by region in 2018, though it should be noted that this industry is changing year-over-year.

GEOGRAPHIC DISTRIBUTION AND PRODUCTION OF ALASKA AQUATIC FARMS³⁶

Region	Number of Aquatic Farms	Production (% of total)
Southeast	42	36%—Southern SE 4%—Northern SE
Southcentral	32	47%—Kachemak Bay 12%—Prince William Sound
Kodiak	6	1%

The table below lists the primary aquatic farm products cultured and sold in Alaska, along with the production amount and value. In addition to the species listed in the Table, other species approved for aquaculture include littleneck clams, scallops, cockles, sea urchins, sea cucumbers, three-ribbed kelp, giant kelp, *Pyropia* sp., and *Palmaria* sp.³⁷ Alaska king crab and abalone also show potential for mariculture/enhancement.³⁸ Finfish aquaculture is banned in Alaska waters.

ALASKA AQUACULTURE PRODUCTION SUMMARY (2021)³⁹

Species	Production	Value ²²
Pacific Oysters (<i>Magallana gigas</i>)—Sold to Public	1,915,831 oysters sold ²¹	\$1,450,598.25
Pacific Oysters (<i>Magallana gigas</i>)—Sold to Other Farms	1,188,246 oysters sold	\$1,212,850.00
Blue Mussels (<i>Mytillus trosullus</i>)	1,762 lbs sold	\$10,432.00
Pacific Geoduck (<i>Panopea generosa</i>)	(production data confidential)	(production data confidential)
Seaweed Sugar kelp (<i>Saccharina latissima</i>), Bull kelp (<i>Nereocystis luetkeana</i>), and Ribbon kelp (<i>Alaria marginate</i>) (No Natural Set)	425,890 lbs sold	\$209,601.50
Five Ribbed Kelp, Bull Kelp, Red Ribbon-Dulse Kelp, Split Kelp, Sugar Kelp, Three Ribbed Kelp (Natural Set)	105,500 lbs sold	\$887.00

Oysters have dominated Alaska's mariculture production since the first farms were established in the early 1980s, accounting for over 90% of Alaska aquatic farm sales in 2015. The Alaska Mariculture Task Force, formed in 2016 by an executive order from Alaska's Governor, laid out a comprehensive Mariculture Development Plan to accelerate the development of a \$100 million industry by 2040. These efforts have increased awareness and confidence in private sector investment, helping to produce an exponential increase in both the number and size (acres) of new aquatic farm lease applications, especially for seaweed.⁴⁰ In 2021, the Task Force dissolved and led to the creation of the Alaska Mariculture Alliance.

Demand for mariculture training has been high. In 2020 and 2021, Alaska Fisheries Development Foundation, Alaska Sea Grant, and other partners held several mariculture training webinars and workshops; 485 Alaskans applied and demand exceeded capacity, indicating that interest in new lease applications will continue.⁴¹ Much

of the interest is from fishermen who can use existing boats and gear to plant out and harvest seaweed in the spring and fall, thus diversifying their year.

An Alaska Native Mariculture Development Workgroup was established as part of the state's Mariculture Development Plan. To date, Alaska Natives have identified concerns and opportunities regarding food sovereignty, increased input into the lease approval process, increased access to training and opportunities, and the diverse interests and goals of tribal governments and Alaska Native Corporations.⁴²

Additional challenges and barriers to expanded mariculture production in Alaska include permitting administrative burden as well as lack of and distance to processing facilities and markets. Social license for mariculture is often tied to scale, with larger operations facing different challenges and opportunities than smaller farms. Partnerships to build community support and foster access to labor, infrastructure, funding, and other resources have been recommended to bolster Alaska's small but growing aquaculture industry.⁴³ The existing seafood infrastructure, workforce, markets, and Alaska Seafood brand can all be utilized to further develop the mariculture industry.

Conclusion

Alaska's agriculture industry is valued at \$40M, including food and fiber.⁴⁴ However, with continued investment in production infrastructure and targeted awareness campaigns, this number could be much larger. It is estimated that Alaskans send roughly \$2 billion out of state in food purchases yearly. Even 1% recapture of this would ensure \$10 million more dollars would circulate around the state and support local producers.

State and federal programs have aided new and existing growers and it is critical this support continues to harness the momentum of new soil and hydroponic farmers. If the State seriously considers industry investment for the long term, a model already exists—seafood. Alaska is a global leader in fisheries management and ASMI played a critical role in turning Alaska seafood into a globally respected brand. Support for new crop research should also be supported, as demonstrated by the success story of launching the peony industry. Peony cultivation was researched by a team at UAF under a USDA Specialty Crop Block Grant, and it was determined that Alaska's climate is ideal for growing this flower to market at a seasonal time when they do not bloom anywhere else in the world en masse.

Additionally, Alaska has the opportunity to learn from other farm hubs that have been producing for decades or centuries and are now experiencing environmental hardships from overuse—water shortages, pest and weed control resistance, and topsoil and nutrient loss. Alaskans are already doing things differently, such as *not* prophylactically spraying seed potato fields with herbicide—making the state an attractive candidate for seed potato export.⁴⁵

While existing production levels are not yet at a level adequate for export, extended growing seasons, climate-controlled growing, investment in storage and processing infrastructure, and sustained marketing investments (similar to ASMI) may make agricultural export an attractive opportunity in the next decade or so. This is especially true of more niche products amenable to the changing northern climates.

Image: Alaska Department
of Fish and Game



Production Summary

STRENGTHS:

- Strong USDA grant support and participation in the EQIP high tunnel programs
- There is USDA financial and technical support available for agricultural producers, Tribes, and tribal conservation districts.
- The State Plant Materials Center is able to develop, test, and grow seeds for varieties that will be successful in Alaska.
- The University of Alaska system has experimental farms that can be used for education and research.
- No permits or certifications are required for farmers to sell raw, whole produce, reducing barriers to market entry.
- Alaskans harvest an average of 295 pounds of wild foods every year.
- Poultry is fairly easy to raise and sell commercially.
- The Alaska Mariculture Task Force, formed in 2016 by an executive order from Alaska's Governor, laid out a comprehensive Mariculture Development Plan to accelerate the development of a \$100 million industry by 2040. These efforts have increased awareness and confidence in private sector investment, helping to produce an exponential increase in both the number and size (acres) of new aquatic farm lease applications, especially for seaweed.
- Resources abound in Alaska for gardener training.
- Vertical Harvest Hydroponics (VHH), operating since 2014, develops and sells turnkey systems designed for remote Arctic conditions.
- Quality and year-round access are benefits of hydroponics in Alaska. Produce is harvested at its peak and can get to consumers within hours rather than days or weeks.
- Alaska's regulatory structure and available coastline and ocean are broadly seen as advantageous for mariculture. This is particularly true when compared to competing regions in North America such as California, British Columbia, or the Northeast, where restrictive regulatory structures and competing coastal uses are barriers to development.⁴⁶
- Since our local food supply chains are short—most farms are small-scale, do not sell in large, bulk quantities, and often sell direct to consumers—local food is the freshest and healthiest by far.

WEAKNESSES:

- To sell direct-to-consumer, farmers and ranchers can only sell a whole or half animal. For any portions smaller or to sell packaged, processed portions, the animal must be slaughtered in a USDA-certified facility.
- There are extremely limited meat packaging facilities throughout Alaska.
 - There are just 3 facilities in the state.
 - The lack of USDA-certified slaughter facilities makes it difficult for producers to sell meat to the general public.
- Imported feed is expensive so access to hay, hay land, and grazing land is vital. Hay is often grown far from the animals that would consume the product—for example, hay is grown in the Mat-Su Valley but needed in the Kenai Peninsula.
- The pasteurization process is expensive, cumbersome, and prohibitive for small-scale dairy producers.
- Equitable access to gardener training is not always available. Some training and courses are not financially accessible, and because of the diversity of growing conditions across the state, local knowledge and local trainers are critical to sustained success.
- Alaska's current seaweed farming costs are roughly \$4,400 per dry metric ton—a price that can be supported only by the "whole" foods market.⁴⁷
- Market demand for most seaweed products is currently limited. Most industry participants are counting on considerable growth in demand for existing products as well as the emergence of additional viable seaweed markets.
- The state infrastructure for support to farmers is lacking. The Division of Agriculture is small and limited. Cooperative Extension through the University also has limited capacity with less than six full time agriculture extension agents for the whole state.



Production Summary

OPPORTUNITIES:

- The pathway to a scaled industry in Alaska will benefit from a mix of public and private investment in the near-term. Growth may hinge on investment from one or more innovative industrial manufacturers who can act as “anchor” customers or partners and help scale demand.
- House Bill 415, relating to the Alaska Food Freedom Act, allowed producers to “sell homemade food products and encourage the expansion of homemade food sales at farmers markets, agricultural fairs, ranches, farms, and producers’ homes by providing Alaskan citizens with unimpeded access to healthy food from Alaska.
- 95% of our purchased food is imported, creating vast opportunities for in-state market expansion.
- There are very limited slaughter options for farmers to resale smaller quantities of meat, with government support more USDA-certified slaughterhouses could come online.
- Our state agriculture leases and grazing leases can serve as a guarantee of food production; a sort of cache of food on the hoof or being grown yearly. With strategic planning and specific growing requirements, such leases could be regional food reserves.
- The University could expand vocational and technical training as well as research regarding best management practices for our climate, soils and the various plant varieties.
- Demand for mariculture training has been high. In 2020 and 2021, Alaska Fisheries Development Foundation, Alaska Sea Grant, and other partners held several mariculture training webinars and workshops; 485 Alaskans applied and demand exceeded capacity, indicating that interest in new lease applications will continue.
- Social license for mariculture is often tied to scale, with larger operations facing different challenges and opportunities than smaller farms. Partnerships to build community support and foster access to labor, infrastructure, funding, and other resources have been recommended to bolster Alaska’s small but growing aquaculture industry.
- Hydroponic greens and herbs are particularly fragile and vulnerable to temperature extremes, such as being loaded into small aircraft for delivery to villages, so growing on-site both increases the quality of products available and reduces food waste.
- The list of genera currently grown or proposed in seaweed farms in Alaska—all brown kelps—is substantially different from the list of genera most frequently grown in the rest of the world. These differences create both challenges and opportunities for Alaska producers.⁴⁸
- With regard to mariculture, Alaska Natives have identified concerns and opportunities regarding food sovereignty, increased input into the lease approval process, increased access to training and opportunities, and the diverse interests and goals of tribal governments and Alaska Native Corporations.
- Additional seaweed opportunities in Alaska include emerging uses that respond to global challenges, such as protein-replacement and bioplastics, as well as “blue carbon.” Alaska is currently under consideration by a number of private firms and NGOs at the forefront of these emerging technologies and markets.
- There is high interest in seaweed’s role in solutions to major global challenges such as carbon sequestration, alternative proteins, and transitioning away from fossil fuels in packaging and energy.



Production Summary

CHALLENGES:

- Start-up challenges are prohibitive for farmers and include buying affordable land, getting the land cleared and prepared for agricultural use, and getting equipment and infrastructure shipped affordably to Alaska.
- Farmers report the top challenges for sustainability and growth are access to labor and labor costs, cold storage and other infrastructure, and access to capital.
- Marketing can also be a challenge for some, building relationships with customers and designing successful business plans. Successful farmers need to have all the skills from planning to growing through marketing and sales or they need to bring on others with those skills.
- Challenges and barriers to expanded mariculture production in Alaska include permitting, lack of and distance to processing facilities and markets, and social acceptance of mariculture.
- Indoor hydroponic systems require artificial lights and water pumps powered by electricity leading to high energy bills. In locations where renewable energy sources are limited, systems are powered by coal, diesel, or natural gas.
- Leafy greens and herbs are flavorful and nutritious, but they cannot meet the caloric needs of a community.
- Hydroponic systems can be operationally complex and require monitoring, so training and technical support is crucial.
- Controlled growing environments often command high start-up and energy costs and offer limited crop variety.
- Infrastructure and logistics will be a significant (and familiar) challenge for the Alaska seaweed industry. Cost structures and distance from markets limit current opportunities but may be offset by technological innovation, coordination among growers, and other opportunities to share costs and pool resources.
- Regulatory structures in Alaska offer some competitive advantages and at least one disadvantage—a prohibition on strain selection.
- One important negative attribute of Alaska's current permitting seaweed mariculture regime is the prohibition on strain selection and breeding of seaweed stocks. Unlike in agriculture, where plant breeding has been essential to meeting global food demands, Alaska growers are required to use wild seed that mimics the biodiversity surrounding each farm site. Numerous interviewees cited this as a significant barrier to investment in Alaska and a barrier not present in most competing regions.

Production Summary

INFRASTRUCTURE NEEDS

- Cold storage and other storage infrastructure
- Distributed micro-processing equipment, such as milk batch pasteurizers and flash freezers
- Expanded access to capital
- Regional seaweed processing facilities and refinement of processing methods
- Assistance with getting equipment and infrastructure shipped affordably to Alaska
- Expansion of the USDA EQIP program that subsidizes the cost of unheated greenhouses and high tunnels
- Expansion of the 2018 Farm Bill Microgrants program, administered by the Alaska Division of Agriculture
- Increased the number and location of USDA slaughterhouses
- Reliable funding for agriculture services, and a dedicated Food Security Department housed independently of DNR
- Guaranteed funding for a state dairy inspector

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Cold Climate Permaculture Institute
- Alaska Farm Bureau
- Alaska Farmland Trust
- Alaska Fisheries Development Foundation
- Alaska Food Policy Council
- Alaska Food Systems Network
- Alaska Mariculture Alliance
- Alaska Native Media Group
- Alaska Ocean Acidification Network
- Alaska Sea Grant
- Alaska Seeds of Change
- Alaska Shellfish Growers Association
- Alaska Division of Environmental Health
 - Alaska State Veterinarian
 - Food Safety & Sanitation Program
- Alaska Village Initiatives
- Calypso Farm
- Chugach Regional Resource Commission
- Gardens in the Arctic
- Intertribal Agriculture Council
- Master Gardener Network
- Native Village of Tyonek
- Plant Materials Center
- Soil and Water Conservation Districts
- Stickleback Farm
- Tribal Conservation Districts
- University of Alaska Fairbanks Cooperative Extension Services
- USDA
 - Farm Service Agency
 - National Resource Conservation Services
 - Sustainable Agriculture Education and Research
 - Federally Recognized Tribes Extension Program
- Vertical Harvest Hydroponics

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Processing

Introduction

Processing and storage needs and techniques vary greatly across Alaska. Personal processing starts at harvest and varies considerably depending on the region of Alaska and types of storage options available. Because of the vast difference in climates and infrastructure options throughout the state, a range of techniques are used. Alaskans with options for more affordable power and fuel sources often have access to reliable freezers and refrigeration options for extended storage.

In other parts of the state, often more rural areas, drying, smoking, canning, and storage in root and ice cellars is more common. Ice cellars, also known by the Iñupiat word *SIGIUAQ*, offer convenience, ample space, and an economical method for refrigeration. As a result, they are in use in the communities of Nuiqsut, Kivalina, Point Hope, Point Lay, Barrow, Wainwright, and Kaktovik. However, across the North Slope, people are documenting problems with preservation and storage of subsistence foods in these cellars.¹ Climate change is accelerating changes in permafrost and ice that insulates these cellars, which raises concerns about increased vulnerability to foodborne illnesses.² Losing this long-standing practice is not only a cultural loss but contributes to a rise in food insecurity in many of these communities.³

Alaska is a unique place where many people process foods that are both grown and harvested. Alaska is the only state where the federal government manages public lands and waters—about 230 million acres, or 60% of the land in the state—or subsistence. Alaska's rural residents each harvest an average of 295 pounds of wild foods every year, or about 18,000 tons, with fish making up about 56% of those harvests, according to the Federal Subsistence Management Program,⁴ which is responsible for balancing harvest with healthy wildlife populations.⁵

Farmed foods play an important role in food security as farming continues to grow in the state. Direct sales in Alaska from the farm direct to the consumer totaled \$2.2 million in 2012, with 241 farms participating in direct sales. This is a 62% increase in the number of farms (149 in 2007) selling direct, and a 32% increase in direct sales over 2007 sales of \$1.7 million. These direct sales amounted to 3.8% of farm product sales, nearly 13 times the national average of 0.3%. This means Alaska's distance from the Lower 48 fosters a sense of independence: if direct food sales made up a single commodity, the value of these sales would just about equal the value of the state's fifth-most important product, potatoes.⁶

Fruit and Vegetable Processing

Fruits and vegetables are grown and harvested for both personal use and retail sale in Alaska. Personal users include people with gardens who are growing for non-resale uses and people who are harvesting wild foods. There are a wide range of resources available for individuals processing foods for their personal consumption. The Cooperative Extension Service (CES) through the University of Alaska Fairbanks is a state-funded program that offers a wide range of resources including publications, videos, and access to experts

through their field offices, website, and outreach events. They cover a range of topics including but not limited to food preservation safety, getting started with processing, home canning, freezing, jams and jellies, and drying.⁷

Farmers selling to individuals, restaurants and retail businesses are required to meet certain state and federal guidelines to meet food safety and handling guidelines. However farmers selling unprocessed produce are not required to hold a permit. An example would be a farm that sells and/or packages vegetables and fruits "raw, whole, and offered in their natural parts, or separating greens from roots". Farmers can sell directly to restaurants or any other venues if the food is not processed. However buyers may require a certain level of third party verification to ensure best practices are being followed, such as the USDA's Good Agricultural Practices (GAP) audit.⁸

A Food Processing Permit is required from the Alaska Department of Environmental Conservation (DEC) if the vegetables and fruits are "process(ed) and alter(ed), with or without washing or other treatment, prior to being packaged for use by a consumer or restaurant." Processing and altering includes: peeling, slicing, chopping, shredding, coring, or trimming. Examples: shucked peas, sliced tomatoes, peeled carrots, shredded lettuce and cabbage, and broccoli and cauliflower florets.

Some successful Alaskan businesses that are selling processed Alaska produce include Bambino's Baby Food, Heather's Choice, Elevated Oats, and Kat's Epic Trail Bites.

Seafood Processing

Seafood plays a pivotal role in the food security of many Alaskans. Anadromous fish like salmon are important to many inland communities as well as coastal communities, and many coastal communities also rely on species such as halibut, crab, shellfish, seaweed, herring and other forage fish, and more. There are different regulations and seasons for when and how species can be harvested. Understanding regulations and land use restrictions can be challenging. The University of Alaska Fairbanks offers resources through the CES to teach people about processing the seafood they catch and how to store it for winter properly. Many people also learn traditional harvest and preservation practices from family members, friends, and community members. While educational resources are available for anyone to learn about seafood processing, risks do exist pertaining to botulism and reduced oxygen packaging. Risks like these make adequate funding for public education and skill training all the more critical.¹⁰

Commercial fisheries are also important access points for many subsistence communities as well. The Alaska Department of Fish & Game Subsistence Division has published research that shows that households with the resources to harvest wild foods share wild foods with low-producing households. Division studies have documented this specialization in subsistence harvests, at least in households that characterize themselves as Alaska Native.

It has been referred to as the "30-70 rule" -30% of the households in a community often produce 70% of the community's harvest in terms of usable pounds of subsistence foods. The high-producing households are usually households with large, mature labor forces fully equipped for hunting and fishing and with higher incomes. The extra subsistence foods they produce are usually shared with the elderly, single mothers with young dependent children, and young single persons or young couples who are just getting started.¹¹

Additionally, "sharing subsistence-caught fish and wildlife is a fundamental characteristic of communities that follow a subsistence way of life, and this system of sharing is protected under Alaska state law." 83% of rural Alaskan households harvest fish, while 95% of households use subsistence-caught fish.

Applications to the Alaska Department of Natural Resources food security grants have demonstrated a consistent expressed need for freezer space to store fish harvested for subsistence and personal use in order to support food security. Community-run cold storage could provide benefits across sectors of food producers. Community-run smokers and canners could provide the security of shelf-stable products for seafood harvesters. Additionally, flake ice machines accessible to the public to keep catch cold would aid in preserving seafood, reducing bacterial breakdown and histamine development which results in fish waste. Currently, these assets are owned by private processing businesses and are generally inaccessible to the public, or at a cost that can be exclusive. Many coastal communities have seafood processors that are locally

owned and operated, which often offer small-batch custom processing that is important for commercial, subsistence, personal use, and recreational fishers alike.

In 2019, more than 62,200 workers were directly employed in Alaska's seafood industry, earning \$1.75 billion in total labor income. An estimated 37,400 full-time equivalent jobs were supported in the state with wages of \$2.2 billion, including multiplier impacts that result from the industry circulating money in Alaska's economy. Alaska commercial fisheries employed just over 31,000 fishermen with total labor income of just over \$1.0 billion. Seafood processors employed 27,000 workers in 2019. The industry includes 8,900 fishing vessels, 160 shorebased plants, 52 catcher-processor vessels, and about 30 floating processors, among other participants. The seafood industry contributed \$5.7 billion in economic output to Alaska's economy in 2019. This measurement includes all the economic activity supported by harvesting, processing, and support sectors.¹²

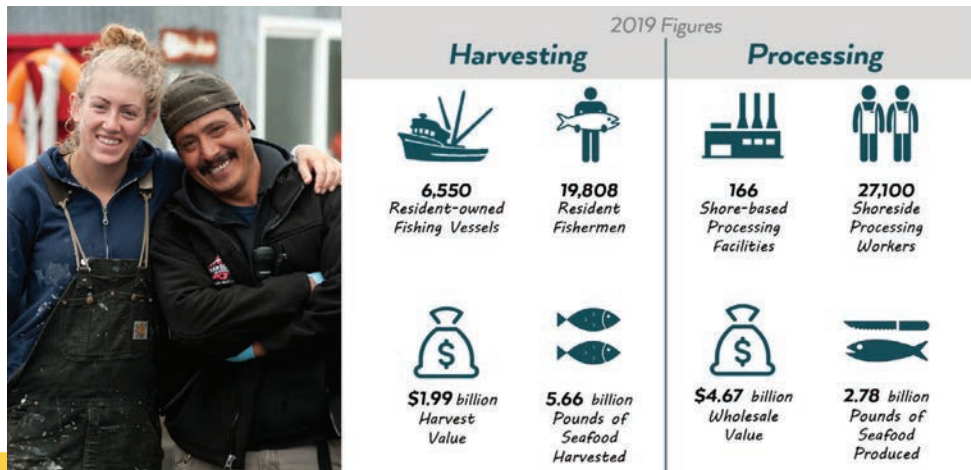


Image: The economic value of Alaska's seafood industry, McKinley Research Group, January 2022

Alaska's largest seafood processing companies are:

- Trident Seafoods—Washington
- UniSea—Washington
- Icicle Seafoods—Washington
- Westward Seafoods—Washington
- Peter Pan Seafoods—Alaska
- Ocean Beauty Seafoods—Washington
- North Pacific Seafoods—Washington

Meat and Milk Processing

There are many regulations surrounding the handling and processing of terrestrial meat in Alaska. Farmed or ranched meat may not be sold directly from a farm to restaurants without going through a USDA-inspected slaughter facility. USDA classifies animals into two groups for inspection purposes: mandatory and voluntary. For animals that fall under the mandatory category, USDA must inspect these animals if they go through a USDA inspected facility for no additional cost to the producer. Examples include cattle, sheep, swine, goats, rhea, ostrich, and emu. For animals that fall under the voluntary category, USDA is not mandated to inspect these animals. If an animal that falls under the voluntary category is slaughtered in a USDA inspected facility, the producer must pay an additional fee for the USDA inspection of that animal. Examples include deer, elk, bison, buffalo, antelope, and rabbit.

The mandatory versus voluntary inspection lists were determined by the industry needs at the time. Regardless of category, all red meat animals must go through a USDA-inspected slaughter facility in order to be sold to restaurants. Reindeer meat is an exception to this rule, if the restaurant owner purchases reindeer



Image: Blood Sweat Food Farm, Courtesy of the Alaska Food Hub



meat from a retail meat market that is processed according to 18 Alaska Administrative Code (AAC) 31.820.¹³ Meat processing facility demand currently outstrips supply. If animal husbandry efforts increase in-state, demand for processing facilities will increase as well. The need for processing equipment is expected to rise and could present an opportunity for future investment for communities.¹⁴

Dairy milk sold commercially must be Grade A and pasteurized. There are extremely limited dairy processing facilities remaining in Alaska. The Alaska Range Dairy, based in Fairbanks is the only FDA-certified Grade A dairy in the Interior. The Kodiak Baptist Mission's Heritage Farm and Ranch Dairy is the only Grade A Goat Dairy in the state of Alaska. All other local milk is obtained through small herd shares organized directly with the farmer. (Note: See "[Production](#)" for more on Alaska dairy.)

Poultry and Eggs

Poultry processing regulations are less restrictive than red meat. There are a variety of exemptions that allow producers to grow, slaughter, and sell their own birds.

A producer can make direct sales from the farm to households, hotels, and restaurants for the preparation of meals sold directly to customers if a producer slaughters less than 20,000 poultry during a calendar year, does not buy or sell poultry products other than those produced on the farm, properly labels and only sells within Alaska. In Alaska, this exemption only applies to dressed poultry sold directly to a food service, such as a restaurant.¹⁵

If the eggs are delivered to or sold to someone who is not the end consumer, such as a food establishment, they must be:

- Received at the establishment in refrigerated equipment that maintains an ambient air temperature of 45°F degrees or below
- Clean and sound
- Not exceed the restricted egg tolerances for the U.S. consumer Grade B (a producer may grade their own eggs)
- Properly labeled as eggs with the grade and size/weight class, numeric count, name/address of the producer, and the words "keep refrigerated"

UAF's Cooperative Extension Services provides resources for smaller producers, to encourage safe handling and regulation education. Funding for public outreach and continued education could spur even more growth in poultry and egg production, in-state.



Images: Blood Sweat Food Farm, Courtesy of the Alaska Food Hub

Meat: Subsistence and Personal Use

Subsistence hunting occurs throughout Alaska all year long and is central to the customs and traditions of many cultural groups in the state. For most rural Alaska residents, subsistence hunting is critical to their nutrition, food security, and economic stability. In many rural areas, subsistence hunting, similarly to subsistence fishing, is considered as a part of normal routine of work. Depending on the community and area, moose, caribou, deer, bears, Dall sheep, mountain goats, and beavers are commonly used land mammals. Seals, sea lions, walruses, and whales make up the marine mammal harvest.¹⁹

Alaska has strict rules about game meat both before and after it has been processed. It is illegal to buy, sell Unprocessed meat and game parts may be transferred to others permanently (gifted) or temporarily in the case of transport. However, two requirements apply. First, any meat that is given away must be in the same or better condition as meat you would keep for yourself. Second, after an animal has been killed, it is the hunter's responsibility to salvage all of the edible meat, in accordance with the Alaska regulations. The harvester must salvage all of the edible meat for all big game animals except brown/grizzly bear, wolf and wolverine.

If no attempt is made to salvage meat, fines range from \$2,000 and seven days in jail to one year in jail and \$10,000 in fines. Alaska regulations state that the horn, hide, or antlers may be taken out of the field only after the meat is packed out.²¹ (Note: For more on subsistence hunting, please see the "Subsistence & Wild Foods" section.)

NUTRITIONAL VALUE OF ALASKA'S BIG GAME:²⁰

Species	Protein %	Fat %	Cholesterol (mg/100g*)	Calories (Kcal/100g*)
Bear (Black)	20.1	8.3	**	163
Beef (lean ground)	17.7	20.7	75	264
Beef (USDA Choice)	22.0	6.5	72	180
Buffalo	21.7	1.9	62	138
Caribou	22.6	3.4	67	127
Chicken	23.6	0.7	62	135
Deer (Mule)	23.7	1.3	107	145
Deer (Sitka)	21.5	2.7	18	117
Elk	22.8	0.9	67	137
Goose (Canada)	22.8	7.1	84	161
Grouse (Sharptail)	23.8	0.7	105	142
Mallard	23.1	2.0	140	152
Moose	22.1	0.5	71	130
Ptarmigan	24.8	2.3	20	128
Rabbit	21.8	2.3	81	114
Wigeon	22.6	2.1	131	153

* 100 grams = 3½ ounces
 ** Not available

Plant Mariculture

The processing and marketing of aquatic farm products, particularly seaweed, is an industry challenge. To date, most shellfish producers in Alaska have processed and marketed their harvests as individual farms or in small co-ops. Seaweed producers are currently oriented around small volumes processed into specialty food products, though multiple operations are presently moving toward larger scales. With increased interest and investment in growing the mariculture sector, the state currently lacks sufficient processing capacity, creating an increasing bottleneck to industry growth.²³

Approaches to address the insufficient processing capacity vary across the state and among different producers and producer groups. In Southeast Alaska, Southeast Conference is creating a blueprint for a mariculture processing facility on Prince of Wales Island with the help of a \$500,000 investment from the USDA awarded in 2021.²⁴ The proposed co-op facility will support diverse aquatic farming, and members will be able to handle, store, freeze, pack, process, label and load their harvest safely and cost-effectively.²⁵

On Kodiak, most seaweed production and processing has been under the initiative of one company, Blue Evolution, which has vertically integrated farming, processing and the manufacture of value-added food products. In Prince William Sound, kelp farming is in the start-up phase, and several small-scale producers are testing different processing methods to match emerging markets. In Kachemak Bay, experiments are underway to test solar and other energy efficient methods of drying kelp as part of a proof-of-concept model for coastal Alaska, in part funded by a two-year NOAA Saltonstall-Kennedy grant.

Statewide efforts include work by Alaska Sea Grant which is currently investigating how to better preserve kelp to make commercial ready-to-eat products, using a technology called high-pressure processing which eliminates pathogens, like E. coli, and preserves food for longer.²⁶ Alaska Sea Grant also offered the state's first ever seaweed processing workshop to current seaweed producers in April, 2022.

A recent report produced for the Alaska Fisheries Development Foundation assessed potential seaweed processing locations in Alaska and identified variables that will influence establishment, including: seaweed supply, operating costs, energy cost and sustainability, water and sewer cost, labor, local property taxes, and shipping cost and schedule.²⁷ This report includes a regional analysis of Alaska's four main seaweed farming regions, followed by an analysis of six communities located within these regions.



Image: Alaska Sea Grant



A move to a larger, more efficient scale of processing may be necessary to make seaweed production profitable, and it will likely require the presence of either a major buyer or a major industrial processor in the state. The state's vast geographic scale means that limited transportation infrastructure, processing infrastructure, and human capital can pose challenges to development and render it a high-cost jurisdiction for processing and manufacturing relative to other seaweed-producing regions of the world.²⁸

A number of private and NGO entities are currently interested in investing or partnering in mariculture production and processing in Alaska. Similarly, two existing Alaska seafood companies have approved or pending seaweed farm applications with the State of Alaska. Alaska's seafood processing workforce, approximately 25,000 people annually, has been identified as a potential labor force for seaweed processing businesses.

