FINAL REPORT ON

THE ALASKA TRADITIONAL DIET SURVEY

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Alaska Native Health Board

Alaska Native Epidemiology Center