Value-Added Products

Value-added products allow businesses and individuals the opportunity to expand the markets and offerings of Alaskan Grown products. Value added products are products that have changed the physical state or form of a product, such as milling wheat into flour or making strawberries into jam.²⁹

A wholesale food processor/manufacturer makes food and sells to other businesses for resale. This includes processing or manufacturing raw materials and other food ingredients into food items, reprocessing of food items, or packaging of food. Manufacturers in Alaska produce a wide variety of foods including but not limited to seafood, canned foods, dehydrated meals, snack foods, condiments, bread products, beverages, and candies.³⁰



Image: Pexel.com, Creative Commons

In Alaska, individuals and small businesses have seen expanded opportunities to make value-added products through changes in both state and municipal Cottage Food rules that have loosened restrictions and decreased permitting fees on cottage food producers. Alaska Food Code regulations allow the sale of foods directly to the consumer without a permit if certain conditions are met. Foods that qualify for Cottage Foods include baked goods, bottled or jarred jams, candies, confections, and fermented products. There are many foods considered “high risk” that do not qualify for sale under cottage food rules, including but not limited to meat and fish, dairy products, juices, and other products that require temperature control for safety (rather than quality). (Note: Please see the *Food Freedom & Cottage Food* appendix.)

While changes in cottage food regulations have helped to encourage expanded entrepreneurship within the state, there is an overall need for all types of processing equipment and space. While there is some commercial kitchen space available now, the current and future needs outweigh available and expected supply.³¹ Rentable and shared facilities such as the UAF Test Kitchen in Fairbanks often host equipment and space that is too expensive or otherwise impractical for a single food entrepreneur to invest in, such as a batch milk pasteurizer, convection oven, or large-scale packaging equipment.³²

For larger companies selling value added products, there are a number of preference programs and grants for utilizing Alaskan products and programs such as the Alaska Product Preference Program provide a small competitive advantage over items made outside of Alaska. There is a strong demand for value-added products for items such as flash frozen cut pieces of meat and fish, dehydrated fruits and vegetables, frozen pies, ready-made meals, and infused spirits, but increased access to processing and freezing infrastructure is required to support this demand.³³

Conclusion

Food processing infrastructure is the key for food entrepreneurs to scale. Food is one of the more common ways to start a business with relatively low barriers to entry. Cottage Food laws also provide a low-cost way to test market demand and preferences without investing in a commercial kitchen or expensive certifications. Food and beverage sales are a multi-trillion dollar market in the United States, and it seems there is no shortage of demand for locally made products in Alaska as demonstrated by the increase in farmers markets and previously mentioned increase in direct-to-market sales by farmers. Companies like Barnacle Foods and Heather's Choice are choosing to stay in Alaska for the unique "Alaska factor" for their brands, even though it would likely be more affordable to run consumer packaged goods companies almost anywhere else in the nation, considering Alaska's high cost of living, small labor pool, and distance from an extended market. The State should make every effort to keep these kinds of companies here and facilitate the launch of subsequent brands that leverage the Last Frontier's distinctiveness.

For food entrepreneurs to scale they must be confident in their path forward to accurately assess financial risk and their capacity to meet demand. Ensuring access, both financial and physical, to licensed processing facilities or amending policy to increase processing capabilities for small producers may allow more entrepreneurs to test broader markets and scale. Of course, food safety is of the utmost concern and decreasing regulation could lead to food safety crises and an increase in liability insurance costs as more risk is passed on to the consumer.

Investing in processing is not only a sound way to encourage economic development through entrepreneurship but also a way to increase distributed food security at the community level. Processing tools are an effective resource for communities to extend a harvest. Even something as simple as a root cellar will protect and preserve root crops well into the next growing season as demonstrated by farms like Singing Nettle in Palmer and Meyers Farm in Bethel. Shared meat lockers and seafood freezers, drying rooms, milk pasteurizers, canning equipment, and more can decrease the stress of delayed food shipments in the case of extreme weather events, which can delay food shipments to rural Alaska for weeks.



Processing Summary

STRENGTHS:

- Alaska is a unique place where many people process foods that are both grown and harvested.
- Alaska's rural residents each harvest an average of 295 pounds of wild foods every year, or about 18,000 tons, with fish making up about 56 percent of those harvests.
- Farming interest and growth continue to increase; there was a 62% increase of the number of farms (149 in 2007) selling direct and a 32% increase in direct sales over 2007 sales of \$1.7 million. These direct sales amounted to 3.8% of farm product sales, nearly 13 times the national average of 0.3%.
- There is a wide range of resources available for individuals processing foods for their personal consumption.
- Farmers can sell directly to restaurants or any other venues if the food is not processed.
- USDA micro food security grants are helping to fill gaps for individual food security needs.
- Eggs can be sold directly to restaurants as long as they are from an approved source and in accordance with 18 AAC 31.200.
- In Alaska, individuals and small businesses have seen expanded opportunities to make value-added products through changes in both state and municipal Cottage Food rules that have loosened restrictions and permitting fees on cottage food producers.

OPPORTUNITIES:

- Alaska's distance from the Lower 48 fosters a sense of independence.
- Community-run cold storage is essential across sectors. Community-run smokers and canners would be another great alternative (freezers are vulnerable and expensive) but likely less relevant to other food sectors like agriculture.
- Meat processing facility demand is currently outpacing supply, and these demands are expected to increase shortly.
- The need for processing equipment is expected to rise and could present an opportunity for future investment for the communities.
- Flake ice machines to keep catch cold are essential for preserving fish and reducing bacterial breakdown and histamine development which results in fish waste. Having those in communities too would be huge. Currently, they're owned by private processing businesses and generally inaccessible to the public. These could be piloted in a few communities where subsistence harvest is concentrated.

WEAKNESSES:

- There is an overwhelming need for freezer space to store subsistence fish. A 25-fish salmon limit takes a full chest freezer in and of itself.
- The separation of commercial and subsistence is not straightforward to segment catch networks between the designations offered by the state. It is expensive to subsistence fish in the way it is done today, and roughly 70% of subsistence fish is caught by 30% of harvesters.
- There are extremely limited dairy processing facilities remaining in Alaska.

CHALLENGES:

- Climate change is causing concerns around increased vulnerability to foodborne illnesses and raising concerns about food security in many of these communities.
- Alaska Food Freedom Act may cause consumer confusion on whether or not a product is regulated; could cause more food safety issues
- Processing equipment is expensive and capital can be difficult to obtain.

Processing Summary

INFRASTRUCTURE NEEDS

- Community ice cellars
- Commercial kitchens and processing equipment
- Mobile slaughter units
- Mobile processors
- Brick and mortar processors
- Community storage spaces

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Manufacturing Extension Partnership (MEP)
- Cooperative Extension Service through the University of Alaska Fairbanks
- Department of Environmental Conservation (DEC)

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Distribution and Aggregation

Introduction

Distribution and aggregation in Alaska present a range of unique challenges, considerations, and opportunities. Alaskan communities face great geographical challenges, extreme weather, and limited infrastructure while often serving small populations that require multiple modes of transportation to connect food from the source to the endpoint. Distribution choke points and delays affect all areas of Alaska. Solutions are often expensive and will require infrastructure improvements and innovation to hub and regional distribution areas throughout Alaska.

Unknowns around existing infrastructure, such as changing funding to the state ferry system, airline sales and bankruptcy, contract negotiations for bypass mail, and health and climate-related road closures due to fires, landslides and unusual weather add additional uncertainty to existing distribution options. The majority of Alaskan communities have no contingency plans or options for alternative distribution and limited resources on-site for aggregating the needed resources for food security for their communities.



Image: Port of Alaska in Anchorage



Image: Alaska Air Taxi Bush Planes: Tok Air Service

Distribution in relation to food security is the act of getting food from where it is harvested, to where it is processed, to where it is consumed. This is the distribution supply chain we witnessed break down during the first year of the COVID-19 pandemic.¹ The more connections along that chain of distribution, the more fragile and less adaptive it is. The shortest connection is directly from farm to table, but since most of us aren't farmers, we have to consider supply and demand—where the supply of food comes from and how to get it to where the demand for it lies.

When it comes to food supply, there is a heavy reliance on import, with some estimates as high as 95%. Food coming from out of state is more prone to spoilage and contamination and has a longer time in transit, leading to uncertain conditions of goods upon arrival, especially perishables. Our shortest supply chains come from local producers sharing food with family and neighbors or selling direct to consumers at farmers markets, food hubs, CSAs, and informal networks.

When it comes to demand and getting available food to the locations that need it, it is critical to consider the vastness of physical space in Alaska. It is 665,400 square miles and only 18% of communities are accessible on the main road system.² Furthermore, the demand for culturally appropriate foods differs throughout the state as well as how the need for nutritious food is met in hard-to-reach places. Very little is simple when it comes to the distribution of food in Alaska.

Storage

Storage is the key for controlling, maintaining, and even increasing the supply of food in our state. For larger stores like Safeway, there is a central storage facility in Anchorage for shelf-stable goods that can be distributed throughout the state when needed. Temperature controlled trucks depart from the lower-48 states weekly, and deliver via the road system, often using heaters or refrigeration to maintain required food safe temperatures. Large retail stores have cold storage built into the building but also use the refrigerated trucks themselves as cold storage until the products are needed.³ Transportation and climate-controlled storage rely on fossil fuels, which fluctuate in cost and can be prohibitively expensive for some communities to invest in more consistent delivery and storage.

For local food producers however, things are even more challenging. In 2018, commercial vegetable producers on the Kenai Peninsula ranked storage as the primary obstacle to growth.⁴ Rather than only selling what they can harvest on the day of sale, refrigeration makes it possible for producers to increase the supply by storing produce for extended sales and bulk buyers like restaurants, hospitals, or grocery stores. For meat producers, cold storage can make the difference between having to sell a whole animal rather than selling value-added packaged meat with a higher margin, and in a manner that appeals to a wider customer base. Refrigeration also plays a part if the supply of food has grown beyond the demand, as crop gluts drive down unit price and cause consumer burnout. If meats and produce can be stored for sale and processing later, then a producer is more likely to risk planting and growing more, which not only increases supply to meet demand, it also encourages producers to create stores of product in times of food scarcity.

Off the road system, climate-controlled food storage is even more critical, not only for producers but for communities and individuals depending on the food coming in. Food that arrives via bypass mail often sits on tarmacs in extreme weather conditions. These elements accelerate the rate of decay and affect food packaging, and many of the items are destroyed due to weather. One store in Utqiagvik has waited as long as 57 days for a food shipment due to extreme weather.⁵ There is often inadequate or nonexistent storage for pallets of food waiting to be shipped out to smaller communities, except on the runway or in non-climate controlled storage areas. Developing reliable and affordable temperature-controlled heating and cooling units in hubs, distributed across the State will not only increase food security at the last mile but also significantly reduce food waste at its final destination.

Transportation

In Alaska, it can take two weeks before food shipments arrive. Natural disasters, weather interruptions, and mechanical failures all contribute to inconsistent food transportation.⁶ These short-term disruptions quickly empty store shelves, but food supplies generally recover within a week or two. COVID-19 is revealing larger structural weaknesses in the state's food system.

Transportation of goods is another barrier to growth of the agricultural sector in this state. The majority of Alaskan communities aren't connected by roads, making marine and air transportation the lifelines for community well-being. State budget cuts have significantly hindered the efficacy and reliability of the Marine Highway System, which many coastal communities depend on for deliveries of groceries and agricultural products.⁷ Recently RavnAir, one of the state's few rural airlines, grounded planes and declared bankruptcy in response to Covid-19 travel restrictions.^{8,9}



Image: Alaska Marine Highway—Alaska.org



Of course, size of producer and carriers is of consideration. Large buyers with consistent ordering potential rely on the consistent availability of product, both size and quantity, and consistent delivery.¹⁰ Smaller food chain entities can not compete with the economies of scale and efficiencies achieved by larger national and regional players such as Sysco and Food Service of America (FSA). These companies can afford the communications technology to ease ordering for buyers, build relationships and loyalty as they get to know their clients' preferences, and advise them on supply changes and sales. Local producers with limited capacity, seasonal production, and limited transport infrastructure often struggle to perform every role that exists within larger companies, making it very difficult to scale distribution or consider increasing production. However, this is not insurmountable. An example of partnerships developed to address the expense of transportation can be seen at Meyers Farm in Bethel where a collaboration between the Yukon-Kuskokwim Health Corporation and the Food Bank of Alaska pays for the shipping costs of Meyers' fresh food boxes to anywhere in the Y-K Delta, bringing the cost of the box down from \$55 to \$15.¹¹

Below are some of the top considerations for restaurants when sourcing food; note that delivery is the top factor.

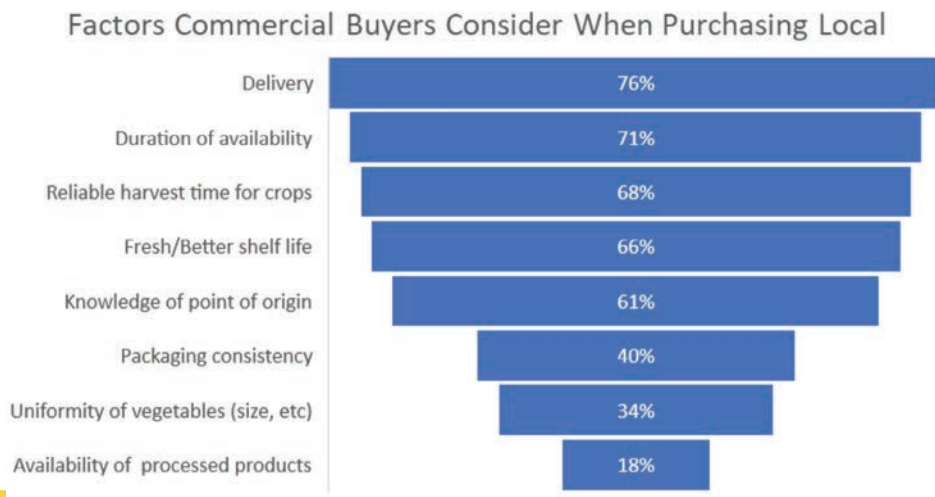


Image: *Buying Local Food*, Homer Soil & Water, 2018



Rural communities often receive products through bypass mail, via barge from the lower-48, often out of Tacoma, Washington, or through the Alaska Marine Highway System. All three options present challenges and often long delays. While the Alaska Marine Highway System has been plagued by inconsistent and unreliable state funding, the Bypass Mail system is a federal program that, while inefficient, is the only solution for many communities.

The Bypass Mail system is a program that allows shipments to bypass the post office and go straight to the carriers, who then deliver them to locations off the road system. Businesses pay approximately \$0.40 cents/pound for deliveries, which is almost half the cost of private freight shipment. The orders first go to carriers that fly between Anchorage and hub communities such as Bethel, Dillingham, and Kotzebue. If the mail is going to a smaller village, it is transferred to one of the Bush carriers—for example, Ryan Air or Grant Aviation—that fly smaller planes and are able to land their aircraft in villages.

As an example, Utqiagvik bypass mail is first trucked to Deadhorse, from where one of the mainline carriers fly it to the town. Each order must be 1,000 pounds minimum. The post office equally distributes the total bypass mail shipments between air carriers that fly to a destination. Long delays in shipments are common and can be caused by various reasons, including maintenance needs, personnel shortages, and supply chain issues. This winter, bad weather was the main factor delaying the shipments which resulted in orders arriving both weeks late and completely frozen or worse, having already gone through freeze/thaw cycles, which both renders the food inedible and is also a food safety risk.¹²

Food Hubs

In Alaska, most of our farms are considered small and medium-sized, and traditional transportation methods may not fit their needs. One option for supporting greater movement of local food products between regions is food hubs. A food hub is defined by the USDA, as “a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distributions, and/or marketing of locally/regionally produced food products.”¹³ In addition to the services listed above, food hubs have the potential to serve a role in creating emergency food caches and distribution.

Food Hub popularity is gaining momentum in the state, with many communities determining the viability of creating their own place-based models and at least six food hubs serving Alaskan communities. (*Note: Alaskan food hubs are explored in greater detail in the “Access” section of this report.*) Some of these food hubs provide transportation—via vans, refrigerated trucks, ferries, and even planes—for small and medium-scale farmers, fishers, and value-added local food producers. Food hubs have the ability to bring local food to a regional scale. “Local food at scale is good for eaters, good for the environment and good for farmers. Win-win-win.”¹⁴ Melding small and large food distribution models is the concept of “Agriculture of the Middle,” defined by the non-profit EcoTrust as “a broad category of small and mid-sized farms and ranches that are larger than those selling via local farmers markets or CSAs, but smaller than those supplying globalized commodity markets, and who want to sell locally.”¹⁵



**ARCTIC
HARVEST
DELIVERIES**



Photo: Arctic Harvest Deliveries owner Kyla Byers, prepping Alaska Grown produce for delivery

This scale of production has the potential to make a bigger impact on regional food systems by reaching more consumers than smaller, direct marketing options do, though those types of businesses are vital to a diverse and resilient local food system. One example of local food sourcing and distribution is Arctic Harvest Deliveries, which serves individuals and families, restaurants, institutions, and retail outlets statewide, utilizing online ordering and transportation planning software, and refrigerated box trucks. They source produce, meat, seafood, eggs, dairy, coffee, and other farm products year-round, from over 25 producers around the state, and offer a range of product sizes, from an à la carte farm box to whole animals.¹⁶ This is a model that could be expanded to all areas of the state, connecting food hubs and producers across regions.

Conclusion

Transportation, storage and supply chain infrastructure are the linchpins in our food chain, and these workers are often the unsung heroes in Alaska's food security. Alaska is no stranger to extreme weather, thus making unpredictability the only predictable factor in planning for food security. Weather delays are inevitable to rural communities, and increasingly common with climate change.¹⁷ Creating climate controlled infrastructure to maintain larger stores, distributed around the state in a hub-and-spoke model, will aid communities in overcoming food scarcity when the planes, ships, and trucks cannot travel.

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Distribution and Aggregation Summary

STRENGTHS:

- Alaskans are creative thinkers and makers, and many small scale examples exist of successful operations working within our complicated supply chain.
- Transportation difficulties are the greatest off the road system, but unlikely partnerships are common in rural parts of Alaska. One example developed to address the expense of transportation can be seen at Tim Meyers farm in Bethel where a collaboration between the Yukon-Kuskokwim Health Corporation and the Food Bank of Alaska pays for the shipping costs of Meyers food boxes to anywhere in the Y-K Delta, bringing the cost of the box down from \$55 to \$15.
- Since our local food supply chains are short—most farms are small scale, don't sell in large bulk quantities and often sell direct to consumer—local food is the freshest and healthiest by far.

OPPORTUNITIES:

- Off the road system, food storage is an urgent need creating opportunities for business start-ups and government support.
- Shared community refrigeration and freezers would allow more rural communities to take advantage of bulk buying and larger community shipments, as well as store local harvests and subsistence foods in areas, where affordable electricity is not readily available to most residents.
- Weather delays are inevitable to rural communities, but creating infrastructure to hold materials, and prioritizing food deliveries over other mail are two options to consider.
- One option for supporting a greater movement of local food products between regions is food hubs.
- Food hubs can potentially serve a role in creating emergency food caches and distribution.
- As ecosystem changes continue to affect subsistence, a staple of rural food systems, many rural communities are taking on local agricultural projects to shorten the supply chain and maintain control of their food supply.

WEAKNESSES:

- Oftentimes, food that arrives via bypass mail sits on tarmacs in extreme weather conditions. These elements accelerate the rate of decay, affect food packages and many of the items are destroyed due to weather.
- Many communities have limited options to store large quantities of food.
- Transportation of goods is another barrier to growth of the agricultural sector in this state. The majority of Alaska communities aren't connected by roads, and state budget cuts have gutted the ferry system.
- When an Alaskan farmer is trying to sell to a restaurant on the road system, they are competing with the trucking companies that come from the lower 48 such as Sysco and FSA (Food Service of America). These trucks deliver food directly to the door of restaurants and large food buyers several days a week with a tremendous array of food choices.
- Most of our farms are considered small and medium-sized, and traditional transportation methods may not fit their needs.
- Since most of our farms are small, aggregating large enough quantities of produce to satisfy larger markets like schools or hospitals is difficult.

CHALLENGES:

- Affordable and reliable transportation is not an option for most of the state.
- Cold storage is extremely important and very limited both to keep food cold and to prevent freezing.
- Our current system requires that food travel great distances, often encountering extreme weather, and is supported by limited infrastructure while often serving small populations that require multiple modes of transportation to connect food from the source to the endpoint.
- The majority of Alaskan communities have no contingency plans or options for alternative distribution and limited resources on-site for aggregating the needed resources for food security for their communities.
- Only 18% of our communities are accessible on the main road system.

Distribution and Aggregation Summary

INFRASTRUCTURE NEEDS

- Climate-controlled, regional hub storage facilities
- Alaska Marine Highway funding
- Refrigeration and temperature-controlled storage centers for local producers
- Food hubs
- Cold and dry storage
- Refrigerated trucks and vans
- Low-cost cargo services
- Workforce development on local and regional logistics
- Commercial kitchens for food processing for easier storage and distribution
- Rail connectivity
- Port of Alaska improvements

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Department of Environmental Conservation
- Alaska Division of Agriculture
- Alaska Marine Highway
- Small Business Development Centers
- Transportation companies/airlines
- USDA funding opportunities
- USDA Rural Development



Access

Introduction

Food access and equity is a challenge throughout Alaska. As climate change disrupts systems, transforms where food grows, and affects where and how people access traditional foods, Alaskans must adapt to a new and evolving landscape. Land use management and resource allocation often work at odds, and Alaska's long and complicated supply chain highlights price differences and accessibility between urban and rural areas. Many equate food access with physical proximity to food, however the term also includes financial access as well as implies the safety and appropriateness of food. To be considered "accessible" food must be available, affordable, and safe to consume.

While selling directly from producer to consumer results in the greatest profit margins for farmers, many unique and innovative partnerships have developed for transporting and marketing agricultural products in the state. Over the years, there have been several successful State and federal programs that have encouraged buy local initiatives, though few of them receive funding for a sustained period which causes undue burden to both producers and buyers. Private partnerships and health initiatives have spawned creative collaborations between health organizations and growers as the connection between fresh foods and health continues to be shown.

At the same time, the number of individuals and families facing food insecurity and hunger continues to rise, and long-term solutions are both urgent and complex. Support and innovation is needed throughout the system to ensure and improve food accessibility and security in the face of limited supply, increased likelihood of systems disruption, and continued challenges that face many Alaskans.

Access to Traditional Foods in Alaska

Food access is increasingly understood as playing a key role in people's health and well-being, especially for Indigenous populations whose relationship to traditional foods is central to social, economic, and spiritual well being.¹ Northern Indigenous communities around the world, including Alaska, work tirelessly to sustain the health of, and access to their land- and sea-based food traditions, while also navigating the inequalities of retail food markets.²

Access to Traditional foods (often referred to as "subsistence foods") in Alaska is dictated by a number of factors including:

- State and federal policies that regulate harvest of wild fish, game, and plant species;^{3,4,5}
- Individual harvesters' and/or consumers' (referred to as 'individuals') ability to physically obtain traditional foods (e.g. transportation across the landscape and waterways to harvest resources);⁶
- Individuals' economic ability to harvest traditional foods (cost of travel or necessary equipment to harvest resources);^{7,8}
- Individuals' and households' ability to meet their daily nutrient requirements;⁹

- Environmental conditions (e.g. in rural Alaska, where household livelihoods and community food systems are tightly connected to climate and landscape features like sea ice or frozen rivers to provide access to certain food species);¹⁰
- Contemporary drivers of environmental and socioeconomic change (e.g. industrial development of lands for oil, gas, and mining);¹¹ and
- Exposure to contaminants that bioaccumulate in wild food species (e.g. heavy metals like methylmercury and persistent organic pollutants left behind from military dump sites and a variety of other sources).^{12,13}

In the context of Indigenous peoples, traditional foods are meaningful in psychological, cultural, and social ways, and access to these foods has greater significance than merely supplying caloric needs.^{14,15,16,17,18} Access to traditional foods in Alaska is one of the central facets of rural, mixed cash-subsistence economies and as such is a critical component of food security for rural residents.¹⁹

Direct to Consumer Access

Selling local farm products directly to consumers, like at farmers markets and farm stores, has tremendous benefits. Selling direct allows for relationship building between farmers and customers, creating more informed and loyal consumers. Farmers are able to retain more economic value by avoiding wholesale pricing offered at most traditional outlets like grocery stores. Direct marketing can also save farmers time, by reducing the number of intermediaries. In addition, it can be easier for small to mid-sized farmers to access direct markets, as large retailers may need larger, more consistent quantities and product qualities.

The USDA's National Agricultural Statistics Service (NASS) reports that in 2020, over 147,000 U.S. farms produced and sold food locally through direct marketing practices, resulting in \$9 billion in sales nationally.²⁰ For the same year, the Alaska Division of Agriculture estimated that direct-to-consumer sales topped \$4.5 million, a tremendous infusion into local economies. According to the 2017 NASS Agricultural Census, Alaska ranked first in the nation in terms of new farms, with the majority of these operations being small (under 10 acres).²¹ In addition, Alaska's direct sales have continued to rise over the last decade—farmers markets, food hubs, farmstands, and CSAs are integral to this growth and crucial to improving food security and building resilient local economies.

FARMERS MARKETS

Farmers markets are good for farmers and good for the communities they serve. Farmers markets provide space for farmers to reconnect with consumers and capture retail dollars for their fresh, high-quality Alaska Grown products. For communities, farmers markets are family-friendly, community-building events that bring neighbors together, attract retail activity to surrounding businesses, create forums for civic education and involvement, and provide direct access to Alaska's agricultural bounty. Nationwide, farmers markets have experienced a renaissance and have taken root across Alaska. While Alaska's short growing season and cold climate offer many challenges to our farmers, farmers markets are emerging across Alaska. In 2005, the Division of Agriculture listed just 13 markets throughout the State.²² Since 2006, the number of farmers markets in Alaska has more than tripled: from 13 to 41 in 2017. In 2021, the Alaska Farmers Market Association (AFMA) counted 56, with a handful in planning stages.²³

CSAS AND FARM STANDS

Adjacent to farmers markets are Community Supported Agriculture (CSAs) and farm stands. The USDA National Agriculture Library outlines that CSAs consist of "a community of individuals who pledge support to a farm operation so that the farmland becomes, either legally or spiritually, the community's farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production."²⁴ Essentially, an individual or family will purchase a share of the farm's produce before the season begins, and receive a weekly (usually) produce box throughout a defined period of time. Should a crop failure arise, all parties have agreed to share the loss. This situation provides some security for the farmer, as well as offers a cash infusion for farm businesses before any product is grown, a critical time for procuring farm supplies, season planning, and marketing.

2022-23 ALASKA FARMERS MARKET DIRECTORY

Image: Co-created by Alaska Farmers Market Association and Edible Alaska

FOOD HUBS

Alaska's vast geography creates unique conditions for farming operations, with many challenges. Food hubs are an integral part of market access, storage, and transportation often resulting in more equitable food access throughout the state. For example, in some areas like Bethel, Iliamna, and Tyonek, which are predominately Alaska Native communities, just one local farm may serve the entire area, selling through both CSAs and individual farm stands. Despite being small-scale and limited, these local food operations are invaluable in providing accessible, nutritious food to underserved areas. Most farms in Alaska are under 50-acres, which seems ineffectual at best when compared to the farming activity in the lower-48 United States, however the small, distributed nature of agriculture in Alaska is of critical importance to the communities served and the hyper-local food security it brings.

As the demand for locally produced food has grown tremendously in the last decade, emerging food hubs are assisting in the sales and distribution of Alaska Grown products. A food hub is defined by the USDA, as “a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distributions, and/or marketing of locally/regionally produced food products.”²⁵ Food hubs are gaining momentum in the state, with many communities creating their own place-based models. Since autumn 2015, five organizations have received funding from USDA grant programs to create Alaskan food hubs. In Alaska, these food hubs take many different forms and can look very different than those in the lower-48 and from each other, each addressing place-based, community-defined needs. Currently, there are six food hubs in the state, with at least one more in planning stages, with varying infrastructure and services provided, geographic foci, missions, and organizational structures. These entities, located primarily in the southeast and SouthCentral areas of Alaska, are:

- Catch 49 (est. 2011), serving Anchorage and Fairbanks²⁶
- Alaska Food Hub (est. 2016), serving the Kenai Peninsula communities of Homer, Anchor Point, Soldotna, Ninilchik, Seldovia²⁷
- Arctic Harvest Deliveries (est. 2017), serving Anchorage, Eagle River, Wasilla, Girdwood; wholesale statewide²⁸

- Salt & Soil Marketplace (est. 2017), serving Juneau and Haines²⁹
- Kodiak Harvest Food Co-op (est. 2021), serving Kodiak³⁰
- Qik'rtaq Food Hub—Alutiiq Grown (est. 2022), serving Alaska Native villages of Kodiak, Larson Bay, Ouzinkie, Old Harbor, and Port Lions³¹



Food hubs benefit farmers, fishers, and value-added producers by connecting them with additional (and sometimes larger) markets and providing services like collective marketing, accounting, sales, and education. Food hubs can help get local food into underserved areas, as well as assist in gleaning activities to benefit food pantries, increasing access to fresh healthy foods. These operations strengthen local economies by creating jobs and new economic opportunities for farmers. They are convenient for both farmers and consumers, allowing for a one-stop-shop (consumers) or one-stop-drop (producers). Food hubs can strengthen food security by supporting local food systems and providing enhanced sales opportunities for Alaskan producers.

TRADITIONAL RETAIL

Retail channels are a powerful tool for increasing market access for producers as well as fresh food access for consumers. Both brick-and-mortar stores with physical locations and e-commerce platforms involve more partners than the direct-to-consumer options like farmers markets. This means producers earn lower margins per unit and more sales channel partners will charge a markup before consumers make their purchases, with the markups often resulting in a higher cost to consumers. However, the trade-offs are not entirely negative. Retail partners often assume most of the cost and onus of marketing, customer service, last-mile distribution to the final point-of-sale, and physical sales infrastructure overhead costs such as storefront space. Retail sales tasks and costs are at times insurmountable for producers, due to their own location, skillset, and available finite resources such as time.

Producers earn fewer cents per dollar of product sales through retail simply because of the need to compensate more players in the supply chain. To access traditional retail points of sale, producers will sell to a wholesaler who will in turn sell to the retailer, or the retail partner will directly purchase from a producer. Retail outlets rely on Alaska's transportation infrastructure to serve consumers, including marine ports, airstrips, small and medium aircraft, trucking routes, ferry vessels, and climate-controlled warehouse space. The two primary retail channels for food access in Alaska are grocery stores and restaurants.

It is important to note that while food entrepreneurs often begin at the Cottage Food level of production, which has less stringent food safety regulation, Traditional Retailers have both third party and internal regulations to which they adhere. Many retailers, particularly national chain retailers cannot accept food made in a non-commercial or home kitchen. Even if food is produced in a permitted kitchen, retailers often have requirements that are much more stringent than the minimum standards set by DEC.

The USDA Harmonized GAP (Good Agricultural Practices) audit program is an audit that was developed as part of the Produce GAP Harmonization Initiative, an industry-driven effort to develop food safety GAP standards for pre-harvest and post-harvest operations. The Initiative is a collaborative effort on the part of growers, shippers, produce buyers, audit organizations, and government agencies, including USDA. The USDA Harmonized GAP audit, in keeping with the Initiative's goals, is applicable to all fresh produce commodities, all sizes of on-farm operations, and all regions in the United States. Retail, wholesale, and institutional buyers typically require GAP audits to ensure conformance to a specific set of company specifications and/or industry best practices. In many cases, buyers require a third-party GAP audit as a term of their contracts with their suppliers. It is a market access tool used when a buyer requires its supplier(s) to undergo an annual food safety/GAP audit to ensure specific food safety practices are being followed based on buyer specifications and/ or industry best practices. Most large national and international buyers are increasingly requiring a third party food safety audit. The Alaska DNR Division of Agriculture has USDA licensed auditors that currently provide this service to industry.³²



GROCERY

Consumer retail outlets such as farmers markets and food hubs are discussed in separate sections of this report. Traditional grocers such as independent, single stores, local chains, and regional or national chains serve the diverse types of communities in Alaska.

As most groceries are imported, food must travel to the state, then travel around the state through a system of barges, warehouses, trucks, and aircraft. Every time food moves, the cost increases. Indeed, in rural Alaska communities, groceries can be as much as 150% of retail prices in Anchorage.³³

Urban retail hubs such as Costco, Fred Meyer, and Safeway serve residents both on and off the road system via brick-and-mortar shopping as well as digital sales and delivery. Bulk orders for off-road delivery are called “bush orders”. The Alaska Commercial Company (AC Stores) and Three Bears each operate over 30 stores in the state. These two retailers are considered last-mile distributors and vendors, ensuring goods make it to Alaska’s rural communities on a regular basis, as weather and supply chain infrastructure allow.

In addition to increasing market access for producers, retailers have the power to increase healthy food access to low-income consumers by accepting Supplemental Nutrition Program (SNAP), Special Supplemental Program for Women, Infants, and Children (WIC), and Senior Nutrition benefits. While the decision to accept these benefits remains with each retailer, state-led incentives such as matching SNAP federal dollars can decrease the burden of high food costs and encourage retailers to accept these programs.

Image: Alaska Grown display in Palmer Fred Meyer, [Twitter](#), March 3, 2017

RESTAURANTS

Sales margins on food at restaurants are thin, so ingredient costs for restaurants are of high consideration when shopping for supply vendors. Alaska grown products may not always be perceived as the most cost-effective choice, even though local food stays fresher longer, reducing spoilage costs.

In 2012, the Alaska Division of Agriculture piloted the Alaska Grown Restaurant Rewards Program to incentivize the use of local foods in meals. USDA Specialty Crop funding was leveraged to distribute \$30,000 to restaurants, using a sliding scale and evaluation matrix developed by the Alaska Division of Agriculture. The program received the same grant in the same amount for 2013. 32 restaurants across the state signed up for the program, which offered 10 to 20 percent off the cost of locally grown food.³⁴

In 2018 The Division of Agriculture launched the Restaurant Recognition Program, which offered free advertising and promotional materials to the first 50 qualified applicants, which included radio advertising, print advertising, social media campaigns, marketing materials, Alaska restaurant directory mobile application, and a specially designed Restaurant Recognition logo for use in each restaurant.³⁵

Image: Restaurant Recognition Program logo, Alaska DNR Division of Agriculture, 2018

Both restaurant incentive examples provided here relied on federal funding and the Division of Agriculture's choice to prioritize this initiative. For future planning, inconsistency in incentive offering or drastic year-over-year programmatic changes could ultimately deter restaurants due to a high learning curve or additional steps to participate. Programs like this remain potentially powerful to showcase Alaska Grown produce and afford producers market access. However a clear launch with low barriers for use and dedicated funding are needed to ensure programs like this are sustainable.



SCHOOL NUTRITION PROGRAMS

School nutrition programs and professionals are a critical piece of Alaska's food system and economic growth potential. At minimum, schools are the place where children receive at least one, sometimes two, hot and prepared meals, every day. As evidenced by the COVID-19 pandemic, school nutrition programs are regarded as essential services by many and are needed to offset the rising cost of household grocery spending. At their best, school nutrition programs are a place for lifelong healthy skill development; from food production to preparation to taste expansion and local food exposure. Not only are school nutrition programs good for families, but they are also good for communities. According to the Rockefeller Foundation in 2021, every \$1 invested in U.S. school meal programs returns \$2 in health and economic benefits.¹



For more on Alaska's School Nutrition history, programs, and opportunities, contact the AKSNA.

Alaska School Nutrition Association (AKSNA) is "dedicated to helping provide nutritious, appealing, quality food to the clients we service. Whether it is a Day Care facility, Senior Center or the almost 50,000 school students we provide meals for everyday of the school week."

AKSNA "is the state affiliate of the School Nutrition Association (SNA), a national, nonprofit professional organization representing more than 58,000 members who provide high-quality, low-cost meals to students across the country. Recognized as the authority on school nutrition, SNA has been advancing the availability, quality and acceptance of school nutrition programs as an integral part of education since 1946." — <https://aksna.org/>

Programs such as Farm to School, Local Food for Schools, Fish to School help nutrition specialists access dollars that not only purchase more healthy foods, but direct those dollars to local producers. Piloted in 2013 and last funded in FY 2015, the Nutritional Alaskan Foods in Schools program distributed \$9 million to Alaska School Districts over three years.² This program modeled that it is possible to utilize local Alaskan foods in school nutrition programs at scale, however challenges arose such as inadequate supply during the time frame ingredients were needed. If this program is reviewed for reinstatement, experts from school nutrition programs, local producers, and supply chain operators should be consulted to maximize impact.

¹ Rockefeller Foundation. New Report: *Every Dollar Invested in U.S. School Meal Programs Provides \$2 in Health and Economic Equity Benefits*. November 15, 2021. <https://www.rockefellerfoundation.org/news/new-report-every-dollar-invested-in-u-s-school-meal-programs-provides-2-in-health-and-economic-equity-benefits/>

² Alaska Department of Commerce, Community, and Economic Development. Accessed February 9, 2023 from <https://www.commerce.alaska.gov/web/dcra/GrantsSection/NutritionalAlaskanFoodsinSchools.aspx>



Image: Credit Adobe Stock License #219083430

Farm-to-School and Other Institutions

Business-to-business/nonprofit food sales hold enormous potential for increasing producers' market access and guaranteeing larger annual contracts. Programs exist to incentivize this relationship—Under the State's procurement code, the Alaska Product Preference program can provide a local bidder or offeror with a cost preference between three and seven percent.³⁶

One such program is the National Farm to School program. This program not only focuses on increasing local food presence in schools, but also on educating youth about where food comes from and how to prepare it. The National Farm to School Network is an information, advocacy, and networking hub for communities working to bring local food sourcing and food and agriculture education into school systems and early care and education environments. Farm to school enriches the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools and early care and education settings. Students gain access to healthy, local foods as well as education opportunities such as school gardens, cooking lessons, and farm field trips.³⁷

For schools and other types of institutions, the Alaska Department of Education provides informational resources to assist organizations with purchasing local foods.³⁸ Procurement guides include:

- Procuring Local Food Guide
- Using DOD Fresh to Purchase Local Produce
- Alaska Seafood Purchasing Guide for School
- Alaskan Grown Meat Processors
- Alaskan Producers and Growers

While schools may be one of the most distributed networks across the state, other types of institutions often hold much of a community's purchasing power. Senior centers, day cares, hospitals and medical care centers, and military bases serve large populations. However, these entities require consistency and reliability in supply, so Alaska's growing but still nascent agriculture community may not yet be in a position to serve this type of customer.

Image: *Farm to Summer Week, Farm to School Alaska, 2018*



Hunger in Alaska

Food security and climate change are two of Alaska's most daunting challenges. The Arctic is warming twice as fast as the global average,³⁹ which affects the ability to access traditional hunting, fishing, and gathering areas.⁴⁰ Additionally, Alaskans import 95% of their store-bought food, with rural Alaskans experiencing the most food insecurity.⁴¹ In 2017, roughly 100,000 Alaskans, or about 14% of the state's population, relied on SNAP to help feed their families.⁴² Further, between 2000 and 2010, over 30% of Alaska Natives were consistently food insecure and were twice as likely to be food insecure when compared to white populations.⁴³

The US Global Food Security Strategy theorizes that "agricultural growth is a mechanism to reduce poverty, especially for the extreme poor in rural areas" through increased access to nutritious foods, improved infrastructure, and increased economic opportunities.⁴⁴ By improving capacities in food production, communities experience greater resilience, stronger localized economies, lower poverty, improved and sustained food security and nutrition, and reduced "reliance upon emergency food assistance... even in the face of recurrent shocks and stresses."⁴⁵ Growing and supporting our local and regional Alaskan food systems are crucial to improving food security and building resilient local economies.

The Food Bank of Alaska, along with Feeding America and the Center on Budget and Policy Priorities, has provided the following snapshot on Hunger and Poverty in Alaska:⁴⁶

- Over 95,000 Alaskans—roughly 1 in 8—struggle with hunger.⁴⁷
- 16% of Alaska kids live in homes that may not have enough food.⁴⁸
- Roughly 1 in 10 Alaska seniors faces the threat of hunger.⁴⁹ While there are more food insecure people living in urban Alaska, the prevalence of food insecurity is higher in rural Alaska. The areas with the highest rates of food insecurity are Kusilvak (formerly Wade Hampton) (28.6%), Bethel (22.9%), Northwest Arctic (22.5%), Yukon-Koyukuk (22.0%) and Nome (19.7%).
- About 85,000 Alaskans participate annually in SNAP.⁵⁰
- In Alaska, more than 67% of SNAP participants are families with children.⁵¹

Alaska Native Communities can qualify for the Federal Food Distribution on Indian Reservations (FDPIR), which is currently administered through the Alaska Native Tribal Health Consortium. Currently, 19 Tribal Agencies are leveraging the FDPIR program in Alaska.

The FDPIR is a federal program funded by a USDA Food Nutrition Service grant. FDPIR food packages may include fresh produce, canned meats, poultry and fish, canned fruits, vegetables and beans, canned soups and sauces, pasta, rice and other grains, cheese, egg mix, dry and evaporated milk, flour, cornmeal, bakery mixes, and more. Eligible households include Alaska Native households in Alaska Native Tribal communities, American Indian and non-Indian households residing on a reservation and households living in an approved area that include at least one member of a federally recognized Tribe. To be considered, households must also meet income standards.

Overall refers to all individuals, including children, regardless of race or ethnicity

2019 Overall (All Ages) Food Insecurity In Alaska



FOOD INSECURE POPULATION IN ALASKA

86,970

FOOD INSECURITY RATE IN ALASKA



ESTIMATED PROGRAM ELIGIBILITY AMONG FOOD INSECURE PEOPLE IN ALASKA



- 36% Above Other Nutrition Program threshold of 185% poverty
- 15% Between 130%-185% poverty
- 49% Below SNAP threshold of 130% poverty

AVERAGE MEAL COST IN ALASKA

\$3.63

ANNUAL FOOD BUDGET SHORTFALL

\$53,905,000

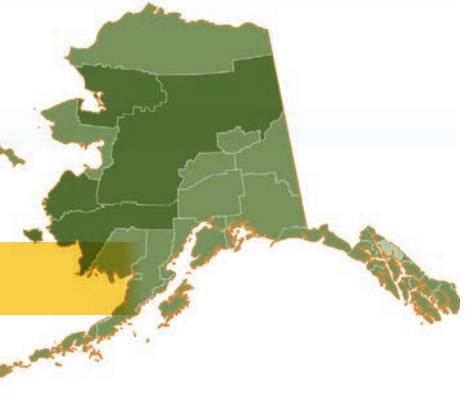


Image: Food Insecurity Among Overall Population in Alaska, Feeding America

Food Banks and Pantries

Food banks, food pantries, soup kitchens, child feeding programs, and senior centers are all vital to ensuring that every Alaskan has access to food and nutrition. Since 1979, the Food Bank of Alaska has been securing donated food for a network of over 150 partner food programs across the state.⁵² In addition to the Food Bank of Alaska's network, there are independent food bank organizations like the Fairbanks Community Food Bank,⁵³ as well as mutual aid organizations like Alaska Food For Thought,⁵⁴ who provide food assistance in their communities through a community fridge.

The Food Bank of Alaska has provided the following overview about who accesses food assistance throughout their partner network:⁵⁵

“ In any given week 6,300 Alaska households turn to Food Bank of Alaska's network of food pantries, soup kitchens, senior centers, and other programs for food assistance. An estimated 51,900 unique households or almost 155,000 people are served annually.”

The face of hunger is changing: 32% are children under 18, and 13% seniors aged 60 and older. Additionally, 23.3% of households include at least one veteran, and 2.6% are currently serving in the military.

Many hungry people are part of the “working poor:” 60% worked for pay in the last 12 months, and 43% worked for pay in the last four weeks. Those working often face underemployment and are more likely to be part-time. Of those not working, 21% are retired and 69% cannot work due to disability.



What was once emergency status is now chronic: 66% of Alaskans using our partner food distribution network tell us that they expect to keep needing food help for the foreseeable future just so they can make ends meet every month.

Many clients are educated: 87% have a high school diploma or GED; 35% have education beyond high school. Additionally, 7% of households include an adult student.

Image: Food Bank of Alaska

Hunger impacts health: 26% of households report at least one member with diabetes, and 47% include someone with high blood pressure.

Rising costs in health care create hardship for hungry Alaskans: 34% have no health insurance of any kind, including Medicaid (survey conducted before ACA implementation), and 56% of households report having unpaid medical bills.

Hunger and poverty often go hand in hand: 53% of clients served have incomes that are at or below the federal poverty level (\$15,510 or less for household of two).

Federal program participation: 45% of households participate in SNAP, but 26% report that their benefits last only one week each month or less. 20% of clients not participating in SNAP cite believing they are not eligible as the reason.

Hungry Alaskans are faced with difficult choices: A majority of client households report having to choose between paying for food and paying for medical care (56%), housing (53%), transportation (64%), and utilities (59%).

Families in need adopt coping strategies, such as eating food past expiration date (71%), purchasing processed, unhealthy, but cheap food (81%) or food in dented or damaged packages (57%), and receiving help from family or friends (54%).

Clients want these food items most: Protein food items like meat (54%), fresh fruits and vegetables (53%), and dairy products such as milk, cheese, or yogurt (29%).

Food access organizations utilize donations from individuals, businesses like grocery stores and fish processors, non-profit organizations, and local farmers. In summer 2022, the Alaska Division of Agriculture was awarded a USDA Local Food Purchase Assistance Cooperative Agreement Program grant. The goal of this inaugural program is to “maintain and improve food and agricultural supply chain resiliency” and awarded “up to \$400 million through non-competitive cooperative agreements with State and Tribal governments to support local, regional, and underserved producers through the purchase of domestic local foods.”⁵⁶ This award will ensure greater access to local food through food access programs.

Kids and families across Alaska can also access food through programs offered by Alaska Child Nutrition Programs (CNP), which “commits to help school districts and other program sponsors provide quality nutrition programs ensuring that our families are well-nourished, healthy, and our children are ready to learn.”⁵⁷ Current and past programs offered by CNP include:

- Alaska Farm to School
- USDA Food Program
- Child and Adult Care Food (CACFP)
- Fresh Fruit and Vegetable
- Summer Food Service (SFSP)
- School Nutrition Programs (NSLP, SBP)
- Special Milk Program (SMP)

Alaska Child Nutrition programs are vital year around, but also play a pivotal role in ensuring children continue to receive nutritious meals during pandemic school closures.

According to Program Manager Jo Dawson, School nutrition professionals across Alaska “transitioned their programs from the cafeteria to meals-to-go, bus route stops, and even home delivery. On an average day, schools in Alaska serve approximately



Image: Pandemic Feeding Program, Sitka School District

48,000 lunches; three-quarters of which are to children who qualify for free or reduced-price meals. Across the state schools knew the impact closure would have on families.”⁵⁸ CNP worked with the USDA to create waivers, allowing them to continue serving meals to students.

Conclusion

Food access for Alaskans is a function of geography, financial resources, nutritional literacy, and for many, the ability to navigate the aid system. Alaskans access foods in a variety of ways, many with local sourcing in mind. Not only are farmers markets and food hub activities sources of local food, but they are also mechanisms for relationship building. In times of crisis, it is most efficient and sustainable for neighbors to help one another and building community through food is a proven way to create or rebuild both urban and rural food resilience.

While it would be ideal for every Alaskan to have access to fresh, healthy, and local foods, that is simply not the reality. Subsistence and personal harvest activities require travel and often equipment to store the processed foods, which necessitates adequate dry and cold storage. For many children, school lunch is their most complete meal of the day. Progress has been made to decrease barriers to applying for SNAP with electronic benefits transfer (EBT) cards and in 2019 the Anchorage Innovation Team, funded by a Bloomberg grant, piloted a still-operating SMS service (see below) to ease some of the stigma and administrative confusion many experience when seeking nutrition benefits.⁵⁹

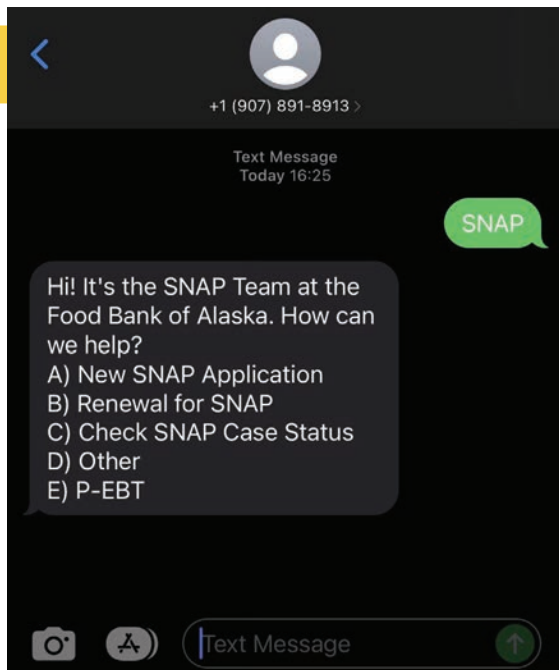


Image: Screenshot created September 2022

What if Alaska led the world in rural food security? What if Alaska's brand included well-fed people in every location, on or off the road system? Even in the best cases, access can be difficult. For many, shopping for local goods requires visiting multiple destinations to complete the grocery list—Fred Meyer, Costco, farmers markets, and the local co-op. Shopping locally can be too cumbersome and draining for busy individuals who do not have the capacity to shop local every day. Off-road-system communities are plagued with weather uncertainty and experience higher rates of spoilage resulting in less available inventory. Alaska can become a leader in circumpolar and global supply chain innovation by investing in distributed, climate-controlled storage around the state and creating policy and supply chain culture that frames last-mile distribution as Alaska's expertise.



Access Summary

STRENGTHS:

- Alaska has many opportunities for farmers to get retail prices for their products through farmers markets, farm stands and CSAs
- Selling local farm products directly to consumers, like at farmers markets and farm stores, has tremendous benefits. Farmers are able to retain more economic value by avoiding wholesale pricing offered at most traditional outlets like grocery stores.
- Farmers markets are emerging across Alaska.
- There is strong support through USDA Grant Funding for food hub creation— Since autumn 2015, five organizations have received funding from USDA grant programs to create Alaskan food hubs.
- Food hubs can help get local food into underserved areas, as well as assist in gleaning activities to benefit food pantries, increasing access to fresh healthy foods. These operations strengthen local economies by creating jobs and new economic opportunities for farmers.
- Alaska Division of Agriculture was awarded a USDA Local Food Purchase Assistance Cooperative Agreement Program grant. This award will ensure greater access to local food through food access programs.
- State and federal food assistance programs serve thousands of Alaskans every year.

WEAKNESSES:

- With small levels of production overall, access to fresh food is not easy for much of the population, especially those with lower incomes.
- Exposure to contaminants that bioaccumulate in wild food species is of high concern for local and traditional foods.
- Retail partners often assume most of the cost and onus of marketing, customer service, last-mile distribution to the final point-of-sale, and physical sales infrastructure overhead costs such as storefront space.
- Alaska imports roughly 95% of its food, by best estimates, food must travel to reach the state, then travel around the state through a system of barges, warehouses, trucks, and aircraft. Every time food moves, the cost increases. Indeed, in rural Alaska communities, groceries can be as much as 150% of retail prices in Anchorage.
- Inconsistency in incentives offerings or drastic year-over-year programmatic changes could ultimately deter restaurants from participating in State and federal programs due to a high learning curve or additional steps to participate. Programs like this remain potentially powerful to showcase Alaska Grown produce and afford producers market access, however, a clear launch with low barriers for use and dedicated funding are needed to ensure programs like this sustain.
- The face of hunger is changing: 32% are children under 18, and 13% seniors aged 60 and older. Additionally, 23.3% of households include at least one veteran, and 2.6% are currently serving in the military.

OPPORTUNITIES:

- Access to traditional foods in Alaska is one of the central facets of rural, mixed cash-subsistence economies and as such is a critical component of food security for rural residents.
- Alaska's direct farm-to-customer sales have continued to rise over the last decade—farmers markets, food hubs, farmstands, and CSAs are integral to this growth and crucial to improving food security and building resilient local economies.
- Food hubs can strengthen food security by supporting local food systems and providing enhanced sales opportunities for Alaskan producers.
- Distributed and small scale of Alaska agriculture means hyper local food security with room to scale.
- The Division of Agriculture Alaska Grown Restaurant Rewards Program was well received and could be revived by the state.
- The Division of Agriculture Restaurant Recognition program was well received and could be revived by the state.
- Business-to-business/nonprofit food sales hold enormous potential for increasing producers' market access and guaranteeing larger annual contracts. Programs exist to incentivize this relationship—under the State's procurement code, the Alaska Product Preference program can provide a local bidder or offeror with a cost preference between three and seven percent.

CHALLENGES:

- Northern Indigenous communities around the world, including Alaska, work tirelessly to sustain the health of, and access to their land- and sea-based food traditions while also navigating the inequalities of retail food markets.
- Individual harvesters' and/or consumers' ability to physically obtain traditional foods (e.g. transportation across the landscape and waterways to harvest resources) is impacted by their economic resources and ability to cover the cost of travel or necessary equipment to harvest resources.
- Contemporary drivers of environmental and socioeconomic change (e.g. industrial development of lands for oil, gas, and mining have significant impacts on traditional food opportunities.
- Producers earn fewer cents per dollar of product sales through retail simply because of the need to compensate more players in the supply chain.
- Food security and climate change are two of Alaska's most daunting challenges. The Arctic is warming twice as fast as the global average, which affects the ability to access traditional hunting, fishing, and gathering areas.
- In any given week, 6,300 Alaska households turn to the Food Bank of Alaska's network of food pantries, soup kitchens, senior centers, and other programs for food assistance. An estimated 51,900 unique households or almost 155,000 people are served annually.

INFRASTRUCTURE NEEDS

- Distributed, climate-controlled food hubs or centers
- Equipment for processing access benefits (i.e. at farmers markets)
- Food bank/pantry equipment (i.e. vans, trucks, shelving)

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES *(Also see the [Wild Foods section](#) of this report)*

- Alaska Department of Education
- Alaska Division of Agriculture
- Alaska Division of Agriculture—Alaska Grown Rewards Program
- Alaska Division of Agriculture—Restaurant Recognition Program
- Alaska Farm to School
- Alaska Farmers Market Association
- Alaska Food For Thought
- Alaska Native Tribal Health Consortium
- CNP—Child Nutrition Programs
- FDPIR—Federal Food Distribution on Indian Reservations
- Feeding America
- Food Bank of Alaska
- National Farm to School Network
- Senior Nutrition Benefits
- SNAP—Supplemental Nutrition Assistance Program
- State of Alaska—Alaska Product Preference Program
- USDA Granting Agency Support
- USDA Local Food Purchase Assistance Cooperative Agreement Program
- USDA Specialty Crop Funding
- Women Infants and Children Program

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Preparation and Consumption

Introduction

Food preparation, consumption literacy, and safety are paramount to building a resilient food system. Resources exist in the state to educate and assist actors throughout the value chain. The University of Alaska, the Alaska Department of Health, the Alaska Division of Agriculture, Alaska Department of Environmental Conservation, and the Alaska Seafood Marketing Institute all provide safe, accurate, and accessible information to individual Alaskans, tourists, and businesses. State and federal funding and support are key to sustaining the main agencies that educate and research new crops, develop markets, expand Alaskan branding and visibility, and provide nutrition and health safety information about local Alaskan foods.

Working in collaboration through public and private partnerships is key to expanding knowledge about local resources and opportunities to learn about safe and responsible preparation and consumption of Alaskan foods, as well as the many health, economic, and community benefits of buying and consuming local foods.

Home Preparation and Safe Storage

There are a wide range of resources available for individuals processing foods for their personal consumption. The Cooperative Extension Service (CES) through the University of Alaska Fairbanks is a State and federally funded program with USDA and NIFA funds that offers a broad range of resources including publications, videos, and access to experts through their field offices, website, published materials, and outreach events. They cover a range of topics including but not limited to food preservation safety, getting started with processing, home canning, freezing, jams and jellies, and dehydrating.¹ The CES food processing page links to numerous publications regarding food preservation as well as the nutritional value of prepared and raw foods. CES also has Supplemental Nutrition Assistance Program Education (SNAP-Ed) and Expanded Food and Nutrition Education Program (EFNEP) nutrition educators who teach underserved communities how to shop, cook, eat healthy foods on a budget.

For people with internet access, CES has an entire library of YouTube videos focused on growing and preparing agricultural products, and ideas and instructions for preparing low-cost and nutrient rich meals with local ingredients.² Many of these videos have been viewed thousands of times. CES also teaches face-to-face classes on gardening, food preservation, and more.

For a more peer-to-peer approach, the Alaska Food Policy Council launched the Alaska Food Systems Network in March 2022.³ This digital community invites users to create a profile with their food interests and expertise and their preference to connect with others seeking to learn. This collective effort results in a dynamic map, showing who is connected to whom, how various food sectors are connected, which communities are emerging as leaders in food systems work, and where the gaps are so that strategies can be formed to strengthen and enhance network relationships.⁴

Food Safety

A vital piece of any food system is food safety, ensuring a reliably safe food supply for consumers, and protecting them from foodborne diseases or injuries related to food consumption. Most major foodborne illness outbreaks are caused by one of the following: 1) poor personal hygiene of food handlers; 2) incorrect time and temperature control of food; and 3) inadequate cleaning and sanitizing of surfaces and equipment.⁵ Foodborne illnesses are often preventable and underreported public health problems and are a burden on public health. Foodborne illnesses can be life-threatening for some people, and contribute to the cost of health care and economic losses due to business closures. Indeed, the Center for Disease Control and Prevention estimates that over 37 million instances of foodborne illness each year are traced or attributed to domestic transmission routes, such as foodborne, waterborne, person-to-person contact, animal contact, environmental contamination, and others.⁶

Food production is regulated by several agencies, primarily the Alaska Department of Environmental Conservation (DEC) Division of Environmental Health, U.S. Food & Drug Administration, and U.S. Department of Agriculture. DEC has delegated limited authority to the Municipality of Anchorage Environmental Health Services for oversight of retail food and public facilities within the municipality. DEC's Food Safety & Sanitation Program's mission is to protect public health at regulated food, seafood, and public facilities. Our vision is to collaboratively work with these facilities to prevent illness, injury, and loss of life caused by unsafe sanitary practices." Both DEC and MOA oversee testing for a "Food Worker Card" within their respective jurisdictions, which is required for workers who work with unpackaged foods, potentially hazardous food, or food contact surfaces. The test ensures workers are aware of safe food handling practices. Additionally, Alaska regulations require food establishments to have at least one Certified Food Protection Manager (CFPM) on staff.⁷ The non-profit Alaska Cabaret, Hotel, Restaurant, and Retailers Association (Alaska CHARR), and the UAF CES offer this course, along with many other food safety training and resources. Additionally, to ease cumbersome reporting, concerning food safety in licensed establishments, the DEC launched the "Yuck Line"—a telephone number to call and report food safety issues and instances of food poisoning.¹⁰

Alaska Food Code¹¹ regulations allow the sale of cottage food, non-potentially hazardous foods, directly to the consumer without a permit, as long as certain conditions are met.¹² Most sales, which currently must be below \$25,000, must be done face-to-face, except for food hubs with variances that allow online sales under certain conditions. Many home-based businesses have emerged around the state, selling at farmers markets, fairs, and through online posting. Some have parlayed their success into brick-and-mortar businesses. Currently, there is interest in expanding what is allowed to be sold by non-permitted home businesses,¹³ citing the passing of "Food Freedom" bills in Wyoming,¹⁴ Utah, Maine, and North Dakota.¹⁵ This comes with both benefits and risks that require further examination. (*Note: Please see the [Food Freedom & Cottage Food appendix.](#)*)

Nutrition and Health

Nutrition and health is a vital benefit of local Alaskan foods, especially considering that heart disease and stroke are among Alaska's leading causes of death, and critical public health priorities.¹⁶ State agencies, Alaska Native organizations, hospitals, and educational organizations are working to incorporate the health and mental benefits of growing and harvesting local foods with the nutritional benefits of eating a well-balanced, culturally and regionally appropriate diet.

Knowing how to grow food, eat smart, and share information with others is an invaluable skill set for many reasons. It can complement Traditional diets, expand access to healthy foods, promote good health through nutrition and activity, provide jobs and entrepreneurial opportunities, and strengthen communities.¹⁷ The Alaska Native Tribal Health Consortium provides several resources for learning about, harvesting, and preparing traditional foods through their Store Outside your Door program and by hosting regional Alaska Plants as Food and Medicine symposiums focused on traditional plant knowledge and ethical harvesting.¹⁸ The National Resource Center for Alaska Native Elders focuses on providing insight and instruction on traditional food preparation. Their website offers podcasts, videos, and printable recipes. While accessible to all Alaskans, they hope to promote positive and healthy aging in our Alaska Native Elders.¹⁹

There has been a lot of work in recent years to update policies and regulations to allow for the acceptance and

use of harvested and donated local and traditional foods in institutional settings. One of the most successful updates was the expansion of the Agricultural Act in 2014 which allows for traditional, whole and quartered animals to be donated and used in hospitals, child nutrition programs, long-term care facilities, and senior care programs.²⁰ This made it possible for the Anchorage-based Alaska Native Medical Center to create a Traditional Foods Program, which allows culinary staff to accept donations, prepare them, and serve to patients. Accepted donations include:²¹

- Most wild game meat and bones (caribou, moose, deer, sheep, goat and beaver): must be whole, quartered, or roasts; meat cannot be ground
- Most fish and seafood: must be gutted and gilled, with or without heads
- Seal meat and fat
- Plants and berries: whole, fresh or frozen

In February 2021, the Alaska DEC approved the use of seal oil in an Elder home operated by Maniilaq Health Association in the Chukchi Sea community of Kotzebue, likely a first for seal oil in the US.²² After more than five years of collaborative work to develop a process for eliminating toxins, while retaining taste and nutritional value, residents can now legally be served seal oil as traditional food. Marcella Wilson, current administrator of the facility explains the importance of this to their Inupiat Elder residents, stating, “They consider it a part of them, their being,” that they “feel warm inside” and sleep all night after eating it, and that “it’s a big deal culturally.”²³

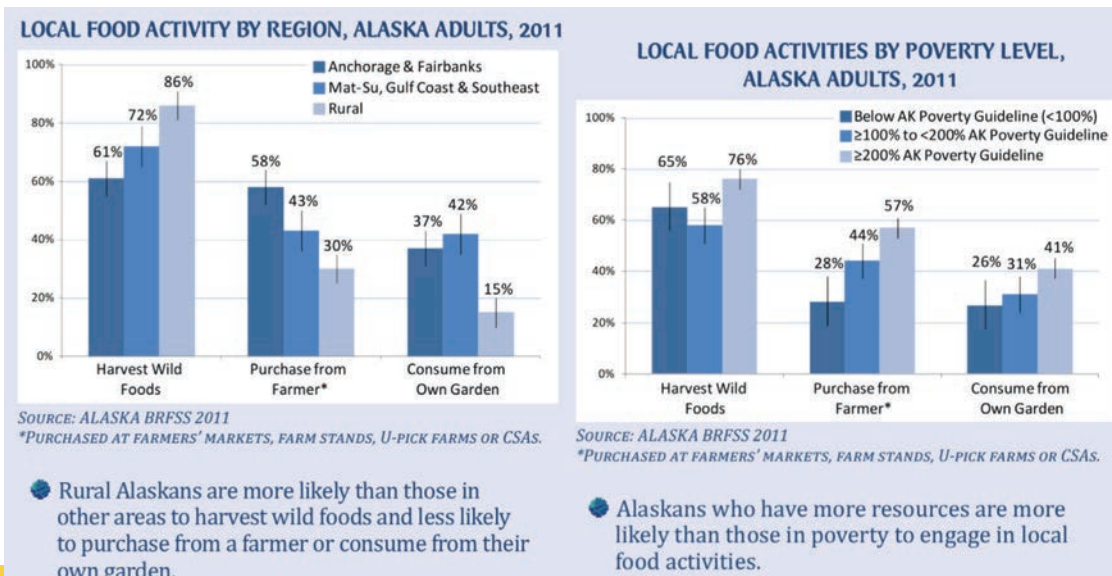


Image: *Alaska Obesity Facts*, State of Alaska Dept. of Health and Social Services, 2013

Marketing

Marketing helps to build and maintain markets through creating recognition of values, building confidence in a brand, and encouraging relationships and loyalty between producers and consumers. Raising awareness of Alaskan produce and seafood has been a focus of the Alaska Grown Program and the Alaska Seafood Marketing Institute, both with the goal of promoting the sale of Alaskan grown and harvested foods.



The over 30-year-old Alaska Grown Program is intermittently supported by the Division of Agriculture. The “agriculture industry in Alaska created the Alaska Grown logo to highlight products grown in Alaska and to help consumers identify which products are local.”²⁴ The unmistakable logo has become a symbol of pride for Alaskans, representing state-grown resilience and independence within the food system. Adjacent activities have included the Restaurant Recognition program, which identifies businesses using Alaska Grown produce, and the Alaska Grown \$5, Five Month Challenge, which declares, “If every Alaskan participates in the challenge, we will put tens of millions of dollars back into our local economy.”²⁵ Previously, the Division of Agriculture has produced an Alaska Grown Source Book, a self-reported guide to local food opportunities and businesses around the state.²⁶



Images: Fairbanks Economic Development Corporation (left), Alaska Division of Agriculture (right)

The Alaska Seafood Marketing Institute (ASMI) is “a public-private partnership between the State of Alaska and the Alaska seafood industry established to foster economic development of a renewable natural resource.”²⁷ Today ASMI is funded by the State budget and a 0.5% voluntary industry tax based on dock prices, along with some grant funding. This critical resource was established by State statute and initially funded by the State. ASMI creates partnerships with retail grocers, foodservice distributors, restaurant chains, foodservice operators, universities, culinary schools, and the media, and conducts consumer campaigns, public relations, and advertising activities, and functions as a brand manager of the Alaska Seafood family of brands.

The BuyAlaska program celebrates, grows, and connects small businesses in Alaska through experienced business coaching and innovative programs.²⁸ They have an extensive directory of local businesses, which span the food system and beyond. The program is hosted by Alaska Small Business Development Center, which provides business guidance, services, and resources to Alaskan entrepreneurs, and operates under the University of Alaska Anchorage (UAA) Business Enterprise Institute (BEI).

Additionally, there are many other organizations that support the promotion of Alaska food, like the Alaska Farmers Market Association (AFMA). AFMA supports and promotes vibrant and sustainable farmers markets throughout Alaska, with the purpose of “gathering critical information for shoppers, markets, CSAs, and vendors to build partnerships, promote opportunities and create resources for our stakeholders.”²⁹ Their most prominent resource is an actively updated market, food hub, and farmstand directory.³⁰ Regional and local food guides, like those created by Kenai Local Food Connection,³¹ Fairbanks Economic Development Corporation,³² and Matanuska Experiment Farm and Extension Center,³³ offer both locals and tourists information to find local food opportunities.

Conclusion

By necessity and now often because of preference, Alaskans have always prepared some of their own foods in lieu of store bought options. The remote and distributed nature of the population often requires this. However, as food safety science evolves, continued public service campaigns and sustained funding for regulatory entities are needed to ensure Alaskans can continue their preferred food preparation practices while maintaining a safe consumer environment.

From a food security perspective, Alaska agricultural production and perishable food stores are not yet at a level that is responsible for considering export. Increasing demand and actual consumption of local foods require cross-sector collaboration and trust-building with consumers. Consumers are ready for more Alaska Grown, as demonstrated by the 2017 Agricultural Census and this momentum should be leveraged with robust marketing efforts from ASMI, the Division of Agriculture's Alaska Grown program, and other branding efforts. Messaging and sourcing must be accessible for all with consideration for a spectrum of languages, reduced jargon, and communication channels.

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Preparation and Consumption Summary

STRENGTHS:

- Strong brand (Alaska Grown/ Alaska Seafood) recognition
- Wide range of resources through agencies—print, videos, and personnel to help with safe methods
- Local foods provide vital nutrition, health benefits, and less spoilage
- Laws and regulations that allow for the use of local foods in institutions
- Alaska Grown Source Book
- Harvesting and preparing food as a community is built into many parts of Alaskan culture and identity.
- Alaskans value self-sufficiency and self-reliance around food and food security.

OPPORTUNITIES:

- Many existing DEC-certified kitchens exist, such as UAF's Test Kitchen.
- Expanded community resources around community drying, canning, refrigeration, freezer, and root cellar space
- Expanded community engagement to teach safe processing—involving both traditional and western knowledge
- Continued collaboration across sectors to allow for expanded use of local and regional foods in larger institutions, health care settings, and child care facilities
- Enormous potential to contribute to economic multipliers through expanded local purchasing of local food

WEAKNESSES:

- Limited and administration-dependent funding for food safety enforcement and improvement
- Limited public awareness of resources available and how to access them
- The range of topics covered may not be relevant to current food trends and community needs.
- There are financial resource barriers to growing and purchasing farmed foods and harvesting wild foods.
- Meat processing infrastructure and knowledge are very limited throughout the state.
- Freezer space to store harvested fisheries resources is limited and expensive for many families.
- Limited options for commercial kitchens and processing options for small retail businesses—many barriers to entry for new and expanding entrepreneurs
- \$25,000 cap on cottage foods revenue may be too low to incentivize businesses to scale

CHALLENGES:

- Limited and administration-dependent funding for food safety enforcement and improvement
- Limited or lack of awareness of food preparation and storage options in both rural and urban settings
- Knowing how to grow and share food resources
- Lack of redundancy or multiple sources of community knowledge
- Understanding land use and harvest information can be confusing for newer residents and people who are unfamiliar with Alaskan rules and regulations.

Preparation and Consumption Summary

INFRASTRUCTURE NEEDS

- Appropriate storage and processing infrastructure for wild/traditional foods
- Affordable commercial kitchen space
- Subsidized storage options for freezer and refrigerator space

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Cabaret, Hotel, Restaurant and Retailers Association (Alaska CHARR)
- Alaska Department of Environmental Conservation
 - Food Safety & Sanitation Program
 - Office of State Veterinarian
- Alaska Department of Health and Human Services
- Alaska Division of Agriculture (Department of Natural Resources)
- Alaska Farmers Market Association
- Alaska Manufacturing Extension Partnership (MEP)
- Alaska Native Tribal Health Consortium
- Alaska Seafood Marketing Institute
- Alaska Small Business Development Center
- BuyAlaska
- Fairbanks Economic Development Corporation
- Kenai Local Food Connection
- Matanuska Experiment Farm and Extension Center (UAF)
- Municipality of Anchorage Environmental Health Services
- National Resource Center for Alaska Native Elders
- University of Alaska Fairbanks—Cooperative Extension Service



Waste and Recovery

Introduction

Food waste is both a challenge and an opportunity. In a circular system, food waste can become a resource through composting, use as animal feed, or conversion to energy. The U.S. EPA Food Recovery Hierarchy prioritizes preventing and diverting wasted food because these activities create the most social, economic, and environmental benefits for communities. Waste and recovery is a vital part of the food system that should not be overlooked.

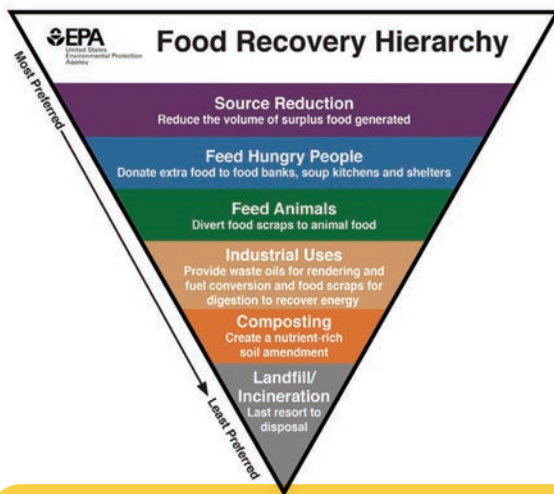


Image: *Food Recovery Hierarchy*, Environmental Protection Agency



Image: *Wasted*, Natural Resources Defense Council, 2017

Food loss refers to food that does not make it off the farm and into the community.

Food waste occurs once the product has left the farm. Food waste materializes at numerous points along the supply chain, from production to processing, distribution, in food service, and at home. According to the USDA, over one-third of all available food goes uneaten through loss or waste.² This uneaten food contains enough calories to feed more than 150 million people each year.³

Equivalent metrics for Alaskan communities are available in some local food system assessments and feasibility studies, but food waste measurement and reporting is inconsistent across the state. Communities in Alaska have various challenges with waste management and recycling depending on their remoteness. For example, various communities calculate the percentage of landfilled materials in Alaska that are food scraps. According to Tongass Botanicals in Petersburg, general waste is shipped to a facility in Washington. Petersburg residents are charged by weight, almost half of which is food scraps.⁴ Although the Kenai Peninsula Borough (KPB) does not track food scraps as a percentage of the waste stream, a 2013 organic waste recycling

feasibility study for KPB used data from Kalskag, Unalaska, Kodiak Island Borough to estimate that 14% of landfilled material is food waste.⁵ In Anchorage, a 2017 waste composition study conducted at the Anchorage Regional Landfill determined total organic materials to be 39.2%, with food scraps contributing almost half (18%) of the total.⁶ This amounts to 59,400 tons of food waste per year disposed of at the Anchorage landfill.

Food Banks

Food bank programs work across the state to recover surplus food from grocery stores, wholesalers, producers, farmers, and fishers that would otherwise be landfilled. Additionally, the food bank receives donations from community members and makes bulk purchases. This food is redistributed across the state to people in need. According to the most recent annual report, the Food Bank of Alaska distributed over 11 million pounds of food in 2021, a 23% increase over the previous year.¹⁰

The Food Bank of Alaska uses mobile food banks to distribute highly perishable foods like fruits and vegetables quickly, and this program supports participation from Alaska's food industry, especially grocery stores. Donations that are not fit for human consumption are sometimes given to local pig farmers.¹¹

Food banks benefit from strengthening relationships with farmers. Connecting food banks to farmers markets, and providing a location to drop off and pick up extra produce, adds another layer of community support to markets. The Alaska Farmers Markets Toolkit provides some resources and examples of programs that include food banks in strengthening local food partnerships.¹²

Gleaning is the harvesting of extra crops from farms and gardens to share with those in need.¹³ These crops could have cosmetic issues that make them difficult to sell, what remains in fields after mechanical harvesting, or crops that do not have a buyer making them more expensive to harvest than to leave in the fields. Gleaning can also happen in urban areas, salvaging crops from gardens and fruit trees that would otherwise go uneaten. Volunteers harvest the crops, and food banks clean, sort, and distribute to their networks thus building relationships between community members and local farmers and gardeners. The USDA's "Let's Glean: United We Serve Toolkit" provides resources for farmers markets, farmers, and nonprofit organizations interested in starting gleaning programs.¹⁴

Value Chain Opportunities: Compost

One way to divert food waste and other organic material from landfills is by composting, combining organic materials, water, and oxygen to support the decomposition process. Composting can be done at home even in very small spaces. The UAF Cooperative Extension Service offers free educational materials about home composting.^{15,16} Several communities in Alaska operate medium- and large-scale composting facilities. Finished compost can be sold to provide a revenue stream for the operation. Composting also keeps nutrients from food scraps and other organic materials in the local soil, maintaining and improving its quality. This process uses waste to add value back into the food system.

Large-scale composting systems include turned windrows (long outdoor piles turned regularly using equipment), aerated static piles (fan-forced aeration) which are open or enclosed, and in-vessel. Enclosed systems can be protected from weather and wildlife and are scalable to fit a community's needs.

Juneau Composts provides curbside collection and drop-off service, sells finished compost to local gardeners, and hosts field trips and classes. The organization's website announces that it has diverted 1,000,872 pounds of food scraps from the landfill. Members use 5-gallon buckets lined with paper or other compostable bags to store scraps. Service is \$27 per month or \$20 if members form a hub, or central collection point for at least five members.¹⁸ Tongass Botanicals in Petersburg used a similar curbside pick up by neighborhood hub system, but the program has ceased operations.

The Petersburg Indian Association runs a compost program funded by the Indian Environmental General Assistance Program (IGAP) that combines wood chips that would otherwise be burned at the landfill with commercial fish processing waste.¹⁹ The Tribe uses a composting machine rather than aerated static piles because the process is faster and more consistent.

SNAPSHOT: Feeding Alaska in FY 2021

A look at how your generosity impacted our community.

11,073,479 net lbs.
FOOD DISTRIBUTED

This is a 2,056,177-pound (23%) increase over FY20. With the increased support of volunteers, partners, donors, and government agencies, Food Bank of Alaska was equipped to meet the challenge of an unprecedented level of food insecurity in Alaska brought on by the effects of the COVID pandemic.

1,191,380 meals
PROVIDED THROUGH SNAP

Due to our SNAP outreach and application assistance efforts.

24,228
SENIOR BOXES DISTRIBUTED

Commodity Supplemental Food Program (CSFP) is a USDA program designed to supplement the nutritional needs of qualified seniors 60 years and older. These are all boxed by our wonderful volunteers.



22,495+ hours
WORKED BY 1,459 VOLUNTEERS

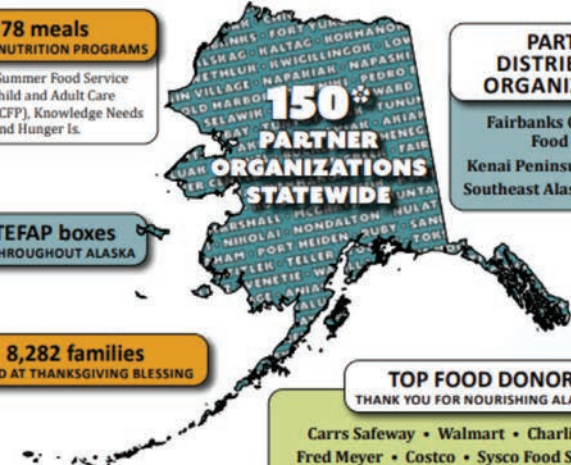
1,740,791 lbs.
DISTRIBUTED THROUGH MOBILE FOOD PANTRIES (MFPs)

MFPs distribute fresh food to families in need, including produce, dairy products, and bread. These are currently operating by a drive-through model. We work with 10 sponsoring agencies that conduct an MFP at nine convenient locations in neighborhoods around Anchorage.

168,378 meals
THROUGH CHILD NUTRITION PROGRAMS

This includes our Summer Food Service Program (SFS), Child and Adult Care Food Program (CACFP), Knowledge Needs Nutrition (KNN), and Hunger Is.

28,821 TEFAP boxes
DISTRIBUTED THROUGHOUT ALASKA



150
PARTNER ORGANIZATIONS STATEWIDE

8,282 families
SERVED AT THANKSGIVING BLESSING

2,399,540 lbs.
DONATED BY RETAIL DONORS

TRANSPORTATION DONORS
COMPANIES THAT DONATED FREIGHT TRANSPORT

TOTE Maritime Alaska
Matson, Inc. • Lynden Transport, Inc.
Weaver Bros., Inc.

PARTNER DISTRIBUTION ORGANIZATIONS

Fairbanks Community Food Bank
Kenai Peninsula Food Bank
Southeast Alaska Food Bank

TOP FOOD DONORS
THANK YOU FOR NOURISHING ALASKANS

Carrs Safeway • Walmart • Charlie's Produce
Fred Meyer • Costco • Sysco Food Services of AK
SeaShare • Pepsi Beverage Company of AK
Target • Alaska Commercial Company
DiTomaso's • Seafood Producer COOP
U.S. Foodservice, Inc. • Peterkin Distributors
Nabisco Foods Group • Great Harvest Bread Co.
Paragon Distributors

*74 additional temporary agencies have been added this past year in response to COVID-19.

Image: Annual Report, Food Bank of Alaska, 2021



Images (left to right): Petersburg Tribe Uses New Machine to Make Compost in Bulk, Alaska Public Media, September 2017; Compost, Cook Inletkeeper

In Soldotna, the nonprofit organization Cook Inletkeeper operates a compost collection service that kept 24,000 pounds of compostable material out of the landfill in 2020.²⁰ By 2021, the program had 150 business and resident participants and diverted 75,000 pounds of food waste. Participants could drop off their buckets at the Cook Inletkeeper Community Action Studio or directly at a local farm. This program was expanded in 2021 by a USDA Community Compost Grant in partnership with the Kenai Local Food Connection and plans to involve institutions such as the Central Peninsula Hospital and to serve more local farms.²¹ In this case, finished compost is not for sale but food scraps are used by local farmers as chicken feed and composted for use as a soil amendment. By reducing landfilled waste, the program is also extending the life of the community landfill, reducing costs for residents.

The Yakutat Tlingit Tribe received funding from the same USDA program in 2021. The organization plans to provide a food scrap collection service and use equipment which can process up to 1,100 pounds of food waste weekly. Finished compost will be available for gardeners, and the Tribe will host workshops to educate the community.²²

In Anchorage, Solid Waste Services (SWS) provides a community compost service that operates from May through October.²³ Participants can bring 5-gallon buckets of accepted organic materials to the Central Transfer Station. Curbside service is also available in limited neighborhoods for \$5.25 to \$10.50 per month, depending on the size of the provided roll cart. Finished compost is no longer available for participants as SWS works to make that part of the program more economical.²⁴



Image: *Yakutat Tlingit Tribe and Kenai Peninsula Borough, Natural Resources Conservation Services, October 2021*



Successful composting programs are supported by workforce training and public education initiatives. The Anchorage SWS report lists numerous challenges to implementing a composting program that is relevant to other communities across the state. Maintaining an ideal mix of wetter materials like food scraps and fish waste with dry organic material like wood chips and cardboard is critical for operations and especially difficult in freezing temperatures. Some communities, especially in Western Alaska, may not have enough woody debris for certain systems.

Collection methods can vary to fit different community needs. Curbside collection requires more resources to operate but may also increase participation, generating larger volumes of food waste and diverting more material from landfills. The Anchorage program currently trucks waste 50 miles to a site in Palmer but has the long-term goal of a centralized municipal location. The KPB feasibility study acknowledges the high cost of transporting waste around the peninsula and outlines a plan with four different facilities.

Different systems also have different sorting requirements. Areas throughout Alaska may also experience issues with wildlife and pests, ranging from bear attractants to rats and foxes. Each community must identify safe ways to store and collect compost. Effective public education and outreach can reduce contamination from incorrect sorting. The following image is from the Anchorage community compost drop-off instructions. Some large-scale composting systems that operate consistently at high temperatures to kill pathogens and break down difficult materials can accept meat, dairy, and compostable containers. For example, Tongass Botanicals provided participant instructions for sorting that accepted those items but would not accept fruit stickers.

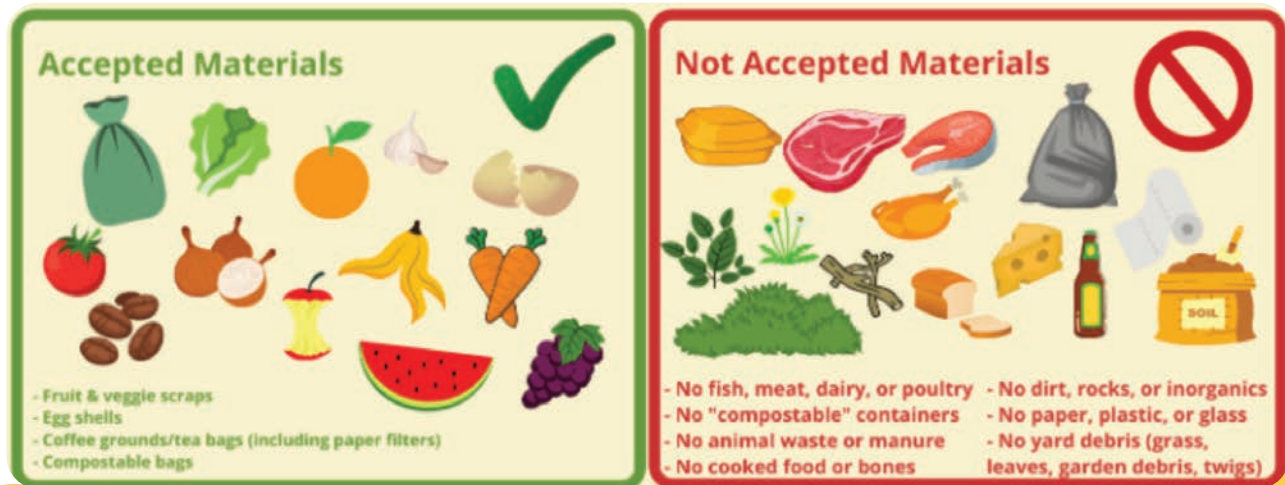


Image: Community Compost, Municipality of Anchorage SWS, 2022

Pre-processing and packaging are barriers to institutional participation in composting programs since removing plastic film and stickers from produce is time consuming. Depackaging technology is described at length in the Anchorage SWS feasibility report.²⁵

The Anchorage School District began a food scrap collection and composting pilot program in partnership with the Anchorage SWS that was discontinued during the COVID-19 pandemic. In 2019, 10 elementary schools participated by sorting food scraps, trash, and liquids resulting in a total of 14.2 tons of food waste diverted from the landfill.²⁶

Value Chain Opportunities: Biogas

Another strategy for managing organic waste is using anaerobic digestion (AD). This process differs from composting in that it does not use oxygen. AD uses a different type of microorganisms that produce biogas, mostly in the form of methane, as a byproduct of decomposition. This biogas can be captured and used for energy. AD was considered in the KPB and Anchorage SWS feasibility studies, and the Cordova biogas project tested small-scale systems. The Cordova project maintained six 1,000-liter AD systems that were inoculated with microbes from cow manure from Delta Junction and sediment from a lake bottom in Fairbanks.²⁷ The systems were fed with food scraps from the school cafeteria and reached production rates as high as 345 liters per day per 1,000-liter tank with the lake bottom bacteria performing better at colder temperatures.²⁸ These rates are well below gas output from systems in equatorial climates where small household scale AD systems are used. In Alaska, additional energy inputs are needed to maintain the warm temperatures needed to support the reaction process. The additional energy may be justified for large facilities or by combining small-scale systems with other sources of waste heat.



Images: *An Investigation of Psychrophiles for Generating Heating Gas, ACEP*

Value Chain Opportunities: Biomass Waste-to-Energy

Biomass, materials from plants or animal products, can be burned at waste-to-energy plants to generate electricity. Burning waste also reduces the volume of material to be landfilled. For example, waste-to-energy plants reduce 2,000 pounds of garbage to ash weighing between 300 to 600 pounds and with an 87% reduction in volume.²⁹ Alaska's primary biomass sources are wood, sawmill waste, fish byproducts, and municipal waste.

Electricity generated by diesel fuel is subject to the price volatility of oil. Waste-to-energy systems use locally-available sources of energy. Some communities use waste resources like logging and mill residue, thinning to mitigate wildfire hazards, beetle kill, and wood chips. Other communities sustainably harvest timber specifically to produce energy.

The Alaska Energy Authority maintains a list of examples of pre-feasibility studies of heating projects for high-efficiency, low-emission, wood-fired systems. These Wood Energy Pre-Feasibility Grants have funded more than 170 studies since 2005 which led to most of the biomass systems in the state.³⁰

Waste-to-Energy systems have the potential to replace large amounts of fossil fuels which results in significant financial savings for communities. A school in Tok has operated a wood chip boiler since 2013 that offsets 59,000 gallons of diesel and saves \$146,000 in heating annually, and waste heat extends the growing season inside a functioning school greenhouse.³¹ Galena's system heats 14 buildings and displaces more than 200,000 gallons of fuel oil per year.³² Communities in the Southeast Island School District on Prince of Wales Island have also combined waste-to-energy systems with greenhouses to amplify the benefits to the communities.³³ Wood heated greenhouses provide spaces for hands-on learning about the food system in Alaska. The school district reduces spending on heating costs, savings that can be used to better serve the students. The wood is purchased from community members, keeping that resource within the community. A wood-fired greenhouse project, funded in part by MIT's Indigenous Communities Fellowship, is being developed for Nenana with the goal of being replicable across the state.³⁴



Image: *Fire-hazard trees could heat greenhouses to feed rural Alaska, UAF*





Image: Tok School, Alaska Gateway School Project



Image: On Alaska's Prince of Wales Island, wood heat pays social, economic dividends, Treesource, January 2018

Studies addressing the challenges of biomass energy systems in Alaska point to the environmental constraints of potential overharvesting, degradation of soils by removal of residues, and impacts of increased infrastructure for transporting biomass. As logging declines, logging and mill waste also decrease. End users must be incentivized to switch from fossil fuels to biomass which may involve changing equipment and increasing storage space. The competitive advantage of local production with lower transportation costs may be offset by generally higher production and operating costs in remote Alaska.³⁵

Value Chain Opportunities: Fish Waste and Seaweed Fertilizers

From biofuel to health supplements, seaweed and fish wastes have been used for a variety of purposes. Many cultures have a tradition of utilizing these marine resources for agricultural fertilizers. Seaweeds contain high amounts of carbon, potassium, calcium, and magnesium, all beneficial for building healthy soils and sustained crop yields.³⁶ Fish wastes are rich in both nitrogen and phosphorus, vital for optimal plant growth. Marine-based fertilizers offer farmers natural, locally available sources of organic material that enhance soils in ecologically, economically and socially sustainable ways.

Worldwide fishing industries, from fish markets to canneries, generate a tremendous amount of fish waste, accounting for up to 30-45% of the product's initial weight. Consumer demand, along with pressure from governments, is pushing for sustainable methods for utilizing this waste. As industries and governments look to ensure "a more responsible and sustainable use of fishery resources", new initiatives, and research projects are investigating the use of marine-based fertilizers.³⁷



Images (left to right): Luis Pedrosa, *Food Navigator*, 2014; Petersburg Marine Mammal Center



Alaska's seafood industry generates around one million tons of fish byproducts annually in post-harvest processing.³⁸ Viable industries to transform these products into fish meals and oils require a high initial investment and continued high energy consumption and marketing efforts to remain viable, all of which are often out of reach for smaller rural fishing communities. A lower cost and lower input alternative to industrial processing is to compost these materials for local crop production and individual gardening. One successful model is the now closed, Ocean Earth Fish Compost, founded in 2004 in Homer, Alaska. Utilizing composted fish byproducts, along with locally available sphagnum (peat) moss, the small company created a product in high demand with local farmers and gardeners. This type of venture could prove usually to "other fishing communities in Alaska to use fish byproducts for local food production, and hence promote sustainable living for these fishing communities."³⁹

Conclusion

Food waste to energy is an especially exciting concept for rural communities off the grid and those with high energy costs on-grid. While Alaska is likely never going to reach fuel independence without a considerable investment in renewable energy infrastructure, waste management for biogas and heat production can alleviate an economic burden on communities as well as the unsavoriness and animal attractant of waste build up.

It is important to remember that imperfect produce may mean the perfect value-added product. Gleaning and processing produce into goods such as fruit leather, dehydrated ingredients, and animal feed and treats leverages the calories used to create that food and turns it back into economic potential.

Finally, while Alaska does have deposits of healthy soil, many farmers use soil amendments to balance the nutrient content and optimize growing conditions. This can be costly to purchase and heavy to ship. Creating more soil amendment compost and fish fertilizer in the state will keep more dollars circulating locally. This is even more likely if producers are incentivized to buy locally through a product preference program with registered compost and fertilizer suppliers. As Alaska commits to supporting its already \$40 million agricultural industry, food waste conversion must be considered as an essential piece of cost reduction puzzle.



Waste and Recovery Summary

STRENGTHS:

- Turning waste into a resource
- Using locally-available materials for energy
- Scalable solutions for communities of different sizes and rural/urban
- Compost keeps nutrients in Alaskan food system
- Solutions can be combined to amplify benefits (wood heat and greenhouses)
- Can extend the lifespan of landfills

OPPORTUNITIES:

- Capturing value from waste products like fish waste, food scraps, and wood chips
- Additional jobs are created as more complex waste recovery systems are implemented
- Climate benefits

WEAKNESSES:

- High capital investment in equipment
- High transportation costs force a trade-off between more infrastructure (more facilities) or longer transport to a central location.

CHALLENGES:

- Cold weather makes composting a potentially seasonal activity and reduces the effectiveness of AD systems
- The mismatch between when waste is available and when it can be used, high cost of storage
- Lack of technical support and training to operate complex equipment and systems
- Need for de-packaging to increase food service industry participation
- Public education and outreach to improve participation and successful sorting. However, sorting is specific to the local system so information that is too general could be contradictory, leading to participant frustration.

Waste and Recovery Summary

INFRASTRUCTURE NEEDS

- Technology such as a web-based system to match locally available foods to local food needs, plus volunteers or other ways to distribute it
- Many of the systems mentioned above have large capital requirements
- Training programs
- Distributed composting equipment and training for both small and industrial scale

OVERVIEW OF SUPPORT ORGANIZATIONS AND AGENCIES

- Alaska Center for Energy and Power (ACEP) at UAF
- Alaska Farmers Markets Toolkit
- Alaska Gateway School District
- Cook Inletkeeper
- Food Bank of Alaska
- Juneau Composts
- Kenai Peninsula Borough
- Municipality of Anchorage Solid Waste Services (SWS)
- Petersburg Indian Association
- Renewable Energy Alaska Project (REAP)
- Southeast Island School District
- Sustainable Energy for Galena, Alaska
- Yakutat Tlingit Tribe

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Section Two Closing

Food System Sectors

Our great state of Alaska is a vast and diverse landscape, encompassing 665,384 square miles with a plethora of natural resources, ranking number one in the U.S. in both land area and most coastline. Climate varies from temperate rainforest in the southeast to arctic tundra in the north. The diversity of cultures matches our rugged landscape, ranging from small rural villages accessible only by plane to a bustling metropolis on the road system, Anchorage, home to the most diverse census tract in the country.¹

Alaska is abundant in wild foods like fish, shellfish, wild game meats, and plants. Our waters provide over half of the nation's seafood production, wild game fills residents' freezers, and the agriculture and mariculture industries are growing. Personal use fishing, hunting, and harvesting supplement many Alaskan diets. Value-added Alaskan food and beverage businesses have popped up around the state and require support from both consumers and the state. Meat processors are hard to come by in Alaska and seafood processors are often located outside of the state. Home preservation of foods remains a staple food security activity in the state. Distribution in urban areas and those on the road system is most commonly done through traditional grocery stores and supercenters. In rural areas, residents rely on costly air and barge transportation. With only 5% of Alaska's non-wild food produced in-state, the rise in popularity of farmers markets across the state, coupled with the creation of food hubs and CSAs help infuse the food system with local foods and spread awareness about eating locally.

Despite all that is going well, food insecurity plagues the entire state, with Alaska Natives suffering the worst. In 2017, roughly 100,000 Alaskans, or about 14% of the state's population, relied on SNAP (Supplemental Nutrition Assistance Program) to help feed their families.² Between 2000 and 2010, over 30% of Alaska Natives were consistently food insecure and were twice as likely to be food insecure when compared to white populations.³ Related, Alaska Natives experience diet-related illnesses at a higher rate than other demographic groups, including diabetes and diseases of the heart.⁴ Over 225 different food pantries and banks redistribute donated food throughout the state, helping to reduce food waste and improve food security all over the state.⁵

Section Three of this report outlines the state's food system, highlighting interconnections between sectors and food provisioning activities, and rural and urban locations, while illuminating strengths and weaknesses, and opportunities, throughout the state. This report should be used a guide to continue the vital work of building an Alaskan food system that is more self-reliant, independent, and sustainable, and that honors tradition, culture, and equity for all Alaskans.



*Image: Beans in a high tunnel
courtesy of Kyra Wagner*

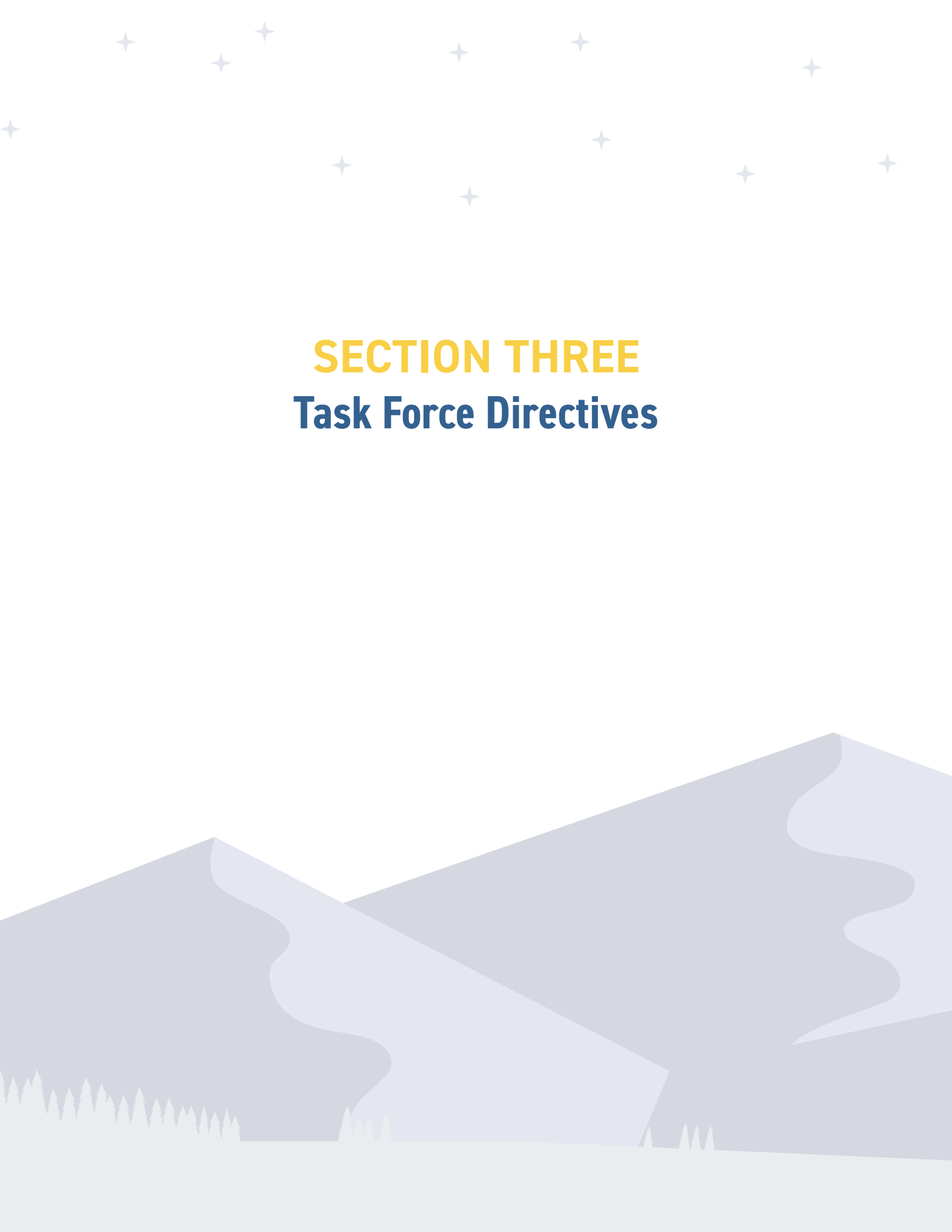
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⁴ Disparities. Indian Health Service. October 2019.

⁵ Food Bank of Alaska. (2018). Food Bank of Alaska 2017 Annual Report. Anchorage.



SECTION THREE

Task Force Directives



Directives

Introduction

Administrative Order 334, establishing the Alaska Food Security and Independence Task Force, included eight specific Directives for the Task Force to address. Task Force members were responsible for making recommendations under each of the eight directives on how to increase all types of food production and harvesting in Alaska, and to identify any statutory or regulatory barriers preventing our state from achieving greater food security. Please see Appendix A for complete text of Administrative Orders 331, 334, and 341.

Throughout the duration of the Task Force, members split into subcommittees to examine each directive, discuss current issues, review literature, and brainstorm potential policies and programs to address them. They met virtually in subcommittees and as a whole group for a half-day workshop. Outlined in this section are the ideas and possible actions recommended by the Task Force, including summaries of policies and programs currently in place, and the specific policy, research, infrastructure, and model program recommendations made by the Task Force for further action.

This section is arranged in the following way, based on directives alignment and intersections:

- [Institutional Procurement of Locally Harvested and Produced Food](#)
 - Provide recommendations that increase the procurement and use of Alaska-sourced foods within federal, state and local agencies, institutions, and schools, including any administrative and statutory changes that are required.
 - Identify factors, including regulatory or statutory burdens that might discourage or prevent locally harvested and produced food from being purchased by federal, state, and local agencies, institutions, and schools.
- [Producer Barriers to Launch, Scale, and Access Markets](#)
 - Identify barriers that farmers, stock growers, fishermen, mariculture professionals, and others engaged in the growing, harvesting, or raising of food face when starting a business or getting their products into the Alaska market. Provide recommendations on how the State can address those obstacles, including through administrative or statutory changes.
- [Wild Foods and Increasing Abundance](#)
 - Assess the levels of wild game and fish harvests in Alaska. Suggest measures that would increase the abundance and harvest of wild game, fish, and food by Alaskans.
- [Fishery Shortfalls and Disaster Response](#)
 - Recommend a program to assist communities and households impacted by fishery shortfalls and disasters.
- [Preparing for Disaster: Food Caches](#)
 - Assess the need for disaster food caches within the State; and how the caches can be developed utilizing Alaskan-sourced foods.
- [Alaska Food System Research Needs](#)
 - Identify research needed to support and encourage increased consumption and production of Alaskan foods sourced within the State.

Many of the barriers identified and recommendations made under this Directive apply equally well to one or more of these directives. Note that all of the Task Force recommendations are included, however, not all members agreed on all of the recommendations.

¹ <https://gov.alaska.gov/admin-orders/administrative-order-no-334/>

² *Local food leader certification training offered.* UAF News and Information. Retrieved September 2022. <https://uaf.edu/news/local-food-leader-certification-training-offered.php>



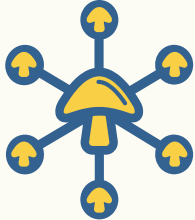
Further Discussions Needed

Because impactful and sustainable food system change often requires an iterative and multi-sector approach, many potential recommendations that were discussed warrant additional discussion, research, and stakeholder input before consensus may be reached. The following topics were discussed by Task Force members, who ultimately decided they required more time and attention than was available. This work may be continued by any or all groups involved in food policy and decision-making, such as The Alaska Food Strategy Task Force, established by House Bill 298, The state legislative Alaska Food and Farm Caucus, the Alaska State Office Of Food Security, as well as additional stakeholders and regulatory entities.



OVERALL

- Consider impact and policy implications of the term "co-management" rather than more general terms such as "cooperative". Due to the lack of consensus, the Task Force opted to use "cooperative" in this report.



WILD FOODS AND INCREASING ABUNDANCE

- Recognize Tribal rights to subsistence.
 - ▶ The State could adopt best practice policies supporting Indigenous subsistence rights, such as those developed by the Bureau of Land Management (BLM) for compliance with Section 810 of the Federal Alaska National Interest Lands Conservation Act (ANILCA) which requires an evaluation of subsistence uses and needs for any permitted activities on federal lands in Alaska.
 - ▶ Preference for harvest will directly support food security across the state.
 - ▶ Understand and acknowledge the difference in terminology and legal rights and implications of using the terms wild harvest, subsistence, and personal use.
 - ▶ Alaska Native peoples use subsistence to refer to their traditional harvests, and subsistence rights are guaranteed by ANILCA.
 - ▶ While acknowledging there are certain rights afforded to Tribes and Tribal Members with the term subsistence, the State of Alaska uses subsistence to apply to all residents.
 - ▶ Consider harvest of wild foods essential for rural and urban Alaskans.



INSTITUTIONAL PROCUREMENT

- Revise "Farm-to-institution" model and revamp program to be more sustainable and long-term.



Institutional Procurement of Locally Harvested and Produced Food

Directives Addressed:

- ✦ Identify factors, including regulatory or statutory burdens that might discourage or prevent locally harvested and produced food from being purchased by federal, State, and local agencies, institutions, and schools.
- ✦ Provide recommendations that increase the procurement and use of Alaska-sourced foods within State and local agencies, institutions, and schools, including any administrative and statutory changes that are required.

Recommended Action

The bullet points below capture policy and infrastructure needs highlighted by the Task Force. Much of what is suggested may be considered “low-hanging fruit,” as they are suggestions largely within the State’s locus of control. They are not in a ranked order.

Policy Considerations

- Further expand and enforce Local Purchase Preference program
- Embrace and fund Farm-to-School and Fish-to-School
- Change reimbursement-based programs to grant payment models through State assistance to pay up-front expenses on both State and Federal grants
- Support and inform Alaska Food and Farm Caucus
- Incentivize producers to fill out the Census of Agriculture and publicly report data annually, within the state
- Create free access to all K-12 breakfast and lunch programs for students
- Create incentives for private industry to invest in Alaska food infrastructure such as distributed and shared cold storage and processing facilities
- Assist Tribes in the development of public partnership relationships to procure Alaskan grown food
- Identify Federal Agency barriers, especially within FDA and USDA
- Facilitate wider network of Future Farmers of America (FFA)

Infrastructure Needs

- Statewide, distributed cache system to better ensure consistent supply and meet year-round demand
- Cold-chain transportation and storage intra-state
- Aggregators and/or wholesalers to assist in the sell and movement of Alaska Grown products

- Additional farmers, trained and ready to meet the nutritional needs of Alaskans
- An Alaska USDA position to help facilitate connections and contracts between producers and institutions who can help navigate additional federal funding for institutional buyers and growers

Introduction

Institutional buyers may be perceived as a difficult or intimidating customer for many of Alaska's small and medium producers—larger order quantities, greater demand for product consistency and availability, and a wider network to spread negative feedback should a producer fall short of expectations. Institutional buyers face challenges buying Alaska Grown because of limited consideration for traditional foods and/or the inability to include traditional foods because of Federal contract quantity needs, nutritional requirements for federally funded meal programs (e.g. 1% cow milk rather than whole goat milk), and/or product specification requirements (e.g. shredded carrots rather than whole carrots) However, with the right guidance, resources, and planning, they can be a source of nearly guaranteed market for producers. Leveraging co-op models and wholesalers, institutional buyers have some of the largest purchasing power in the State, with much unmet demand.



Image: Synergy Gardens, Homer Alaska, courtesy of Kyra Wagner

There is a long-standing tradition in Alaska of "handshake agreements" whereby producers and buyers will agree to a future deal but not enter into a legally binding contract. This speaks to the low risk tolerance of farmers and the variability in Alaska's year-over-year yields. Investing in farming infrastructure and resources to de-risk farming itself may be the most straightforward manner in which to grow in-state production and availability in institutions. It is important to note that food production is inherently risky thus the State may play a role in reducing but never eliminating all producer challenges.

Because Alaska is rebuilding its in-state food supply, decision-makers have the opportunity to learn from hindsight, other circumpolar nations, and other states and territories. Embracing a high risk tolerance to pilot innovative programs as a state and planning for 25-50 years in the future, not simply 2-5, is the long term thinking and messaging needed to foster a community of producers and customers who will be able and incentivized to wade through the additional administrative burdens of serving larger markets.

Institutional buyers, including schools, hospitals, universities, the Food Bank of Alaska and affiliated pantries, corrections facilities, senior centers, and daycares have supply chain power in Alaska but often encounter many challenges when attempting to buy Alaska Grown.

Challenges Include

- Product consistency, limited quantities, and year-round availability
- Lack of appropriate substitute or required product type (ex. skim versus whole milk)
- Limited consideration for traditional foods and/or the inability to include traditional foods because of Federal and/or State regulations
- Inconsistencies between municipal and state food safety code. (Note: DEC retains authority over manufactured food produced in Anchorage to avoid inconsistent requirements for food processors; If the MOA were to adopt DEC's food code, it would primarily impact Anchorage based restaurants and markets, not farmers and/or food processors.)

✦ Recommended Action: Expand production specifically for use by institutional buyers

Farm-to-institution efforts and challenges are not unique to Alaska. With federal programs better supporting and funding regional food production and consumption, policies are changing annually and the landscape looks promising to both offer local market access for producers and navigate the bureaucratic burden of institutional purchasing for buyers and suppliers.^{1,2}

A concerted effort, with accompanying resources, is required to expand production that is linked with institutional purchasing needs. As an example, if the Anchorage School District will need 400 pounds of green beans for a school year, a facilitator or broker would communicate this to growers and assist with planning and contracts.

✦ **Recommended Action: Leverage existing data collection channels to reduce the burden of metric tracking and evaluation**

Supporting institutional purchasing of local products directly benefits local producers by creating a guaranteed outlet for their products. This often leads to producers scaling and creating more local food within the system while supporting local economies.

But how to measure this impact?

A program like The Farm to Institution New England (FINE) network is a leading example of local food metric collection and reporting and regional support for institutional food purchasing. FINE regularly collects survey data and publishes a dashboard, using indicators such as meals served at universities and hospitals in the region.³ In Alaska, opportunities are available to leverage existing data collection channels, such as the USDA’s Agricultural Census to reduce additional financial burden of metric tracking and evaluation. Data collection could focus on connections between Farm to School, Farm to College, Farm to Hospital, and Farm to Production.



Image: Reporting Dashboard, FINE

Program Success

Federal interest and funding remains strong and vital to local food systems within the state. In September 2022, Agriculture Department of Agriculture announced a \$400 million investment to create USDA Regional Food Business Centers to promote more local food exchange.⁴

Traditional foods programs are gaining awareness and traction across the country, and the USDA provides resources for more institutional inclusion. Programs created and supported by local entities are best versed in what eaters want and the most sustainable ways to access local foods. For example, Sugpiaq, Inc. sells Alaska salmon, black cod, rockfish, and other seafood products through their Sugpiaq Seafood program.⁵

✦ **Recommended Action: Create collection centers across the state to accept and distribute donated traditional foods for community use and to be included in disaster preparedness strategies and school food education programs**

The Alaska Native Medical Center in Anchorage is leading the way in Traditional Foods integration, at the institutional level. An impressive 66% of the hospital's menu uses Alaska Traditional foods.⁶ In 2014, Executive Chef Amy Foote and several additional stakeholders worked towards a variance with Alaska's Department of Environmental Conservation to accept donated items. This program could be replicated across the state and be included in disaster preparedness strategies and school food education programs.

Executive Chef Amy Foote (left, foreground) stands with donated wild game; Image: Alaska Native Medical Center



Donations accepted include:⁷

- Most wild game meat and bones (caribou, moose, deer, sheep, goat, and beaver): must be whole, quartered, or roasts; meat cannot be ground
- Most fish and seafood: must be gutted and gilled, with or without heads
- Seal meat and fat
- Plants and berries: whole, fresh or frozen

Many institutional buyers in the state must follow USDA purchasing requirements in order to receive reimbursement from federal programs. Milk in schools is a primary example and a very real challenge for one of Alaska's two FDA-certified dairies. Heritage Farm on Kodiak is a certified goat dairy that produces soft cheese, ice cream, and chocolate, regular, and strawberry milks. They have reported that they have the capacity to supply the local schools with milk, however their production facility only creates whole milk, rather than 1% or skim milk.⁷ This is a challenge due to federal USDA reimbursement policy that requires a low fat and bovine product.

Similarly, as schools try to reduce labor and supply costs, pre-made meals are increasingly used. However, it is difficult to compete with out-of-state, USDA-compliant sources for some of these pre-made items. Pre-made dishes, even partially or fully dehydrated meals, could be easier to serve and less labor intensive to create in many Alaskan institutions.

Furthermore, regulators could see a reduced burden if municipality and state food safety regulations were streamlined or the same, across the state. One solution is for the Municipality of Anchorage to adopt the Alaska Department of Environmental Conservation's food safety code.

Not only do local farm-to-institution policies and programs increase immediate consumption of local foods, but they build a pipeline of long-term consumers if done well. Institutional end-users are consumers—kids, seniors, and patients. Positive experiences with Alaska Grown foods could yield lifelong retail buyers thereby increasing in-state demand and expanding the market for Alaskan producers.

✦ **Recommended Action: Support the inclusion and education of local foods in prescription produce programs and the Department of Health and the Department of Family and Community Services in the education and messaging around the benefits of local Alaska foods.**

Finally, prescription produce programs have sprung up around the country in an effort to proactively address diet-related illnesses such as diabetes, high blood pressure, and colon cancer. Prescription produce programs are touted as not only health-related but also a way to integrate food sovereignty into health and wellness initiatives.

Image: Kodiak Baptist Mission's Heritage House, Facebook, October 17, 2020.



A CASE STUDY WAS PUBLISHED IN JUNE 2022 ON THE YUKON-KUSKOKWIM HEALTH CORPORATION PRESCRIPTION PRODUCE PROGRAM (PPR) IN BETHEL, ALASKA.

“Since 2019, the YKHC Diabetes Prevention and Control (DP&C) department has enrolled approximately 150 patients with a diagnosis of pre-diabetes, diabetes, and/or gestational diabetes and with Medicaid insurance. Participants receive three one-month prescription vouchers at a time, each redeemable for up to US \$45 worth of fresh, frozen, or canned FVs¹⁰ that do not have added salt or sugar. Participants can receive up to 24 vouchers over the length of the program, worth US \$1,080 toward the purchase of FVs over two years. Vouchers can be redeemed in nine participating village grocery stores and through direct delivery produce boxes from a farm in Bethel. In addition to the PPR participants receive culturally appropriate recipes utilizing fresh, canned, or frozen FVs, as well as online cooking demonstrations.”¹¹

- This was the first GusNIP PPR to be implemented in a remote tribal community in a subarctic region of the United States. Key learnings included:¹²
 - Use of a voucher system to replace cash
 - Climate and weather patterns disrupted consistent supply for the program and left food vulnerable to freezing or spoilage, once it left the farm
 - Regional production (from Meyers Farm) was crucial in reducing distance from farm to sale
 - Online companion education about foods was not always easy to deliver, given regional connectivity challenges

Suggested Further Research

The bullet points below capture further research suggestions and needs highlighted by the Task Force.

- Determine specific production requirements to meet all school, hospital, and senior center annual needs. This study must include nutritional considerations beyond national baseline requirements as well as traditional foods.
- Understand the opportunity of available sourcing options, and logistics for rural and urban populations for prescription produce programs.
- Project food assistance, financial need and community impact for the state by 2035, taking into account expected increasingly low fisheries escapements and more regular climate events.
- Further analysis of controlled environment growing opportunities, using circumpolar case studies.
- Review aggregated policy scans—such as the New England State Local Food Procurement Policy Scan, for replicable policy actions.

Related Programs for Review

- Alaska Native Medical Center Traditional Foods program
 - Expand variances and exemptions to include uses for disaster preparedness and food aid programs.
- National Farm-to-School
- National Fish-to-School
- Farm to Institution New England (FINE)
- 2022 USDA Regional Food Business Center fund
- Nutritional Alaskan Foods and Schools Program

¹ USDA. (2022, September 7). *USDA announces \$400 million in funding available to create USDA Regional Food Business Centers*. <https://www.usda.gov/media/press-releases/2022/09/07/usda-announces-400-million-funding-available-create-usda-regional>

² USDA. (n.d.). *Regional Food System Partnerships*. Retrieved September 2022 from <https://www.ams.usda.gov/services/grants/rfsp>

³ *Farm to Institution Dashboard*, FINE. Retrieved September 2022. <http://dashboard.farmtoinstitution.org/>

⁴ USDA. (2022, September 7). *USDA announces \$400 million in funding available to create USDA Regional Food Business Centers*. <https://www.usda.gov/media/press-releases/2022/09/07/usda-announces-400-million-funding-available-create-usda-regional>

⁵ USDA. *Procuring Local Foods for Child Nutrition Programs*. USDA Food and Nutrition Service. Revised January 2022. <https://fns-prod.azureedge.us/sites/default/files/resource-files/June22F2SProcurementGuide508.pdf#page=87>

⁶ Fernandez, G. *Over half of Alaska Native Medical Center's menu includes Alaska Native ingredients*. Alaska News Source. February 23, 2022. <https://www.alaskasnewsresource.com/2022/02/24/over-half-alaska-native-medical-centers-menu-includes-alaska-native-ingredients/>

⁷ Alaska Native Medical Center. *Traditional Native Foods Initiative*. Retrieved September 2022. <https://anmc.org/traditional-native-foods-initiative/>

⁸ Task Force member survey response. August 2022.

⁹ *Fish-to-Schools: A model to enhance health and food security in Alaska Native Communities*. (n.d.). UAF Center for Alaska Native Research. Retrieved September 2022 from <https://canhr.uaf.edu/research/past-canhr-projects/fisheries-school-program-promoting-health-and-food-security-alaska-native-communities/>

¹⁰ FVs = Fruits & Vegetables

¹¹ Budd Nugent, N., Ridberg, R. A., Fricke, H., Byker Shanks, C., Stotz, S. A., Jones Chung, A. G., Shin, S., Yaroch, A. L., Akers, M., Lowe, R., Goerge, C., Thomas, K., & Seligman, H.K. (2022). *Food sovereignty, health, and produce prescription programs: A case study in two rural tribal communities*. *Journal of Agriculture, Food Systems, and Community Development*, 11(3), 177–196. <https://doi.org/10.5304/jafscd.2022.113.014>

¹² Budd Nugent, N., Ridberg, R. A., Fricke, H., Byker Shanks, C., Stotz, S. A., Jones Chung, A. G., Shin, S., Yaroch, A. L., Akers, M., Lowe, R., Goerge, C., Thomas, K., & Seligman, H.K. (2022). *Food sovereignty, health, and produce prescription programs: A case study in two rural tribal communities*. *Journal of Agriculture, Food Systems, and Community Development*, 11(3), 177–196. <https://doi.org/10.5304/jafscd.2022.113.014>



Producer Barriers to Launch, Scale, and Access Markets

Directive Addressed:



Identify barriers that farmers, stock growers, fishermen, mariculture professionals, and others engaged in the growing, harvesting, or raising of food face when starting a business or getting their products into the Alaska market. Provide recommendations on how the State can address those obstacles, including through administrative or statutory changes.



Recommended Action

The following policy and infrastructure recommendations highlight opportunities in the short (2-10 years), medium (10-50), and long term (50-100 years) timeframe. Some require collaboration with the Federal government and deep policy research while others are within the Administration's purview to address immediately.

Policy Considerations

- Creation of a Department of Agriculture & Mariculture or Agriculture & Mariculture Subcabinet
- Create a stand-alone Alaska Department of Agriculture, instead of housing it as a division in the Department of Natural Resources (DNR)
 - Alternatively, adequately staff the Division of Agriculture to successfully accomplish their mission to promote and encourage agriculture development and growth
- Consider funding and development path similar to Alaska Seafood Marketing Institute (ASMI)
- Update and help facilitate participation in the Agriculture Revolving Loan Fund (ARLF) terms and policies to increase access to farmer capital

Image: Credit Adobe Stock License #183152571

- Leverage newly created agriculture-related grant funding streams, created by HB 298
- List DEC's shellfish sanitation program as an essential service
- Advocate for the repeal or exceptions to the Jones Act
- Establish and maintain clearinghouse to match restaurants with local suppliers
- Work with the farming community to understand where leases for State-owned land should be expanded; ensure agriculture activities are happening on these lands
- Ensure feed and agriculture product traceability is employed and enforced
- Better utilize rural air carriers traveling between communities, for food security and trade
- Establish Alaska Agriculture Product Registration guidelines and labeling laws for improved traceability and revenue, while ensuring this does not create new barriers to entry
- Create an exemption for game processors to package commercially available product, such as beef, poultry, and pork
- Ensure local communities and tribal entities are represented in new or revised policy
- Expand the new Cooperative Agreement for the Alaska Local Food Purchase Assistance Program
- Fund and facilitate grants for large-scale commercial operations, such as those for building facilities like deep-pit design feedlots for cattle, hogs, and chickens
- Create statutory change to require state entities buy Alaskan food when available prior to putting out large-scale contracts that cannot be locally sourced. Refer to AS 36.30.332 for reference.

Infrastructure Needs

- Facilitate aquatic farm equipment for lease, rent, or loan.
- Distributed meat processing and storage facilities to make animal transport less onerous for producers and less stressful for animals
- Build small-scale community freezer capacity to create disaster preparedness stores, and create seasonal storage for local producers
- Work with Manufacturing Extension Partnership (MEP) to increase instate packaging and processing manufacturing capacity, with focus on Alaska produce, livestock, poultry, Alaska seafood, shellfish, kelp, and imported produce/commodities.
- De-risk the farming environment by securing long term funding and program support in areas such as:
 - Ensure inspection and certification services
 - Farmer access to responsible credit
 - Decrease barriers to entry in retail environment through State collaboration
 - Distribution infrastructure
- Build grain drying and storage facilities near areas where grains are being grown
- Create or support the creation of a farm equipment rental program or library
- Fund post-secondary agriculture research and education programs in the University of Alaska system such as crop development and climate controlled growing
- Increase in-state crop and oyster seed stock
- Increase in-state production of poultry chicks
- Increase in-state animal feed supply



Image: 2020 Alaska Agricultural Profile,
University of Arkansas Extension

Introduction

This Directive addresses two unique lenses for producers: *start-up barriers and market access challenges*. Bottlenecks or significant vulnerability occur at every point in Alaska's food chain and there has been much discourse about the "how" to increase food security while creating economic opportunity within the agricultural sector. Generating almost \$40 million in cash receipts, Alaska's food, flower, and fiber industries combine to show a promising yet underdeveloped landscape for current and future producers.

Ideas for how to decrease barriers for Alaskan farmers abound. As one Task Force member noted "None of these (ideas) are new...", speaking to food system improvements frequently referenced in publications and community conversations about food security and long-sought after infrastructure improvements.¹ These include but are not limited to: better utilizing backhaul opportunities, stabilizing meat processing infrastructure, creating more food storage and processing facilities, reestablishing an agriculture program at the University of Alaska to better prepare Alaskans to solve challenges moving forward, learning from outside Alaska, and agricultural cooperation with Alaska Native Corporations and Tribes.

Opportunities to decrease barriers and de-risk farming include a variety of options with varying time lengths. Federal collaboration is often a long play, and the sooner talks about easing shipping challenges and streamlining federal grant programs can occur, the better. These recommendations and others in this report should be collectively discussed across State Administration and the Legislature, to determine the best way to prioritize and execute on them.

Further discussion about Alaska post-secondary agricultural education and research is discussed in the Research Needs directives section of this report.

Current Landscape

Alaska's high costs of labor, land, and fuel are barriers to both entry and expansion for growers in the state. Many communities and farms, both on and off the road system use antiquated technology that is costly and vulnerable to failure. The most active farming cooperative in Delta Junction runs on generators to provide 3-phase electricity, as does the North Pole animal processing facility.² Additionally, with the exception of hydroponic farming and fully climate controlled environments, producing year-round is simply not an option for many, as the fuel costs to keep animals watered, fed, and warm or produce from freezing are insurmountable.

“ Alaska is a difficult place, that is expensive and unforgiving.”
—Task Force member and farmer

Despite these challenges, the 2017 Agricultural Census revealed that the state has an up-and-coming group of farmers, younger than average. Forty-six percent of Alaska's producers were new and beginning farmers while 47 percent are female and 14 percent have military service. The average age of a producer in Alaska is 55.2 years, compared with the national average of 57.7 years.³

Farms by Value of Sales

	Number	Percent of Total ^a
Less than \$2,500	312	32
\$2,500 to \$4,999	130	13
\$5,000 to \$9,999	140	14
\$10,000 to \$24,999	191	19
\$25,000 to \$49,999	68	7
\$50,000 to \$99,999	59	6
\$100,000 or more	90	9

Farms by Size

	Number	Percent of Total
1 to 9 acres	428	43
10 to 49 acres	236	24
50 to 179 acres	159	16
180 to 499 acres	89	9
500 to 999 acres	35	4
1,000 + acres	43	4



Image: *USDA Census of Agriculture Alaska State Profile, NASS, 2017*

While the statistics are encouraging, the very real challenges experienced on the ground are often prohibitive to newcomers and defeating for current farmers. Not only do new farmers need to have confidence in infrastructure and available markets, but existing farmers need baseline resources such as affordable labor and energy. Every on-farm challenge is compounded by the difficulty of getting farming inputs to and around Alaska, and moving product through the reverse supply chain.

Challenge and opportunity categories for these Directives are outlined below:

- Land Access & Support
- Workforce Needs
- Lack of Awareness of Existing Resources
- Funding Challenges
- Supply Chain Gaps & Challenges
- Commodity Shortfalls
- Fair Market Competition

Land Access and Support

Land access overall is a complicated issue in Alaska and affects relations between federal, State, and Tribal governments. Navigable waterways and submerged lands are equally as crucial to Alaska's food security and goods transportation.

*Rivers function as the roads of Alaska, to an extent unknown anyplace else in the country. Over three-quarters of Alaska's 300 communities live in regions unconnected to the State's road system. Residents of those areas include many of Alaska's poorest citizens, who rely on rivers for access to necessities like food and water."*⁴

Agricultural land values can be confounding in Alaska and finding consistent data, relative to the rest of the country can be difficult. Both Hawaii and Alaska are excluded from the USDA Land Values Summary reports.⁵ Value can change drastically, depending on access to utilities and proximity to roads or other transportation routes such as rail, barge, or air strips.

✦ **Recommended Action: Develop clear and consistent systems for recording and determining agricultural land values.**

Agricultural covenants exist to designate Alaska farm lands. While an owner must have a state farm conservation plan in place, there is no production requirement, only a clearing requirement, which does not ensure agricultural activity. Enforcement of these covenants can be costly and onerous for the State. Furthermore, these covenants have been called into question as they may unfairly cap the price on agricultural land for non-agricultural practices and land sales are one of the few ways farmers can raise cash when needed.⁷

Workforce Needs

✦ **Recommended Action: Incentivize farm laborers and aid in farm labor housing.**

Alaska's population is well under one million residents and producers and harvesters are aging. Next generations are not assuming the family operations as has been done in the contiguous United States agricultural and fishing history. Task Force members who are also farmers reported that in addition to worker availability, local affordable housing and staff living costs are also a barrier to hiring seasonal staff. Producers are also competing for labor with other well-developed industries that pay more. Farm labor wages are notoriously low and certainly cannot compete with oil and gas industry salaries.

“ (I'm) Getting too old to do this...”
 –Task Force member and agricultural producer

Lack of Awareness of Existing Resources

✦ **Recommended Action: Educate and connect farmers with existing educational and funding resources.**

The USDA has created a variety of resources for new and existing farmers, and while some may not be appropriate for Alaska's landscape, there is a disconnect between available education and funding and those Alaskan producers who need it most. Lack of awareness and resource education is a national gap. This is particularly true for small and medium producers, which comprise the majority of Alaskan farmers.

How to Start a Farm: Beginning Farmers and Ranchers

New to farming? Want to learn how to start a farm? USDA can help and offers additional assistance to beginning farmers and ranchers. USDA considers anyone who has operated a farm or ranch for less than ten years to be a beginning farmer or rancher. USDA can help you get started or grow your operation through a variety of programs and services, from farm loans to crop insurance, and conservation programs to disaster assistance.

On This Page

[Why Work with USDA](#)

[Specialty Farmer Groups](#)

[Get Involved](#)

[How to Work with USDA](#)

[USDA Support for Beginning Farmers](#)

[Resources and News](#)

Image: [How to Start a Farm, USDA](#)

Funding Challenges

Alaska farmers have few sources of funding—those that exist include personal resources, Alaska’s Agricultural Revolving Loan Fund, the USDA Farm Service Agency, and a variety of project-based grants and loans through the USDA.

“ ... we are on the verge of closing because we do not have the finances to grow to the level we need to cover the increasing costs of shipping and feed. We do not qualify for grants nor have the time to jump through all the hoops needed.”

—Task Force Member and Farmer

✦ Action: Increase funding to the State’s Agricultural Revolving Loan Fund

The State’s Agricultural Revolving Loan Fund (ARLF) was put into place in 1968 and has seen minimal updates to match current market prices and conditions. For example, a product processing loan is capped at \$250,000. This is not adequate for a food-grade facility, especially in rural Alaska. Additionally, the maximum indebtedness through ARLF is \$1,000,000. This is also not adequate to purchase and upgrade facilities such as meat packing or long-term cold storage.

Supply Chain Gaps and Challenges

Farming inputs must first reach Alaska and once food production begins, transportation and storage is required at nearly every stage of the food chain. The distance between live animal production, feed production, animal processing, then redistribution is at times hundreds of miles apart.

✦ Action: Encourage Alaskan production of livestock feed and brood supply

This still does not account for additional needed farm tasks such as product marketing, accounting, staff management, and farm administration tasks such as making sure the appropriate licensing and health insurance needs are met. A farmer’s day is truly never ending.

Additionally, the example provided here assumes the animal operation is on the road system. The logistics for feed delivery and animal processing become exponentially more complicated and expensive if air or marine travel is required. Cost per pound and insurance rates often become too high for small and medium scale producers. Furthermore, there are policy and regulatory challenges if importing anything through Canada or outside the United States.

Production

✦ Action: Reexamine the Jones Act, support regional food hubs and co-ops, and build more processing and storage facilities throughout the state.

The Jones Act, Section 27 of the Merchant Marine Act of 1920, requires that vessels transporting cargo between destinations within the United States be built and owned in the United States, and crewed by U.S. citizens.^{9,10} While the national protectionist intentions may be clear, the Jones Act is a significant barrier to

the cost effective import of goods, including animal feed and farm equipment. This included goods traveling through Canada and Mexico, even on very short (less than 100-foot) distances.¹¹

There is a shortage of available processing and climate controlled storage throughout the state. However, despite all the supply chain gaps, some producers see a path forward to meet a growing demand for local food.



Joseph Hartman moves a half beef out of a large cooler, in preparation for processing at the Alaska Meat Packers slaughterhouse in Palmer. Image: Loren Holmes/ADN, 2021

“

I have been producing pork for 20 years in North Pole Alaska. Some of the biggest challenges have been production cost compared to the lower-48 and producing enough pork to open year round markets. I (ran) a 100-sow facility for several years and had challenges with having a stable processing plant. Since my wife and I purchased the butcher plant in Palmer, we now know that there will always be a butcher plant available. We still had challenges with production cost and markets. By increasing our herd to a 200-sow operation and producing approximately 3,600 head of fat hogs a year we were able to have enough volume to open new markets in the grocery stores. Our production costs are still high but with the increased production volumes we have reached an economy of scale which will make the farm profitable. What we have found is that we are able to put fresh pork into grocery stores cheaper than it can be shipped up from the lower 48 and the product is three weeks fresher. The next factor that we have found is that the markets are wide open. I have no doubt that if I were running a 600-sow operation and producing 12,000 head of fat hogs a year I would still not be able to meet the demand.”

—Todd Elsberry, Task Force Member and Elsberry Farm owner

Furthermore, smaller cooperative food hubs and processing facilities distributed across the state could potentially help create more market opportunity for small scale producers and offer hyper-local, fresher product.¹²

Finally, processing and storage needs are even more crucial for animal protein, especially for year-round storage. As of 2022, there are only 3 USDA-certified meat slaughter plants in the State.

- Midstate Meats, LLC, North Pole¹³
- Delta Meat and Sausage, Delta Junction¹⁴
- Alaska Meat Packers Incorporated (DBA) Alaska Meat, Palmer¹⁵

Animal slaughter facilities are subject to USDA inspection and approval, whereas meat processing facilities, which yield value-add products like spiced and smoked sausages, may be subject to both USDA and FDA inspection and approval. As an example, a game processor may only be subject to FDA inspection and approval if they do not accept meat slaughtered in a USDA approved facility. If they accept meat from USDA-approved slaughter facilities, they are subject to both USDA and FDA oversight.

Mobile processing units have been piloted in Alaska, however many have failed to sustain in the long term due to a variety of reasons including lack of consistent demand, high fuel costs, and ownership disputes. Additional capacity is needed now and new meat processing initiatives must consider the root causes of previous failures.. If the State supports farm and ranch expansion, this need will only increase. The Niche Meat Processor Assistance Network offers resources for mobile slaughter unit planning, launch, and operation, and may be of value to smaller farmer collectives as ranching expands.¹⁶



Image: Barley Field in Delta Junction, Courtesy of Alaska Flour Company;

Alaska Commodity Shortfall

✦ **Action: Support the production of commodity crops.**

✦ **Action: Create and support Alaska Grain Guarantee Program.**

Commodities such as wheat, barley, oats, soy, and alfalfa are in high demand. Alaska Mill & Feed alone would source 800-tons per year, if the in-state production could meet that need.¹⁷ In addition to large plots of farmland, agricultural research, adequate drying, storage, and transportation are needed to ensure the raw food grown can be processed into usable human and animal products.

Increased in-state commodity production will require additional resources, not only for the growing and harvest efforts but for the regulation and traceability. For all increased capacity in the food system where there exists a regulator or State oversight, so too will the costs increase, likely for both the producers and regulatory agencies.

Fair Competition

✦ **Action: Develop Product Registration Guidelines and Labeling Laws**

Product Registration Guidelines and Labeling Laws for animal feed do not currently exist in Alaska. These types of policies establish criteria for importing agricultural goods into the state (such as outside animal feed, pet food, hay, etc). If passed, implemented, and enacted in Alaska, manufacturers, distributors, and retailers then must register and pay a fee for each product they import. This also builds in invasive species protections and generates revenue, which could be used to create a self-sustaining program and further support Alaska agriculture initiatives.



Alaska needs a business plan to identify what products are in demand. We also need a marketing plan to get those products to market—beyond 'Alaska Grown'.

—Task Force member and commodity purchaser

Recommended Action

The following research recommendations highlight opportunities in the short (2–5 years), medium (5–10 years), and long term (50–100 years) timeframe. Some require collaboration with the federal government and deep policy research while others are within the Administration's purview to address immediately.

Suggested Further Research

- Conduct an analysis to understand the commercial and retail Alaska Grown demand for local products, with particular attention to commodities.
- Research in-state, out-of-state, international market size and purchasing power for Alaska Grown, or complete a targeted analysis of existing reports.
- Explore the marine barge cost reduction options for producers and purchasers.

Related Programs for Review

Review the Jones Act exemptions—The U.S. territories of Guam, American Samoa and the U.S. Virgin Islands have either partial or full exemptions. However, Hawaii is subject to the Jones Act.¹⁸

Research and educate farmers on the USDA Reimbursement Transportation Cost Payment Program (RTCP) to decrease farming supply costs.

Analyze Washington (and other) State's Product Registration Guidelines and Labeling Laws.

¹ Meter, K. & Goldenberg, M.P. (2018, September 18). *Potential Infrastructure Investments for Alaska-Grown Food*. Crossroads Resource Center, Minneapolis, MN. September 18, 2018. <https://www.akfoodpolicycouncil.org/ak-food-system-research>

² Task Force member survey response. August 2022.

³ Benz, S. *Agriculture Grows in the Land of the Midnight Sun*. (2021, July 29) USDA's National Agricultural Statistics Service. <https://www.usda.gov/media/blog/2019/12/27/agriculture-grows-land-midnight-sun>

⁴ Kangan, J. (2019, March 26). *Sturgeon v. Frost*. U.S. Supreme Court.

⁵ USDA. (2021, August). *Land Values 2021 Summary*. National Agricultural Statistics Service. https://www.nass.usda.gov/Publications/Todays_Reports/reports/land0821.pdf

⁶ *Alaska Municipali Land Management Handbook*. (2009, April). <https://www.commerce.alaska.gov/web/Portals/4/AKMuniLandManagementHandbook/AKMuniLandManagementHandbook.pdf>

⁷ Lockyer, E. (2013, July 19). *State Agricultural Covenants Questioned*. Alaska Public Media. <https://alaskapublic.org/2013/07/19/state-agricultural-covenants-questioned/>

⁸ Held, L. (2022, September 7). *The Field Report: The USDA Steps Up Its Investments in Regional Food Systems*. Civil Eats. <https://civileats.com/2022/09/07/the-field-report-usda-investments-regional-food-systems-local-food-jobs-economies/>

⁹ Shipping Under the Jones Act: Legislative and Regulatory Background. Congressional Research Service. November 21, 2019. <https://sgp.fas.org/crs/misc/R45725.pdf>

¹⁰ Jones Act. Legal Information Institute. Cornell Law School. Retrieved September 2022. https://www.law.cornell.edu/wex/jones_act#:~:text=The%20Jones%20Act%2C%20also%20known,see%2046%20USC%20%2%A7%2050101.

¹¹ Alex DeMarban. *Judge allows millions of pounds of backed-up Alaska seafood to move to eastern US in battle over Jones Act loophole*. Anchorage Daily News. October 11, 2021. <https://www.adn.com/alaska-news/2021/10/11/in-jones-act-dispute-judge-allows-millions-of-pounds-of-backed-up-alaska-seafood-to-move-to-eastern-us/>

¹² Meter, K. & Goldenberg, M.P. (2018, September 18). *Potential Infrastructure Investments for Alaska-Grown Food*. Crossroads Resource Center, Minneapolis, MN. <https://www.akfoodpolicycouncil.org/ak-food-system-research>

¹³ Midstate Meats. (n.d.). Retrieved September 2022 from <https://www.fsis.usda.gov/inspection/fsis-inspected-establishments/aks-midstate-meats-llc>

¹⁴ Delta Meat and Sausage. (n.d.). Retrieved September 2022 from <https://deltameat.com/>

¹⁵ Alaska Meat Packers Incorporated. (n.d.). Retrieved September 2022 from <https://www.fsis.usda.gov/inspection/fsis-inspected-establishments/alaska-meat-packers-incorporated>

¹⁶ *Mobile Unit Overview*. Niche Meat Processors Association. Retrieved September 2022 from <https://www.nichemeatprocessing.org/mobile-unit-overview/>

¹⁷ Task Force member survey response. August 2022.

¹⁸ Frittelli, J. *Shipping under the Jones Act: Legislative and regulatory background* [R45725]. (2019, November 21). Congressional Research Service. <https://sgp.fas.org/crs/misc/R45725.pdf>



Wild Foods and Increasing Abundance

Directive Addressed:

- ✦ Assess the levels of wild game and fish harvests in Alaska. Suggest measures that would increase the abundance and harvest of wild game, fish, and food by Alaskans.



Image: Crowberries courtesy of JLS Photography

Recommended Action

POLICY CONSIDERATIONS

The following policy and infrastructure recommendations were made by members of the Task Force and are intended to build on actions already being taken to assess and increase the abundance of wild foods for harvest. The Task Force cited many specific examples of changes to policy and regulations of wild fish and game that would improve access to wild food species for Alaskans. If made, these changes would result in greater ability to harvest wild foods—and therefore increased food security for Alaskans—and would go beyond strategies that focus narrowly on increasing abundance of wild fish and game populations.

- Regulate pesticide sprays to include consideration of wild harvested foods.
- Work with Federal entities to change Marine Mammal Protection Act to replace the blood quantum requirement in current regulations with proof of membership in a federally recognized Tribe.
- Include wild, Traditional Alaskan foods in the Food Distribution Program on Indian Reservations (FDPIR).
- Expand cooperative programs with federally recognized Tribes (e.g. government-to-government agreements) and build capacity for cooperation on food security initiatives.
 - From the tribal perspective there is opportunity to improve management through application of Traditional Knowledge in a cooperative structure.

- Help Tribes build capacity and opportunities for management through workforce development, training, monitoring, and collecting baseline and other data.
- Increased State support for creating cooperative agreements or protected land-use designations.
- Address bycatch by changing regulation and management in sensitive ecosystems.
- Create policy solutions that address maximizing food production on lands that are federally managed.
 - The State cannot manage resources on federal land (ex: fire control on federal land to increase moose production is difficult).
- Enact policies and increase regulatory protections for wild populations that maintain healthy habitats for the fish and wildlife harvested by Alaskans.
- Increase ability to circulate subsistence foods
 - Example: a local Tribe has funds for special hunts/harvests to be donated foods for Elders, Youth, and Traditional Foods programs.
- Ensure policy for mariculture development includes a consultation process with local communities and Tribes to evaluate if the proposed site identified for the lease is a traditional use area, and/or an area heavily used by residents to avoid user conflict.
- Maintain predator control programs to maintain ungulate populations for human harvest.
- Foster an increased wild harvest of shellfish.
- Improve PST testing and awareness through a State program that routinely tests traditional shellfish harvest areas for PST and high vibrio danger.
- Monitor more locations and target more species
 - Example: monitor littleneck and butter clams, which can hold PST for at least two years.
 - Misinformation and fear may currently be generated unnecessarily because of focus on the wrong species/locations.
- Change practices to better understand what's happening and then change the narrative. Listen to traditional harvesters and incorporate traditional knowledge in testing programs.
- List DEC's shellfish sanitation program as an essential service
 - If funding is cut, there is no backup/path for recourse or for maintaining programs and public education.
- Establish cooperative agreements with Tribes.

Infrastructure Needs

- Increase access to mobile and modular wild harvest butchering space, such as outfitted shipping containers.
- Increase in-state fish processing infrastructure. Use existing commercial fisheries assets to bring food back to communities.
- Invest in education programs aimed at increasing harvest effort, especially in younger generations. This will:
 - Raise awareness of the nutritional value of wild foods
 - Provide more information on what opportunities exist to participate and what resources are available for wild harvest and/or for purchase from producers
 - Provide and support programs that train people to hunt, fish, prepare, preserve and otherwise participate in other wild harvests
 - Advertise more broadly that SNAP program funds can be applied toward supplies and gear needed for wild harvest. This is an important access issue—many food insecure households that could benefit from wild harvests do not have the equipment or gear to participate

- Educate about which wild harvests require licensing and reporting, and which do not.
- Expand State testing PST and vibrio testing to include recreational shellfish

Introduction

Subsistence, personal, and sport harvest of wild foods are crucial aspects of food security, culture, and economic stability among all user groups in Alaska. Rural, urban, Indigenous and non-Indigenous Alaskans harvest wild food species to provide for their food security through a wide range of hunts and fisheries. These harvests add up to more than 33.6 million pounds annually, and are important for cultural, nutritional, economic and recreational reasons.

The amount of wild fish and game harvested in Alaska depends on many, interacting biological, political and social factors that affect both wild food abundance and harvest access. Different stakeholder (user) groups often disagree on how wild food species and harvest should be managed based on different perspectives, expertise, and/or worldview, thus, making policy recommendations and enactment related to wild food management is inherently difficult.³³

Alaskans have witnessed numerous, unprecedented fish and wildlife population declines and collapses over the past several decades in both the marine and terrestrial realm. In response, policy makers, resource managers and tribal entities have made efforts to improve the health and abundance of wild species populations. Current initiatives include interagency and intergovernmental working groups to manage and increase wild species population health and abundance, efforts to increase ungulate populations (stocking, wild releases, and Intensive Management), and salmon population management (research, habitat protection, and rehabilitation, hatcheries, and the Alaska Bycatch Review Task Force).

Among this Task Force’s policy, research, infrastructure, and model program recommendations, several common themes emerged, including the need for increased public awareness and education regarding wild food harvesting (e.g. safety, best practices, and permitting) and the need for greater collaboration with other government agencies (including Federal and Tribal governments). Some Task Force members recommended policies to expand cooperative opportunities as a way to provide wider access to Traditional foods in impacted communities. Additionally, most Task Force members agreed additional investment in research that fills critical knowledge gaps about wild species habitat and stock assessment would be an important step towards maximizing wild resource abundance.

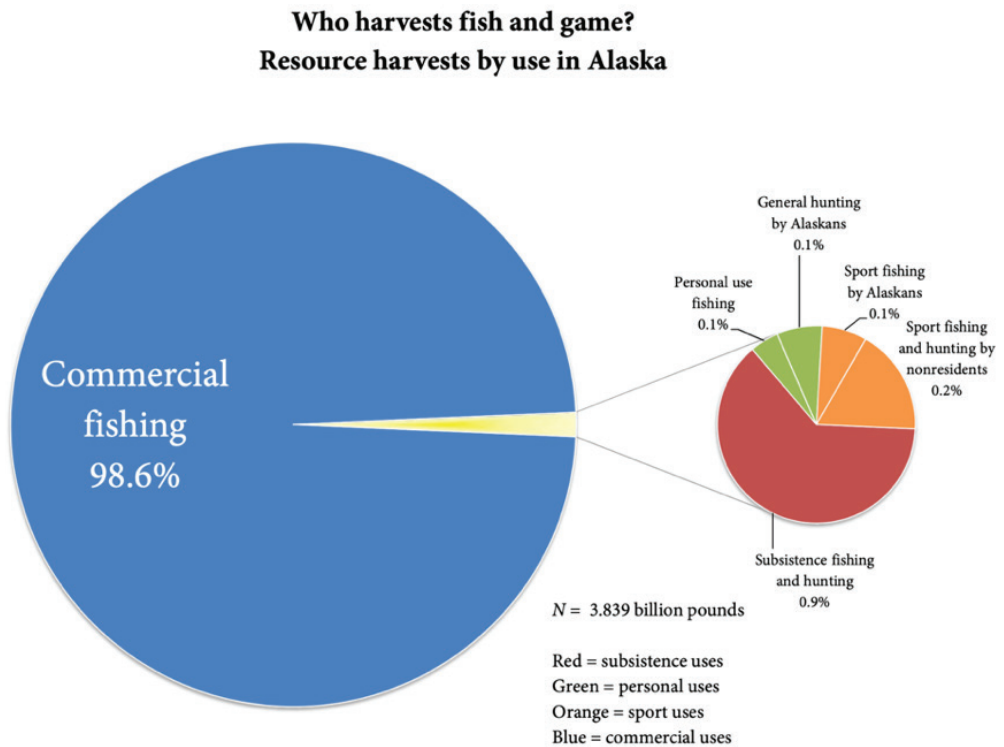


Image: The percentage of commercial fishing, ADFG, 2017

The levels of wild fish and game harvests in Alaska are dependent on many factors, including:

- Current management and harvesting regulations and policies set forth by both state and federal entities (e.g. ADF&G, USFW, BLM, and NOAA)
- Wild species' population health which is predicated on factors like environmental health, disease pressure, and/or fishing and hunting pressure
- Accurate data that informs regulation and population management
- Harvest pressures outside of Alaska (especially in the case of pelagic groundfish and anadromous fish species, like halibut and salmon)
- Abundant and healthy habitat (increasingly habitat degradation from environmental change like warming water temperatures, or resource development and/or extraction are resulting in deleterious effects on important food species like salmon, caribou and marine mammals)

Each one of these factors interact with one another to either support or detract from healthy fish and game populations on which both rural and urban Alaskan residents depend for food security and livelihoods. Additionally, each of the above determinants affecting wild food abundance is associated with some form of disagreement between different stakeholder (user) groups based on different perspectives, expertise, and/or epistemology (worldview).^{5,6} This point is emphasized to highlight the fact that any policy recommendation will need to seriously assess the possible resulting benefits or disadvantages of its adoption for different Alaskan stakeholder groups.

✦ **Recommended Action: Assess the possible resulting benefits or disadvantages of policy adoption for different Alaskan stakeholder groups.**

Over the past several decades there have been numerous population declines and collapses of both marine and terrestrial wild food species across Alaska (e.g. declared salmon fisheries disasters, and ungulate populations crashes). Wild species populations appear to be fluctuating and/or declining at an increasing rate, and policy makers, resource managers and Tribal entities alike have made efforts to improve wild species population health and abundance.

Current Landscape

Below are descriptions of recent and current programs and initiatives designed in part or in full to increase the abundance and harvest of wild game, fish, and food by Alaskans. Many of the measures that are currently or have been actively pursued are covered in Section II—Wild Foods Summary. Each of the topics/actions outlined below includes a brief synopsis of what is working and not working well with regard to the levels of wild game and fish for harvest in Alaska.

Select examples of interagency collaborations designed to collect wild fish and game species/population data and aid management for improved population health and abundance include:

- **Western Arctic Herd Working Group** is a cooperative body, supported by agency staff, that meets regularly to exchange traditional and Western scientific information; to reach consensus on recommendations for research, monitoring, regulation, allocation and enforcement; to support education about the herd; and to foster communication among stakeholders.
- **International Porcupine Caribou Board** is a shared effort of The United States and Canada which jointly manage the Porcupine caribou herd. The two countries signed a treaty in 1978 establishing an advisory board, to coordinate research, management, and conservation of the herd.
- **Ice Seal Committee (ISC)** is an Alaska Native co-management organization working with ADF&G to address the need for reliable seal population estimates. Learning more about seal populations from subsistence harvesters of ice seals provides valuable information about the status of seal populations where previously little information has been available.

- Funding from the **State Wildlife Grant (SWG) program**,⁷ led to the creation of the Alaska Department of Fish and Game's **Threatened, Endangered, and Diversity (TED) Program**, which includes Wildlife Diversity biologists and the Endangered Species Coordination team.

✦ **Recommended Action: Improve collaboration and shared decision making with federal management agencies.**

Cooperative agreements are becoming more popular between Tribes and federal agencies and have led to improved harvest records, and improved species population management.^{9,10} Examples from Alaska include the Ahtna Intertribal Resource Commission, which under a cooperative agreement oversees hunts on neighboring federal lands,¹¹ and the Huna Tlingit Gull Egg Harvest program developed in Glacier Bay National Park between the Hoonah Indian Association of Alaska and the National Park Service.¹²

Efforts to Increase Ungulate Populations

The ADF&G designs and implements several different programs to increase big game abundance, including stocking, wild releases, and Intensive Management (IM), which includes selective habitat improvement and predator control.

STOCKING AND WILD RELEASES

Alaska has a long history of both stocking and wild releases of ungulates. Sitka black-tailed deer were successfully introduced to Yakutat, Prince William Sound and Kodiak Island between 1916 and 1934, while an attempt to introduce deer to the Kenai Peninsula in 1923 was not successful. Elk were first introduced in 1928 and now inhabit islands in both Southeast Alaska and the Kodiak Island area. Moose from Southcentral Alaska were released to Berners Bay north of Juneau in 1958 and 1960, and into the Copper River Delta between 1949 and 1958. In a recent example, the state reestablished a wood bison herd in Western Alaska in 2015, and is currently preparing to add more young animals to that population as part of a broader effort to restore the animal's population in the state.¹³ Most of the successful ungulate introductions in Alaska have become important for harvests and can be considered successful in terms of increasing the abundance of and access to wild game.

INTENSIVE MANAGEMENT (IM)

The Alaska Legislature recognized the importance of wild game meat to Alaskans when it passed the Intensive Management Law in 1994. This law requires the Alaska Board of Game (BOG) to identify moose, caribou, and deer populations that are especially important food sources for Alaskans, and to ensure that these populations remain large enough to allow for adequate and sustained harvest. If a population drops below what the BOG determines is needed for continued harvests by people, the board directs ADF&G to enact intensive management. This can include restricting hunting seasons and bag limits, evaluating and improving habitat, liberalizing harvest of predators and predator control.

PREDATOR CONTROL

According to a 2007 ADF&G report on predator control programs, anywhere from 5–11% of Alaska's land mass is under a predator control program at any given time, and data estimates derived from aerial surveys suggest the efficacy of predator control programs in increasing survivability in ungulate populations.¹⁴ Examples of past successes in predator control include the Southern Alaska Peninsula caribou herd, Game Management Unit 13 moose, and the Fortymile caribou herd, which are all important resources for wild harvests for Alaskans.¹⁵

There are, however, critiques that predator control programs are not necessarily sufficient or holistic in their approach to manage wildlife populations. For instance a report by the Alaska Wildlife Alliance states that because the ADF&G lacks the authority to regulate/impose habitat improvement activities on lands other than State game refuges, control of large predators has become the only mechanism for implementing IM when there are insufficient numbers of caribou, moose, and Sitka black-tailed deer available to meet hunter demand.¹⁶

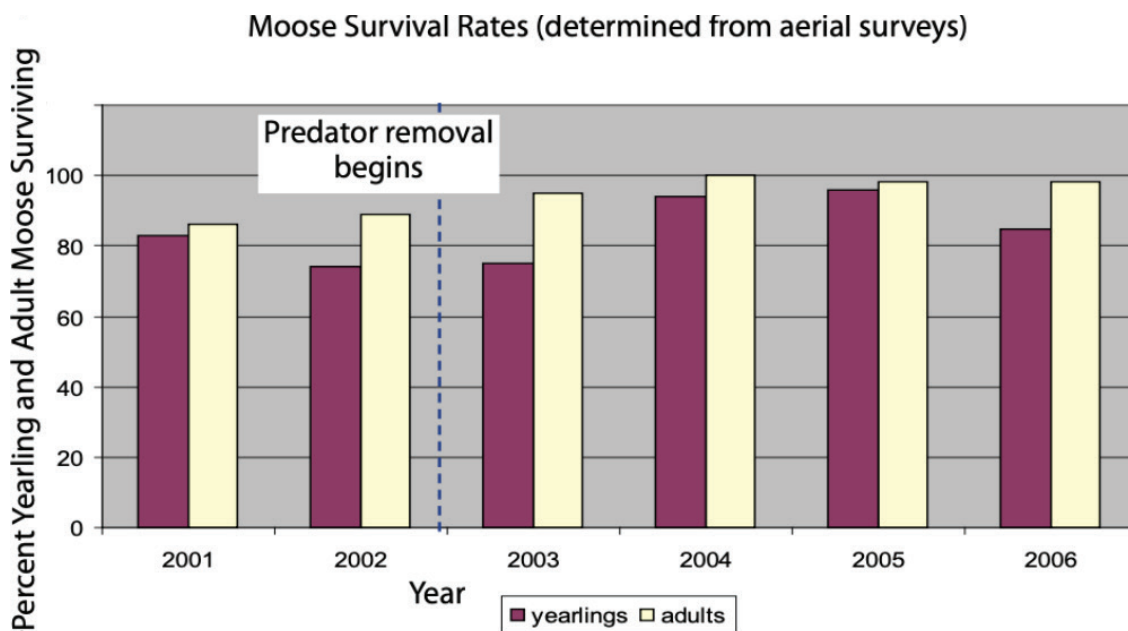


Image: 2007 Moose Survival Rates following implementation of predator control, ADF&G



- ✦ **Recommended Action: Devote additional funding for research to better understand ungulate and predator populations and how those interact with changes in habitat.**

INTENSIVE MANAGEMENT—HABITAT IMPROVEMENT

Improving habitat for moose involves stimulating shrub or young tree growth to increase food availability on their winter range, which is most commonly accomplished by mechanical disturbance, prescribed fire, or allowing wildland fires to burn. While enhancing habitat is often successful in bolstering moose population numbers, it is expensive to implement and practical only on a relatively small scale. Recent examples include habitat enhancements on the Kenai Peninsula and in the Matanuska-Susitna Borough. Notably the State only has the authority to apply habitat improvement on State lands, and is another example where collaboration with federal agencies and Tribal organizations could increase the use of habitat management on non-state owned lands.

Salmon Population Management

- ✦ **Recommended Action: Examine if rehabilitating runs through hatchery production is both feasible and acceptable, recognizing it is a highly controversial issue that must be well studied and thoroughly vetted**

HABITAT PROTECTION AND REHABILITATION

In response to fisheries declines across the state, other programs have been launched by Tribal entities and economic organizations in order to protect salmon and rehabilitate stocks of concern. For example, Tribal Conservation districts through Alaska have included salmon habitat restoration as part of their strategic conservation plans. The Tyonek Tribal Conservation District, for example, has worked cooperatively with the Native Village of Tyonek, the Tyonek Native Corporation, the USDA Natural Resources Conservation Service, the US Fish & Wildlife Service, and ADF&G, in order to implement salmon passage in habitat improvement projects as well as invasive species monitoring.

The Norton Sound Economic Development Corporation (NSEDC) exemplifies another example of non-government organizations demonstrating leadership in supporting increased health and abundance of wild salmon in Northwest Alaska since the early 2000s. NSEDC's Fisheries Research and Development (NSFR&D) program promotes scientific research in the region with an emphasis on supporting local fisheries. In a response to declining populations of valuable commercial and subsistence species (e.g. Chinook salmon and King crab) NSFR&D works to explore the potential of under-utilized stocks (e.g. Chum salmon) and, when possible, enable greater use by local residents for both commercial and subsistence purposes. With regard to increasing abundance of wild stocks, the NSFR&D currently operates rehabilitation projects are conducted through egg takes, incubation, and fry releases into Norton Sound Rivers in collaboration with ADF&G.

Numerous other habitat protection and rehabilitation projects and programs are also underway in Southeast Alaska, the Kenai Peninsula, the Matanuska-Susitna region and elsewhere in the state.

HATCHERIES

✦ **Recommended Action: Conduct studies on the interaction between wild and hatchery fish to gain a better understanding of impacts on wild stocks.**

Hatchery-bred fish is one of the State's (ADF&G's) primary tools in increasing the abundance of salmon stocks. There are several distinct types of hatcheries in Alaska, these include: private nonprofit (PNP) salmon hatcheries which produce salmon to enhance commercial, sport, subsistence, and personal use fisheries; sport fish hatcheries which produce fish specifically to enhance sport fisheries. These facilities are owned and operated by ADF&G, and; two other federally-operated research facilities and a hatchery operated by the Metlakatla Indian Community.²³

Hatcheries present both positive as well as negative impacts on increased abundance of "wild" foods for Alaska. On one hand, hatcheries provide an increase in fish abundance, although on the other hand, the hatchery fish create competition for food sources with wild species.²⁴ In response to continued low returns of wild fish populations, ADF&G has paused increasing hatchery pink and Chum releases while the agency conducts studies on the interaction between wild and hatchery fish to gain a better understanding of impacts on wild stocks.¹⁸



Images: Research technicians collect salmon eggs, courtesy of Norton Sound Economic Development Corporation



✦ Recommended Action: Develop state bycatch research priorities across departments, implementing strategies for cooperative research to reduce bycatch and associated mortality.

Governor Mike Dunleavy issued an Administrative Order forming the Alaska Bycatch Review Task Force in January 2022. The group, focused on reducing and managing bycatch in commercial fisheries, issued a set of recommendations in November 2022.

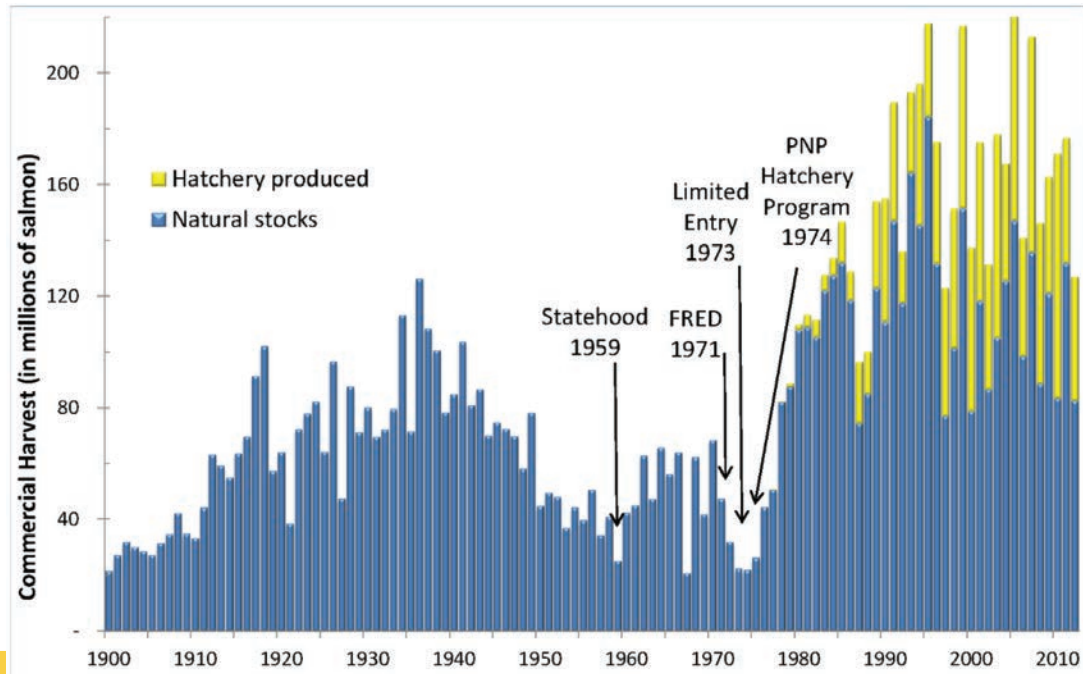


Image: *Alaska commercial salmon harvests 1900–2012, ADF&G, 2013*

Recommended Action

The following research and model program recommendations were made by members of the Task Force, and are intended to build on actions already being taken to assess and increase the abundance of wild foods for harvest. The Task Force cited many specific examples of changes to policy and regulations of wild fish and game that would improve access to wild food species for Alaskans. If made, these changes would result in greater ability to harvest wild foods—and therefore increased food security for Alaskans—and would go beyond strategies that focus narrowly on increasing abundance of wild fish and game populations.

SUGGESTED FURTHER RESEARCH

- Invest in research that helps maximize resource yields and ensures adequate stock assessments across the state.
- Examine how the carrying capacity of Alaska lands is currently being measured and ensure the methods follow best practices in ecological and management sciences.
- Add to current research on ocean acidification, the effects on shellfish, and future production of shellfish.
- Research the potential impact of establishing Sockeye salmon hatcheries in Southeast Alaska to enhance food security.
- Incorporate Traditional Knowledge of streams and habitat restoration models. Use Sockeye hatchery research in South Central as a potential model.

RELATED PROGRAMS FOR REVIEW

- Ahtna Intertribal Resource Commission—under an agreement with the US Department of Interior, oversees hunts on neighboring federal lands.
 - Recognizing the importance of Traditional Ecological Knowledge and cultural practices, the agreement commits Interior to begin a process under the Federal Subsistence Board to allow the Ahtna Commission to administer caribou and moose hunts for tribal members under the Federal Subsistence Management Program.³¹
 - This program could be used as a model by other tribal entities in the state.
- The Bering Sea Indigenous Sentinels Network.
 - Provides remote, Indigenous communities with tools, training, networking and convening, coordination, and capacity for ecological, environmental, and climate monitoring.³²
 - Is a model for tribal and rural community engagement in monitoring and other management related science.
- Alaska Native Tribal Health Consortium's Local Environmental Observer (LEO) Network.
 - A network of local environmental observers and topic experts who apply traditional knowledge, western science and technology to document significant, unusual or unprecedented environmental events in their Northern communities to increase understanding about environmental change so communities can adapt in healthy ways.³³
 - Is a model for tribal and rural community engagement in monitoring and other management related science.
- ADF&G's cost recovery for sockeye salmon program in Prince William Sound.
 - Could be replicated elsewhere to enhance salmon runs.
- ADF&G's work to increase big game abundance, including stocking and wild releases,
 - Additional opportunities for transplanting additional herds of elk, deer, and wood bison may exist.
- The 2018 Farm Bill, Title 4 (Nutritional Programs) Section 4203 includes a provision for donation of wild harvested traditional foods to healthcare and residential care programs.³⁴
- Programs that encourage the distribution of free Coho and Sockeye salmon from PNP hatcheries to the public are widely used on Prince Of Wales Island in Southeast, especially by the elderly and poor.

¹ Bureau of Land Management. (2011). *Instructions and policy for compliance with Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA)*. <https://www.blm.gov/policy/im-ak-2011-008>

² National Parks Service. (n.d). *Alaska Subsistence: The subsistence fishing question*. Retrieved August 2022 from <http://npshistory.com/publications/alaska/subsistence/chap9.htm>

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⁴ Fall, J.A. (2018). Subsistence in Alaska: A year 2017 update. Alaska Department of Fish and Game. https://www.adfg.alaska.gov/static/home/subsistence/pdfs/subsistence_update_2017.pdf

⁵ Weiss, K., Hamann, M., & Marsh, H. (2013). Bridging knowledges: understanding and applying Indigenous and western scientific knowledge for marine wildlife management. *Society & Natural Resources*, 26(3), 285-302.

⁶ Harrison, H. L., & Loring, P. A. (2014). Larger than life: the emergent nature of conflict in Alaska's Upper Cook Inlet salmon fisheries. *SAGE Open*, 4(4), 2158244014555112.

⁷ U.S. Fish & Wildlife Service. (n.d.). *State wildlife grants*. Retrieved September 2022 from <https://www.fws.gov/program/state-wildlife-grants>

⁹ Nie, M. (2008). The use of co-management and protected land-use designations to protect tribal cultural resources and reserved treaty rights on federal lands. *Natural Resources Journal*, 585-647.

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Fishery Shortfalls and Disaster Response

Directive Addressed:

- ★ Recommend a program to assist communities and households impacted by fishery shortfalls and disasters.

Recommended Action

The following policy and infrastructure program recommendations were made by members of the Task Force, and are intended to build on actions already being taken to assist communities and households impacted by fishery shortfalls and disasters. Note that all of the Task Force recommendations are included, however not all members agreed on all of the recommendations. The sub bullets below offer additional context provided by one or more Task Force member(s).

Image: Salmon Subsistence Harvest, courtesy of Kyra Wagner



POLICY CONSIDERATIONS

- Adopt management and harvest policies that support healthy ecosystems and therefore support healthy people.
 - Many Tribal communities do not want food boxes; they want to practice traditional ways of life. Give priority and assistance to subsistence communities over sport and commercial interests.
- Explore ways to legally use bycatch.
 - Use tax credits to incentivize bycatch use and distribution.
 - Alaska's film crew and TV production tax credits, and oil and gas tax incentives could be used as models.

- Expand cooperative opportunities to leverage federal dollars to create strong and meaningful infrastructure projects throughout the state.
 - Greater collaboration between the State & Tribes could leverage more federal funding.
 - Align Tribes with trusted partners to increase their capacity to apply for grants, where needed.
- Increase the bypass mail system to increase storage at distribution and transfer hubs, expand cargo capacity for more timely deliveries and fewer delays due to shipment prioritization, and improve tracking to prevent items from sitting on the tarmac that should be either refrigerated or frozen to better support food distribution.
 - Currently, pallets of food are not given priority on flights and often are left on the tarmac until space is available on a later flight. This leads to food waste as a result of freezing and/or spoiling due to high temperatures.
- Educate the public and institutions about regulations to allow fish caught in personal use fisheries to be donated to food banks and other donation programs.
 - Precedence exists through the Alaska Native Medical Center (ANMC) in Anchorage, which accepts donations of hunted and gathered foods to their inpatient food service program. Donations they can accept include most wild game meat and bones (caribou, moose, deer, sheep, goat, and beaver), most fish and seafood, seal meat and fat, and plants and berries.
 - DEC allows donation of:
 - Hatchery salmon from ADFG to a food bank (18 AAC 31.200(b)(2))
 - Seafood to a non-profit or institution if the seafood is whole, gutted, or gilled at 18 AAC 31.205
 - Other traditional foods are allowed (plants, most game animals)
 - Not allowed due to the high-risk nature of these products (18 AAC 31.210):
 - Fermented seafood products
 - Smoked, canned, or reduced-oxygen packaged fish unless from a permitted processor.
 - Personally harvested molluscan shellfish
 - Consider creating a tax or donation campaign focused on large, commercial fisheries operators to support community subsistence activities.

INFRASTRUCTURE NEEDS

- Invest in adequate dry, cold, and frozen storage at distribution hubs specifically for bypass food products and food security improvement in communities.
 - The State's experience from the last two years demonstrated that a lot of cold storage is needed to make the donations work.
 - Determine required storage needs at hubs and how to distribute from hubs to communities.
 - Build in-state expertise to be housed through the Division of Agriculture to run food logistics and maintain onsite emergency storage caches. Partner with experts at retailers and incentivize them to bring more expertise to the state. For example, Walmart's expertise with 'mixing centers', Carrs/Safeway is the largest retailer for warehousing, AC Stores are widely distributed across the state.
 - Incentivize more retailers to cache more in-state (*Note: See also Directive on Disaster Food Caches*)
- Invest in infrastructure that supports food logistics and shortens supply chains, including at node locations that reduce the distance between harvest and distribution.
 - This could possibly reduce costs of food generally and also in the case of disaster assistance.

Introduction

Alaskans have experienced an unprecedented number of fisheries shortfalls and disasters in the past four years, and have seen declines in many other fisheries across the state over the last two decades (*Note: See Section II, Wild Foods*). Various programs and initiatives have sought to provide assistance to impacted communities and households, including several well-orchestrated salmon donation efforts in 2020, 2021 and 2022. In many areas of the state, regional agencies, local organizations, and Tribal entities are actively working to provide greater access to alternative sources of traditional wild foods as a way to address fisheries shortfalls. Because the rate and severity of fisheries shortfalls and disasters have increased with both regularity and severity in the past decade, this section highlights the need for both solutions and food source alternatives. However, it is important to note that at this time, not all areas of Alaska are facing fisheries disasters. There are a number of robust fisheries providing vital subsistence, personal use, sport and commercial opportunities.

The formal disaster determinations issued by the U.S. Secretary of Commerce in January 2022^{1,2} provide for substantial funding to help address economic impacts for shortfalls that occurred from 2018 to 2021 in 14 different fisheries. While the federal funding is welcome and necessary in the affected communities, subsistence users have been vocal in calling for action to better understand and address the root causes of the declines, especially with regard to bycatch of salmon in commercial fisheries.^{3,4,5} In response to the growing controversy, Governor Mike Dunleavy formed the Alaska Bycatch Review Task Force in January 2022. Subsistence harvesters have also made clear that while they need and appreciate the salmon donation programs, those fish do not fully address their nutritional needs, nor do the donations address the significant cultural loss of practicing their own traditional harvest.

Among the Task Force's policy, research, infrastructure and model program recommendations, a common theme was the current lack of adequate cold and dry storage and transportation infrastructure to support timely food logistics and distributions. Preventing fishery shortfalls and disasters through bycatch reduction, habitat protection, and fisheries management was another common element. Some Task Force members recommended policies to expand cooperative opportunities as a way to provide wider access to traditional foods in impacted communities.



Image: Alaska Bering Sea crab crew pulls a pot on deck, courtesy of Chris Miller, ASMI

Recent Disasters

Alaska has recently experienced an unprecedented number of fisheries shortfalls and disasters, including 14 that occurred from 2018 to 2021 that were issued formal disaster determinations by the U.S. Secretary of Commerce in January 2022.^{9,10} These disasters are detrimental to our communities and expensive to mitigate. Those fisheries include:

- 2018 Upper Cook Inlet east side set net salmon
- 2018 Copper River Chinook and Sockeye salmon
- 2019 Eastern Bering Sea Tanner crab
- 2020 Prince William Sound salmon fisheries
- 2020 Copper River Chinook, Sockeye, and Chum salmon fisheries
- 2020 Eastern Bering Sea Tanner crab
- 2020 Pacific cod in the Gulf of Alaska
- 2020 Alaska Norton Sound salmon
- 2020 Yukon River salmon
- 2020 Chignik salmon
- 2020 Kuskokwim River salmon
- 2020 Southeast Alaska salmon fisheries
- 2020 Upper Cook Inlet salmon fisheries
- 2021 Yukon River salmon fishery

Previously, two fishery disasters were declared in Alaska in 2018 for Sockeye and Pacific cod, one in 2016 for pink salmon,¹¹ and two in 2012 for king salmon in the Cook Inlet and the Yukon regions.¹² Additional fishery shortfalls and declines have occurred in the past several decades that were not elevated through the state and federal disaster process.

Salmon runs have been especially hard-hit, with 11 of the 14 recent disaster declarations pertaining to one or more salmon runs in different river systems. Across most of Alaska, not only is the number of salmon diminishing, but also the fish coming back are smaller, younger and stocked with less fat.¹³

Current Landscape

Below are descriptions of recent and current programs and initiatives designed in part or in full to provide assistance to communities and households impacted by fishery shortfalls and disasters in Alaska.

DISASTER DESIGNATIONS

The disaster designations from the US Department of Commerce are a significant step toward fishermen and communities receiving relief funds, and part of a lengthy process that started with formal requests from local communities to the State of Alaska, which reviews and submits requests to the federal government. The State recently announced allocations totaling \$131.8 million in fishery disaster assistance to address losses to be distributed among the different fisheries:¹⁴



Image: Salmon drying at St. Marys, ADF&G Division of Subsistence

- 2018 and 2020 Copper River and Prince William Sound salmon: \$34,326,265
- 2018 Upper Cook Inlet East Side Set Net and 2020 Upper Cook Inlet salmon: \$9,404,672
- 2019 Norton Sound Red King Crab: \$1,433,137
- 2019/2020 Eastern Bering Sea Tanner crab: \$12,935,199
- 2020 Gulf of Alaska Pacific cod: \$17,772,540
- 2020 Norton Sound, Yukon River, Kuskokwim River, Chignik, and Southeast Alaska salmon; and
- 2021 Yukon River salmon: \$55,928,849

✦ Action: Continue to obtain federal funding for fisheries disasters while focusing on restoring runs.

Alaska Department of Fish and Game (ADF&G) works with affected stakeholders and NOAA Fisheries to identify funding priorities and develop spending plans for each fishery disaster. Funds are intended to assist fishery participants harmed by the fishery disaster, to improve fishery information used to assess and forecast future fishery performance, and to develop management approaches that mitigate the impacts of future fishery disasters that cannot be prevented. Previous Alaska fishery disaster spending plans have provided funds for two general categories: research and direct payments to affected fishery participants such as harvesters, processors, communities, and households.¹⁵ A group of Yukon River tribal and fishing organizations that worked together to campaign for the Yukon disaster declarations¹⁶ and for federal funding under the declaration are calling for assurance that all fishermen—both commercial and subsistence—get the assistance they need.¹⁷

STATE OVERSIGHT

The Alaska Board of Fish engages with the public and enacts policy changes that aim to increase fish stocks throughout the state. This board is an important forum for public-to-government relations and determining future regulations for these public resources. The Alaska Board of Fisheries consists of seven members appointed by the Governor and confirmed by the legislature, to serve three-year terms. The main role of the board is to conserve and develop the fishery resources of the state. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport, and personal use fisheries, and it also involves setting policy and direction for the management of the state's fishery resources. The board is charged with making allocative decisions, and the department is responsible for management based on those decisions.

The board has a three-year meeting cycle, and generally holds meetings from October through March. The Board of Fisheries meets four to six times per year in communities around the state to consider proposed changes to fisheries regulations. The board uses biological and socioeconomic information provided by the Alaska Department of Fish and Game, public comment received from people inside and outside of the state, and guidance from the Alaska Department of Public Safety and Alaska Department of Law when creating regulations that are sound and enforceable.

SALMON DONATIONS

In both 2021 and 2022 communities adversely impacted by poor salmon returns to the Yukon and Kuskokwim Rivers have received donations of salmon from other regions of the state. In 2021 Bristol Bay fishermen and processors donated nearly 10,000 pounds of Chum and King salmon, with logistical assists by SeaShare and Kwik'pak Fisheries in Emmonak.²¹ The state directed an additional \$75,000 to purchase more salmon from Alaska processors for donations, and Tanana Chiefs Conference and the Association of Village Council Presidents helped with distribution.²²

In 2022, a partnership between the State of Alaska, Kwik'Pak Fisheries, Alaska Interior Fish Processors, and Tanana Chiefs Conference, Copper River Seafoods, and Lynden Air Cargo, Air Land Transport, brought 12,928 pounds of Chum salmon to the region.²³

In 2020, The Alaska Longline Fishermen's Association, as part of an otherwise COVID-related food distribution program, made deliveries to two regions of the state due to fisheries shortfalls and disasters. The first was to Alaska Peninsula communities in response to the failure of Sockeye salmon runs that closed commercial fisheries and caused tribal entities to halt subsistence harvests to protect the run. These communities wanted—and received—whole sockeye, so families could process the



Forklift operator Leonel Tualla moves a container of King salmon at Alaska General Seafoods in Naknek, for delivery and distribution to communities along the Yukon River; Image: Courtesy of Bryan Miller/ADN, July 21, 2021

fish following cultural traditions. The second group of deliveries was to Southeast Alaska in response to weak Sockeye returns. Those distributions, along with others made in response to COVID-related food shortages, were made in partnership Alaska Sustainable Fisheries Trust (ASFT), Catch Together, the Alaska Community Foundation, Salmon State, Seafood Producers Cooperative, Sealaska, Northline Seafoods and private donors to purchase “stranded” product.²⁴ While the Yukon-Kuskokwim area communities have expressed tremendous gratitude for the donations of fish from other regions, people have been very clear that the lack of fish in their rivers is disruptive to their traditional ways of life and represents a severe cultural loss, as well as a financial and nutritional loss.²⁵

SUBSTITUTE FOODS

People in areas impacted by fisheries shortfalls and disasters have also turned to other alternative food sources to feed their families. People emphasize there are few good options, and both the dietary and cultural importance of salmon cannot be replaced. In Yukon and Kuskokwim River communities some people have relied on extra moose hunts and long trips to the coast to harvest halibut, crab, and lower river salmon. Many worry that with freezers unfilled, people will rely on unhealthy and expensive store-bought processed foods.

✦ **Action: Research existing programs, approaches, and new ways to support the harvest of more culturally acceptable alternative foods.**

The Bethel-based Association of Village Council Presidents and the Tanana Chiefs Conference (TCC) are working with partners to help as the region struggles with food insecurity. One proposal is to expand moose, caribou and other hunts in order to give families the chance to put away more meat this fall. Moose are relatively new to the Lower Yukon. But over the last few decades, they have become more plentiful and more of a dietary staple. TCC is also exploring a wide range of other options including purchasing bison from the Interior or reindeer from herders in the Norton Sound region and ways to further diversify subsistence harvests, including workshops to teach traditional methods for netting sheefish.²⁷

✦ **Action: Support programs that have been launched by Tribal entities and economic organizations to protect salmon and rehabilitate stocks of concern.**

In response to fisheries declines across the state, programs have been launched by tribal entities and economic organizations to protect salmon and rehabilitate stocks of concern. These programs include habitat restoration and exploring wider harvest of under-utilized species, and all could be models for new initiatives in other regions.

Recommended Action

The following research and model program recommendations were made by members of the Task Force, and are intended to build on actions already being taken to assist communities and households impacted by fishery shortfalls and disasters. Note that all of the Task Force recommendations are included, however not all members agreed on all of the recommendations. The sub-bullets below offer additional context provided by one or more Task Force member(s).

Suggested Further Research

- Inventory both existing programs and the need for new programs assisting communities impacted by fisheries disasters and sharing resources across the state.
- Conduct an audit of existing infrastructure and infrastructure needs. Identify opportunities to leverage transportation, processing, storage and other existing infrastructure. Identify ways to reduce costs, localize, and shorten the distance between harvest and distribution.
- Identify who is already doing last-mile distribution to help address some of the transportation barriers.
- Research opportunities to incentivize sharing of fish caught in both commercial and personal use fisheries via food banks and/or other donation programs.

- Conduct more research to identify the full monetary value of subsistence fisheries, and promote understanding of the cultural value of subsistence fisheries/harvests.
 - A recent study of cost to replace subsistence-caught Bristol Bay salmon is an example.²⁸
- Research if hatcheries could help address shortfalls.
 - State runs two hatcheries for sport fisheries.
 - All others are private, nonprofit producing salmon to enhance commercial, sport, subsistence, and personal use fisheries.
- Research existing programs/approaches and new ways to support the harvest of more culturally acceptable alternative foods.
- Examine bycatch programs for opportunities for improvement in prevention and distribution of non-target species.
 - NOAA observers (observer program and electronic data collection systems) are sample based and not on every vessel, and not on board for the full season.
 - The observer program is under funded and fisheries specific, which could lead to underreporting.
 - Most of the bycatch is not distributed to rural communities that are losing subsistence runs. Examine and improve where the bycatch is distributed.
 - Bycatch is often multi-species and multi-age (meaning throwback age or appropriate harvest age), making aggregation and distribution complicated.
- Calculate the costs of population shifts caused by food insecurity in the state. Recognize that a lack of food in rural areas causes an influx of people into urban centers where food programs are already maxed out. Policies should account for the long term actual costs of food assistance to subsistence communities and individual harvesters versus the cost of management that supports subsistence.
- Determine required storage needs at transportation and community hubs and how to distribute products from hubs to communities to eliminate waste.

Related Programs for Review

- Alaska Longline Fishermen's Association 2020 COVID-related program:
 - As part of a mostly Covid-related food distribution program in 2020, Alaska Longline Fishermen's Association and their Alaska Sustainable Fisheries Trust (ASFT) partner worked with Catch Together, the Alaska Community Foundation, Salmon State, Seafood Producers Cooperative, Sealaska, Northline Seafoods and private donors to purchase "stranded" product. They purchased a variety of fish species and distributed over 600,000 seafood meals to people in need in Sitka, Anchorage, the Alaska Peninsula, Southeast and the Pacific Northwest.
 - They delivered by barge, freezer troller, or airplane to military bases, Tribal centers or, in Sitka, direct to people's doors. This program supported both people in need of high quality nutrition and commercial fishermen when their markets were disrupted due to the pandemic.
 - The deliveries to Alaska Peninsula communities were in response to the failure of Sockeye salmon runs that closed commercial fisheries and caused tribal entities to halt subsistence harvests to protect the run. These communities wanted—and received—whole sockeye, so families could process the fish following cultural traditions.
 - The deliveries to Southeast Alaska were also in response to weak Sockeye returns.
 - This program is noted as a potential model for future USDA food distributions²⁹ and could also serve as a model for others in Alaska to respond to future fisheries shortfalls and disasters.
- The Local Food Purchase Assistance Cooperative Agreement Program (LFPA):³⁰
 - Through LFPA, the Alaska Department of Natural Resources Division of Agriculture will purchase and distribute locally grown, produced, and processed food from underserved producers.
 - Funds will support growth of regional farming through pilot programs with Qik'rtaq Food

Hub, which includes six geographically isolated villages and Steven's Village tribal buffalo ranch, to provide distribution to small villages and Tribes in their areas. ALFPP partners local farmers, village and tribal farms and ranches with local distribution to those in their communities that do not geographically or financially have access to local fresh foods.

- The LFPA program is authorized by the American Rescue Plan to maintain and improve food and agricultural supply chain resiliency, and was put in place in July, 2022.³¹ It could serve as a model for providing local food to communities in response to fisheries shortfalls and disasters.
- The Food Distribution Program on Indian Reservations (FDPIR) 638 Self-Determination Demonstration Project:
 - Established under the 2018 Farm Bill, this project gives tribal communities that operate the Food Distribution Program on Indian Reservations (FDPIR) greater control over food choices and allows direct purchase of more Traditional, Tribally grown, local and regionally produced foods to replace USDA commodities in food boxes. One recent example was replacing catfish with Alaska halibut.
 - The FDPIR program is an alternative to the Supplemental Nutrition Assistance Program (SNAP) operated by the State of Alaska, otherwise known as the food stamp program.
- USDA's Food and Nutrition Service (FNS) awarded \$3.5 million to eight tribal nations for the pilot project, including the Alaska Native Tribal Health Consortium (ANTHC).
- Project implementation began in October 2021 with some contracts expected to last up to three years. Tribes proposed to purchase a variety of products including meats, fish, grains and fresh produce.³²
- Prohibited Species Donation Program:
 - The Prohibited Species Donation Program is the result of a collaboration between NOAA Fisheries and the North Pacific Fishery Management Council. The program, established in 1996, allows for salmon and halibut caught as bycatch by the groundfish trawl fishery off Alaska to distribute salmon and halibut to economically disadvantaged individuals. The nonprofit organization SeaShare³³ distributes the fish through Feeding America, the nation's largest network of food banks. SeaShare relies on voluntary partnerships and financial support from the seafood industry participants, and coordinates the processing, transportation, certification, and distribution of the donated fish. Cold storage providers, freight companies, packaging companies, and financial supporters all volunteer in this shared effort. The U.S. Coast Guard contributes by flying pallets of fish to remote Alaska locations like Kotzebue and Nome. The program fills a critical nutritional need for protein. The program distributed more than 6 million pounds of salmon and halibut bycatch between its inception in 1996 and 2000.³⁴
 - The program is not targeted specifically at assisting communities and households impacted by fishery shortfalls and disasters, but bycatch recovery programs have been identified by the Task Force as a resource.



Image: U.S. Coast Guard delivers donated seafood to Nome, courtesy of Jim Harmon/SeaShare, 2018

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Preparing for Disaster: Food Caches

Directive Addressed:



Assess the need for disaster food caches within the State; and how the caches can be developed utilizing Alaskan-sourced foods.



Recommended Action

The following policy and infrastructure recommendations were made by members of the Task Force, and built off work already being done in Alaska to address disaster response concerns. Note that all of the Task Force recommendations are included, however, not all members agreed on all of the recommendations. The sub-bullets below offer additional context provided by one or more Task Force member(s).

Policy Considerations

- Provide additional funding to Cooperative Extension Services.
- Create State capacity to offset food storage energy costs.
- Support small Alaskan growers by promoting local production through advertising and incentives that tie local production to an increase of food security and a decrease in the need for food caches. Most of Alaska's producers are considered small-scale by USDA standards (under 10 acres of production)
- Through the utilization of state land, create no cost, 10-acre plots and root cellars for rural community use that include animal and pet feed in planning efforts
- Prioritize local processing when possible in all state and federal contracts—create local food purchasing agreements with farmers, food hubs, and food distributors

Image: Port of Alaska construction, courtesy of Port of Anchorage, 2017

- Position the State of Alaska to be the biggest buyer of Alaska Grown and harvested products, helping to bolster surplus and storage of local foods to assist in disaster relief efforts
- Continue to engage FEMA in planning efforts
 - Examine the delta between immediate response and FEMA intervention. There is roughly a two to three day supply right now, with what's in the state.
- Create public education campaigns on the need for household preparedness to ensure families have seven days of food supply on hand
 - Encourage household security from three to five days to 14 days
 - Provide additional tools to address the cost barriers to preparation
 - Create an engaging disaster goods store cookbook
- Fully define and operationalize disaster terms: Eustress, Distress, Disaster, and Crisis
- Prioritize cooperation with Tribes and local governments which could lead to a reduction of costs to the state by contracting with local communities or Tribes
- Follow the recommendations of the Director of the Alaska Department of Military and Veterans Affairs Division of Homeland Security and Emergency Management Director and local jurisdiction input for implementing the appropriate response for food caches and food security preparedness



Image: Old Alaskan Cache, JLS Photography—Alaska

Infrastructure Needs

- Build and appropriate enough funding for a long-term distributed network of climate-controlled storage
 - Low-energy, low-cost storage should be a priority
 - Employ and mainstream Traditional Ecological Knowledge (TEK) to address food storage technologies appropriate to various Alaskan regions
 - For example, there are food preservation techniques to help foods store better, like saltless forms of processing and storage and dried product that may need rehydration
- Climate-controlled food cache structures for both disaster and commercial uses. These may be built into airports and schools.
- Champion transportation investments to restore air, port, and ferry transportation infrastructure that are as important as having a financially sustainable amount of shelf-stable disaster supplies located in Alaska
- Create a distributed network of community-accessible root cellars
- Invest in Alaska-based processing for:
 - Alaska Grown produce, livestock, and poultry
 - Alaska seafood, shellfish, and kelp
 - Imported produce/commodities



Image: Meyers Farm Root Cellar in Bethel, Alaska, *Modern Farmer*

Introduction

Alaska is vulnerable to a myriad of natural disasters, including wildfires, floods, severe winter storms, earthquakes, landslides, tsunamis, hazardous material spills, power outages, volcano eruptions, and crop and wild food failures. Coupled with these vulnerabilities, Alaska is a vast state, with more than 80% of its communities located off the road system. This geographic distribution can make emergency disaster response difficult. Through the work of the Alaska Division of Homeland Security and Emergency Management's (DHS&EM) Disaster Assistance Section, Federal Emergency Management Agency (FEMA), and numerous other partners and agencies, there have been various initiatives to plan for emergency response, with food and water provisioning being a primary focus. FEMA's Public Assistance Program provides "supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies."¹

The Task Force has made several recommendations on how to further assess the need for disaster food caches

throughout the State that could utilize Alaskan-sourced foods. Core to these recommendations is a need to support local food producers and priority for local food products. This preference could lead to greater food production, with surpluses being used for stocking food caches. Additionally, the Task Force made several infrastructure development recommendations, ranging from improving transportation to community-accessible storage and processing facilities. Without improvements in the State's infrastructure, processing, transporting, and storing local food will be very difficult.

Recommendations include a public outreach campaign to educate Alaskans about disaster preparedness, utilizing state-owned land for no-cost community growing plots, and closer collaboration with both the private and non-profit sectors to address disaster response planning. There were a number of research needs identified as well. A full-state assessment of need and risk should continue to be prioritized, as well as a regional food chain assessment to identify necessary improvements and investments. The Task Force highlighted the differences in needs and capacities between rural and urban areas, and the duty to involve communities in planning activities.

Alaskans are resilient, independent, and self-sufficient in many ways. This can only go so far with a disaster that strikes unexpectedly. Alaskans need seven days of food for every household member, pet, and livestock. State resources to promote education and capital for building these distributed, household-level reserves would be critical to achieving adequate response and preparation for emergency feeding.

Current Landscape

Over the last decade, there has been much work around Alaska's emergency response planning. In 2011, having made disaster readiness a priority of his administration, Governor Sean Parnell proposed \$4.9 million for emergency food supplies to be stashed across the state.² The proposal had an initial goal of feeding 40,000 Alaskans for up to a week, via two storage sites—near Fairbanks and Anchorage, where military bases are located—and a food supply with a five-year shelf life in place by the end of 2012. However, in January 2013, the

Alaska Department of Military and Veterans Affairs canceled its solicitation for proposals after receiving an inadequate response. In late-2013/early-2014, through a request for proposal titled, *Purchase of Emergency Food Products for the State of Alaska*, the State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management sought “competitive proposals to contract with a qualified supplier for the purchase of emergency food products for the State of Alaska.”³

In 2013, Gov. Sean Parnell issued Administrative Order 265, which “establish[ed] the Alaska Food Resource Working Group (AFRWG) to recommend policies and measures to increase the purchase and consumption of local wild seafood and farm products.”⁴ The objectives of the order were to “improve the health of state residents, increase food security, strengthen local economies, and encourage community development.” State agencies that administered programs affecting food production, wild harvest, and foods collaborated with the Alaska Food Policy Council (AFPC), an independent organization that was founded to provide recommendations for improving access to healthy, affordable, and culturally appropriate foods for all residents of the state.

The Emergency Preparedness Work Group developed out of this collaboration, with the goal of developing tools to help communities across the state of Alaska to prepare for emergency and disaster events. With the help of the Cooperative Extension Service, Alaska Community Emergency Food Cache System (ACEFCS) proposal was created, with the purpose “to increase the ability Alaskan communities to feed themselves in the case that typical food supply routes and schedules are disrupted for a period of time ranging from days to weeks.”⁵ The plan called for extensive public and private sector collaboration, with a focus on wild foods and locally grown foods. (Note: See appendix “Alaska Community Emergency Food Cache System” for the full 2013 plan.)

✦ Action: Build Infrastructure that Supports Local Food Production

In the Alaska Department of Health and Human Services / Alaska Food Policy Council 2014 report, “*Building Food Security in Alaska*,” researchers Ken Meter and Megan Phillips Goldenberg made several recommendations to improve the state’s food security. Included in these recommendations is to “Build Infrastructure that Supports Local Food Production,” and is outlined here:⁶

- Food caches should be created across the state, providing safe and secure spaces to store healthy food during winter months and for emergency preparedness year-round. These should emphasize traditional storage techniques that use little fossil fuel energy, and storage of Alaska-grown root crops should be a priority.
- Food production “nodes:” Local level washing, packing, storage, and distribution facilities, should be funded through a competitive grant program open to any community-based food production initiative.

Measures of success:

- Number of food caches developed, diversity, and quantity of food stored.
- Funds allocated by the State of Alaska to invest in local-foods infrastructure at the community level.

DIVISION OF HOMELAND SECURITY

In Alaska, the Division of Homeland Security and Emergency Management “provides critical services to the State of Alaska to protect lives and property from terrorism and all other hazards, as well as to provide rapid recovery from all disasters,” and are responsible for disaster planning and response, including interagency coordination.⁷ The mission of the State of Alaska Division of Homeland Security and Emergency Management’s (DHS&EM) Disaster Assistance Section “is to coordinate state and federal actions with local jurisdictions to assist affected communities in responding to, recovering from, and



mitigating against major disasters or emergencies declared by the Governor of Alaska or the President of the United States.” Through the division’s Public Assistance (public infrastructure) and Individual Assistance (private property/shelter) programs and activities, the Disaster Assistance Section works to provide supplemental assistance to affected areas and help them recover from a disaster as quickly as possible. A.S. 26.23.040(e)⁸ outlines “Homeland security duties of the Alaska Division of Homeland Security and Emergency Management.” Duties included in this statute are:

The Alaska division of homeland security and emergency management shall:

1. determine the requirements of the state and its political subdivisions for food, clothing, and other necessities in the event of a disaster emergency;
2. procure and pre-position supplies, medicines, materials, and equipment;
3. adopt standards and requirements for local and interjurisdictional disaster plans;
4. periodically review local and interjurisdictional disaster plans;
5. establish and operate, or assist political subdivisions, their disaster agencies, and representatives of interjurisdictional disaster planning and service areas to establish and operate, training programs;
6. plan and make arrangements for the availability and use of any private facilities, services, and property and, if necessary and if in fact used, provide for payment for use under terms and conditions agreed upon by the parties;
7. establish a register of persons with types of training and skills important in disaster prevention, preparedness, response, and recovery;
8. prepare, for issuance by the governor, orders, proclamations, and regulations as necessary or appropriate in coping with disasters;
9. cooperate with the federal government and any public or private agency or entity in achieving any purpose of this chapter and in implementing programs for disaster prevention, preparedness, response, and recovery;
10. develop and carry out procedures and policies to effectively employ disaster relief funds made available by the governor’s authority or by special legislative action; these procedures shall include application and documentation by disaster victims or applicants, review, verification and funding approval, and processing of appeals;

Recommendations from the Director of the Alaska Department of Military and Veterans Affairs Division of Homeland Security and Emergency Management Director, and Task Force member:

In addition to the recommendations below, Bryan Fisher, Director of the Alaska Department of Military and Veterans Affairs DHS&EM, and Task Force member, has provided the following assessment of potential disaster feeding needs and potential proposals for food caches statewide:⁹

“Our worst-case scenario plan, and therefore our greatest conceived disaster feeding need, is known as the Alaska Response Plan, part of FEMA’s planning efforts. Within that plan, the models estimate that we will have a need to provide feeding and hydration support to 137,000 people sheltering in their homes (in addition to 72,000 people in congregate shelters). In the worst event we have planned for (a 1964-like earthquake occurring over today’s built infrastructure and population), we are looking at approximately 209,000 survivors needing food.

In general, based on my experience over the last 30 years, and with today's just-in-time supply chain delivery model, we can expect most communities would have food stores on hand, including perishables, for a minimum of seven days (more for non-perishable commodities). Our catastrophic plans include a robust, whole-of-government response, so for purposes of this task force, I would suggest potentially stockpiling food supplies for those requiring delivery of food to their homes (137,000 people) for three days, extending our food availability for around 10 days, is a good starting point.

✦ **Action: Stockpile food supplies for those requiring delivery of food to their homes (137,000 people) for three days, extending our food availability for around 10 days.**

Within 10 days, we will have critical supplies being transported by air into the state, and continual food shipments occurring via the ALCAN and any surviving port infrastructure. In essence, that would be 1,233,000 meals worth of food. We have also looked at caches large enough to feed the entire population, for three days and seven days. This feels impractical, as I cannot envision a scenario that would require the government to feed the entire population from a disaster event.

In terms of costs, our Department looked at 3 scenarios, listed below. These are rough order of magnitude costs, and are currently unbudgeted.

Proposal 1: Total amount: \$10.6M

- Follows the Alaska Response Plan
- Number of people: 137,000
- 3-day supply (3 per day per person)
- Includes purchasing the MREs, shipping to storage location, and storage
- Storage would be in Anchorage, Fairbanks, and Juneau.

Proposal 2: Total amount: \$54.4M

- Number of people: 739,361 (population of AK)
- 3-day supply (3 per day per person)
- Includes purchasing the MREs, shipping to storage location and storage
- Storage would be in all the hubs: Utqiavik, Kotzebue, Nome, Galena, Fairbanks, Anchorage, Bethel, Dutch Harbor, Kodiak, Juneau, Valdez, Kenai, Klawock, Ketchikan, and Sitka.
- Storage costs everywhere but Anchorage, Fairbanks, and Juneau are rough estimates at this point. I'm unsure of our ability to have large temperature-controlled storage of the size we need in some locations.

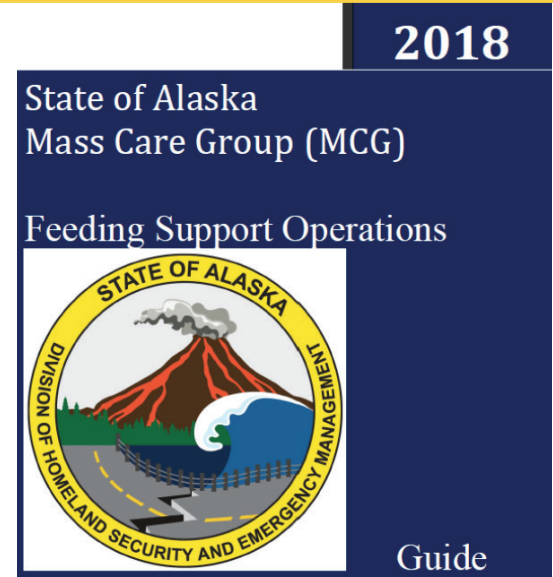
Proposal 3: Total amount: \$126.9M

- Number of people: 739,361 (population of AK)
- 7-day supply (3 per day per person)
- Includes purchasing the MREs, shipping to storage location and storage
- Storage would be in all the hubs: Utqiavik, Kotzebue, Nome, Galena, Fairbanks, Anchorage, Bethel, Dutch Harbor, Kodiak, Juneau, Valdez, Kenai, Klawock, Ketchikan, and Sitka.
- Storage costs everywhere but Anchorage, Fairbanks, and Juneau are rough estimates at this point. I'm also not sure about our ability to have large temperature-controlled storage in some locations."

✦ **Action: Coordinate state-level mass care services with, and supporting, local community disaster operations using recommendations from the Mass Care Group.**

In 2018, the State of Alaska Mass Care Group: Feeding Support Operations Guide (FSOG) was released.¹⁰ It was created by the Mass Care Group, operating under the Mass Care Operations Guide (MCOG), which coordinates disaster Mass Care in the State of Alaska. The MCG is led by the Mass Care Group Supervisor (MCGS) and operates within the Operations Section in the State Emergency Operations Center (SEOC) or a State/Federal Joint Field Office (JFO) if one established.

“State-level disaster feeding operations are overseen by the MCG using the MCOG, supplemented by this Feeding Support Operations Guide (FSOG). This FSOG captures disaster feeding best practices, policies, and procedures for all-hazards, State-level, multi-agency disaster feeding support in Alaska. When a disaster Feeding Task Force (FTF) is established under the MCG, this guide supports that Task Force’s operations. This FSOG, as one of the functional operations guides under the MCOG, supports execution of the State of Alaska Emergency Operations Plan (EOP).”



“The overall goal of this FSOG is to coordinate support for disaster feeding across the state among all levels of government and all involved agencies and organizations. Disaster feeding operations supported under this guide include survivor mass feeding and hydration. This guide assumes that disaster-feeding operations at the local, state, and federal level combine the efforts of government agencies and non-governmental organizations and require a multi-agency approach. This guide assumes all agencies and organizations involved in feeding support in Alaska will operate in accordance with their internal policies, regulations and requirements in a cooperative effort to provide effective disaster feeding services to Alaska’s disaster survivors.

As specified in Alaska’s EOP, disaster operations, including feeding, are conducted by local communities. When local capability is exceeded, state-level disaster operations work to support the local community’s efforts. When State capabilities are exceeded, the State may request support from the Federal government. This FSOG is designed to be implemented during either a state or federally declared disaster.”

Disasters involving evacuations, displaced persons and pets, and destruction of property and infrastructure may require mass care services for survivors. The disaster may be the result of a natural or manmade hazard, but disaster mass care starts at the local level. Local communities, incident commands, Emergency Operations Centers (EOCs), and organizations conduct and coordinate mass care activities, employing available local resources and mutual aid agreements. When the need for disaster mass care services exceeds local community capabilities, the State executes state-level mass care operations. This guide assumes state-level mass care services will be coordinated with, and supporting, local community disaster operations.

This MCOG is intended to apply during all State of Alaska disaster response and recovery operations including field operations, and those in conjunction with a Federal disaster declaration and Joint Field Office (JFO) with the Federal Emergency Management Agency (FEMA).

—2018 State of Alaska Mass Care Group (MCG) Operations Guide.



Image: FEMA Region 10 logo

Since January 2011, FEMA Region 10 has partnered with the State of Alaska for a variety of disaster planning activities, including Risk Mapping, Assessment, and Planning, (Risk MAP) projects, “with the goal of accurately and comprehensively depicting natural hazard risks throughout Alaska.”¹¹ Risk MAP “is a process, a continuing, collaborative partnership to help federal, state, tribal, and local community officials, business owners, private citizens and stakeholders make sound floodplain management decisions and take action to reduce risk from floods and other hazards. Communities can use the information and resources obtained through the Risk MAP process to update plans, reduce risk, and increase local resilience to disasters.”¹²

✦ **Action: Communities can use the information and resources obtained through the Risk MAP process to update plans, reduce risk, and increase local resilience to disasters.**

Through an ongoing collaborative process, including local, state, and federal entities, a document released in March 2021, FEMA Region 10 Alaska Response Plan Base Plan¹³ outlines estimates potential impacts of disasters and provides operational planning responses at various levels, including food and shelter provisions. Below are select excerpts:

Food, Water, Shelter (Facts)

- Immediate warming and feeding operations will be required to save lives in the extreme cold weather (ECW) environment.

Food, Water, Shelter (Planning Assumptions)

- Immediate warming and feeding operations will be required to save lives in the ECW environment.
- Mass care needs will increase each day, as people leave their homes due to lack of heat, food, and/or water.
- Some local facilities will suffer less damage and will be available for use as shelters, warming centers, and feeding locations.
- Family reunification will be an immediate and significant concern; many families will be separated at the time of the event due to commuter travel and school being in session.
- Some individuals with access and functional needs may be able to maintain their independence when support services are available to them, such as interpretive services, durable medical equipment (DME), and medications.
- The initial shelter population will increase over time as utility service outages drive survivors to shelter sites, regardless of whether their homes were damaged; lack of heat will be life-threatening.

Recommended Action

The following research and model program recommendations were made by members of the Task Force, and built off work already being done in Alaska to address disaster feeding concerns. Note that all of the Task Force recommendations are included, however, not all members agreed on all of the recommendations.

Suggested Further Research

- Determine applicability of federal grants and consider creation and maintenance of a federal grant clearing house.
- Complete a regional food chain assessment of needs throughout Alaska
 - As a state, we don't know fully what is needed
 - Considerations to explore:
 - Modes of transportation, preservation, types of storage (mobile/brick-and-mortar)
 - Identify what is required to assess the need
 - Example: examine the 2017 USDA Agricultural Census; take the amount of food produced and divide on per person's needs to establish a baseline
- Access the differences/overlaps in needs between rural and urban communities, considering their existing infrastructure and capacities
 - Examine opportunities for greater rural food security and transportation options— for example, empty planes between rural communities present an opportunity
- Review state and city regulations that disallow certain food security activities
 - Example: A city yard could support goats that could feed infants/toddlers if there's no milk in a community or donations of personal harvest fish and game could be donated to community organizations.

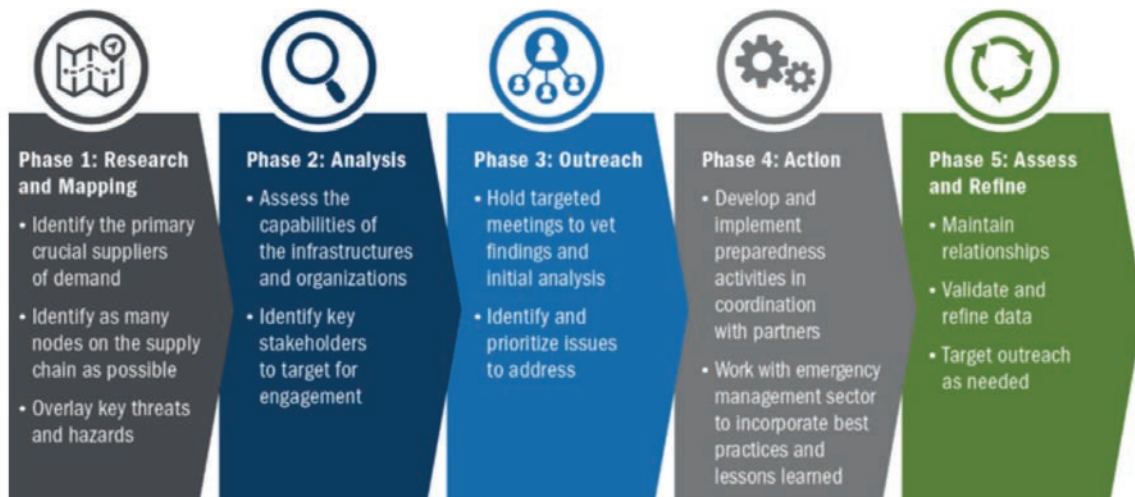


Image: *Supply Chain Resilience Phases, US Dept. of Homeland Security, 2019*

Related Programs for Review

- Local Food Purchasing Programs
 - Consider state funding to replicate the USDA's Local Food Purchase Assistance Cooperative Agreement Program, to "maintain and improve food and agricultural supply chain resiliency"¹⁴
- A public education campaign to promote individual/household preparedness
- Create a Northern Farming Guide—the Meyer's farm root cellar in Bethel has never frozen in over 10 years of use; this model could work for other rural communities as well as numerous examples from other northern nations
- Create partnerships with food hub/food distributors
 - A core value proposition for local and regional food hubs is relationships with community-based organizations and relationships across the supply chain and the community. These organizations are able to activate last mile partners quickly.¹⁵

- Reconnecting Tribal members to the land
 - Work with tribal groups to develop curriculum and programs on processing
- Relaunch the Cooperative Extension Service's Alaska Community Emergency Food Cache System (ACEFCS) project
- Determine if programs that are successful in other remote areas could be replicated in Alaska
 - Example: Hawaii has partnered with the Hawaii Foodservice Alliance to launch the first-ever disaster "precovery pod" to hold a stockpile of food in case of emergencies¹⁶
 - This model was drafted in 2013 and works by using local food producers and distributors to rotate out food on a schedule to ensure that it is always available, essentially increasing the current food stock on a rotation
 - By doing this, more food will be on hand during an emergency, and professionals trained for distribution can give out what of the stock is needed



Image: *WK Kellogg Foundation, 2019*

Agencies and entities that are/should be involved in Alaska food disaster preparedness:

- All agencies
- Airlines
- Alaska Community Emergency Food Cache System
- Alaska Department of Fish and Game
- Alaska Federation of Natives
- Alaska Food Policy Council
- Alaska Municipal League
- Alaska Native Healthcare Nonprofits
- Alaska Sea Grant
- American Red Cross
- Congressional Delegation
- Cooperative Extensive Service
- Dept of Public Safety
- Dept. of Commerce, Community, and Economic Development
- Dept. of Environmental Conservation
- Dept. of Family and Community Services
- Dept. of Health
- Dept. of Military and Veteran's Affairs
- Dept. of Natural Resources
- Dept. of Public Safety
- Dept. of Transportation and Public Facilities
- Federal Emergency Management Agency
- Foodbanks/pantries
- Governor's Office & Legislature
- Homeland Security and Emergency Response
- Military Branches
- Producers—wholesalers/processors
- Regional Alaska Native Corporations
- Salvation Army
- Shipping companies



Image: 7.0 Magnitude Earthquake, Marc Lester/ADN, December 2018



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¹⁴ USDA. (n.d.). *Local Food Purchase Assistance Cooperative Agreement Program*. Agriculture Marketing Service. Retrieved September 2022 from <https://www.ams.usda.gov/selling-food-to-usda/lfpacap>

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¹⁶ Kamanā, L. (2022, January 29). *Hawaii Foodservice Alliance, LLC launches first-ever precovery-pod*. KITV. https://www.kitv.com/news/local/hawaii-foodservice-alliance-llc-launches-first-ever-precovery-pod/article_49d2c326-814e-11ec-ab83-9bdfc40a9346.html



Alaska Food System Research Needs

Directive Addressed:

- ✦ Identify research needed to support and encourage increased consumption and production of Alaskan foods sourced within the State.



Image: University of Alaska Fairbanks - Fairbanks Experiment Farm, courtesy of Todd Paris

Recommended Action

This section aggregates recommendations from all other sections as well as extended research suggestions. It is recommended that a holistic and inclusive approach to research is employed, with meaningful commitment to Tribal engagement protocol and stakeholder communications. It is further recommended that communities and other stakeholders be engaged in every step of the process: planning, execution, data management, and post-research evaluation.

- Systematic review and analysis of producer needs, with producer-centric approach and inclusion.
- Determine funding potential and use of Federal funds, considering the land grant status of entire University of Alaska system.
- Research accuracy of "95% of food is imported"
 - Create a publicly accessible food security dashboard to track local food production, imports, and consumption levels. Measuring impact is essential to show efforts are improving food security in the State.

- Explore Prescription Produce programs, in partnership with healthcare providers
- Economic impact of food insecurity, both long-term and immediate crisis-driven
- Determine the amount of federal match dollars to be earned with State-led food security initiatives as well as the economic loss of not pursuing those dollars
- Comparative analysis of other state budgets, concerning the reallocation of agricultural programs to more specific budget lines to better insulate agricultural program investments from administration changes
 - Example: Plant Materials Center current budget approval flow
- Develop a University of Alaska integrated workforce team to leverage grant funding and increase research training within the state
 - Example: The UA system is comprised of faculty at all UA institutions doing work and teaching across the food systems spectrum (production, biology, marketing, consumption patterns, policy development, engineering, etc.), yet opportunities for collaboration and integration have not been maximized
- Increase public awareness of upcoming and existing funding opportunities to assist with startup food production, scaling agricultural projects, acquiring land, and completing business and feasibility plans
 - Connect Alaskans with Inflation Reduction Act funding to assist in paying for energy and sustainability improvements to their food-related businesses

Introduction

The hundreds of pages in this report contain many references and calls for broader and deeper research. Alaska is no stranger to research and innovation, and the budding entrepreneurial, changing Arctic, and space exploration efforts overlap well with food system improvement needs. The infrastructure and intellectual capital needed to make strides in food security, especially in the face of accelerating climate change, will benefit all industries, including new ones being developed in an effort to diversify the economy alongside the powerhouse revenue drivers of fisheries, tourism, and oil and gas.

Alaska is poised to become a leader in circumpolar innovation, cooperative, climate change mitigation and adaptation, especially at the intersection of food, energy, and water. As space exploration, Arctic development, and climate resilient food research becomes more mainstream, the State has the opportunity to become a leader in the circumpolar north in year-round food production, with a goal of zero hunger or product surplus.

In early 2022, the World Economic Forum cited "... a \$15.2 billion funding gap for (global) food system innovation that could support ending hunger, keeping emissions within 2°C and reducing water use by 10%."¹ Add that to the fact that Alaskans spend \$2 billion on out of state food purchases each year signals an urgent message for funding research, with the potential for positive economic outcomes in the State—all while creating a more food secure community.²

Directive-Specific Research Needs

DIRECTIVES ADDRESSED:

- ✦ Identify factors, including regulatory or statutory burdens that might discourage or prevent locally harvested and produced food from being purchased by federal, State, and local agencies, institutions, and schools.
- ✦ Provide recommendations that increase the procurement and use of Alaska-sourced foods within State and local agencies, institutions, and schools, including any administrative and statutory changes that are required.

- Determine specific production requirements to meet all school, hospital, and senior center annual needs. This study must include nutritional considerations beyond national baseline requirements as well as traditional foods.
- Understand the opportunity of available sourcing options, and logistics for rural and urban populations for prescription produce programs.

- Project food assistance, financial need and community impact for the state by 2035, taking into account expected increasingly low fisheries escapements and more regular climate events.
- Further analysis of controlled environment growing opportunities, using circumpolar case studies.
- Review aggregated policy scans - such as the New England State Local Food Procurement Policy Scan, for replicable policy actions.

DIRECTIVE ADDRESSED:

✦ **Identify barriers that farmers, stock growers, fishermen, mariculture professionals, and others engaged in the growing, harvesting, or raising of food face when starting a business or getting their products into the Alaska market. Provide recommendations on how the State can address those obstacles, including through administrative or statutory changes.**

- Conduct an analysis to understand the commercial and retail Alaska Grown demand for local products, with particular attention to commodities.
- Research in-state, out-of-state, international market size and purchasing power for Alaska Grown, or complete a targeted analysis of existing reports.
- Explore the marine barge cost reduction options for producers and purchasers.

DIRECTIVE ADDRESSED:

✦ **Assess the levels of wild game and fish harvests in Alaska. Suggest measures that would increase the abundance and harvest of wild game, fish, and food by Alaskans.**

- Invest in research that helps maximize resource yields and ensures adequate stock assessments across the state.
- Examine how the carrying capacity of Alaska lands is currently being measured and ensure the methods follow best practices in ecological and management sciences.
- Add to current research on ocean acidification, the effects on shellfish, and future production of shellfish.
- Research the potential impact of establishing Sockeye salmon hatcheries in Southeast Alaska to enhance food security.
- incorporate Traditional Knowledge of streams and habitat restoration models. Use Sockeye hatchery research in South Central as a potential model.

DIRECTIVE ADDRESSED:

✦ **Recommend a program to assist communities and households impacted by fishery shortfalls and disasters.**

- Inventory both existing programs and the need for new programs assisting communities impacted by fisheries disasters and sharing resources across the state.
- Conduct an audit of existing infrastructure and infrastructure needs. Identify opportunities to leverage transportation, processing, storage and other existing infrastructure. Identify ways to reduce costs, localize, and shorten the distance between harvest and distribution.
- Identify who is already doing last-mile distribution to help address some of the transportation barriers.
- Research opportunities to incentivize sharing of fish caught in both commercial and personal use fisheries via food banks and/or other donation programs.
- Conduct more research to identify the full monetary value of subsistence fisheries, and promote understanding of the cultural value of subsistence fisheries/harvests.
 - A recent study of cost to replace subsistence-caught Bristol Bay salmon is an example.⁸
- Research if hatcheries could help address shortfalls.

- State runs two hatcheries for sport fisheries.
- All others are private, nonprofit producing salmon to enhance commercial, sport, subsistence, and personal use fisheries.
- Research existing programs/approaches and new ways to support the harvest of more culturally acceptable alternative foods.
- Examine bycatch programs for opportunities for improvement in prevention and distribution of non-target species.
 - NOAA observers (observer program and electronic data collection systems) are sample based and not on every vessel, and not on board for the full season.
 - The observer program is under funded and fisheries specific, which could lead to underreporting.
 - Most of the bycatch is not distributed to rural communities that are losing subsistence runs. Examine and improve where the bycatch is distributed.
 - Bycatch is often multi-species and multi-age (meaning throwback age or appropriate harvest age), making aggregation and distribution complicated.
- Calculate the costs of population shifts caused by food insecurity in the state. Recognize that a lack of food in rural areas causes an influx of people into urban centers where food programs are already maxed out. Policies should account for the long term actual costs of food assistance to subsistence communities and individual harvesters versus the cost of management that supports subsistence.
- Determine required storage needs at transportation and community hubs and how to distribute products from hubs to communities to eliminate waste.

DIRECTIVE ADDRESSED:

★ Assess the need for disaster food caches within the State; and how the caches can be developed utilizing Alaskan-sourced foods.

- Determine applicability of federal grants and consider creation and maintenance of a federal grant clearing house.
- Complete a regional food chain assessment of needs throughout Alaska
 - As a state, we don't know fully what is needed
 - Considerations to explore:
 - Modes of transportation, preservation, types of storage (mobile/brick-and-mortar)
 - Identify what is required to assess the need
 - Example: examine the 2017 USDA Agricultural Census; take the amount of food produced and divide on per person's needs to establish a baseline
- Access the differences/overlaps in needs between rural and urban communities, considering their existing infrastructure and capacities
- Examine opportunities for greater rural food security and transportation options— for example, empty planes between rural communities present an opportunity
- Review state and city regulations that disallow certain food security activities
- Example: A city yard could support goats that could feed infants/toddlers if there's no milk in a community or donations of personal harvest fish and game could be donated to community organizations

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² Meter, K., & Goldenberg, M. P. (2014). *Building food security in Alaska*. Minneapolis, MN: Crossroads Resource Center. https://static1.squarespace.com/static/584221c6725e25d0d2a19363/t/58b0e030ebbd1abb37f85817/1487986738928/14-09-17_building-food-security-in-ak_exec-summary-recommendations.pdf

³ Act of July 2, 1862 (Morrill Act) [Public Law 37-108]. National Archives. <https://www.archives.gov/milestone-documents/morrill-act>

⁴ The U.S. Land-Grant University System: Overview and Role in Agricultural Research. Congressional Research Service. Updated August 9, 2022. <https://sgp.fas.org/crs/misc/R45897.pdf>

⁵ USDA. (n.d.). land-grant Colleges and Universities. National Institute of Food and Agriculture. Retrieved September 2022 from <https://www.nifa.usda.gov/about-nifa/how-we-work/partnerships/land-grant-colleges-universities>

⁶ University Land Deficit. (n.d.). University of Alaska. Office of Government Relations. Retrieved September 2022 from <https://www.alaska.edu/govrelations/State/land.php>

⁷ Email correspondence September 2022. Jodie Anderson, Interim Associate Director Institute of Agriculture, Natural Resources, and Extension University of Alaska Fairbanks Matanuska Experiment Farm and Extension Center.

⁸ Thompson, T. (2021, April 27). *New report: Value of Bristol Bay subsistence salmon would cost Alaska families \$5 to \$10 million to replace*. KDLG: <https://alaskapublic.org/2021/04/27/new-report-attempts-to-quantify-bristol-bays-subsistence-salmon-with-a-look-at-protein-replacement/>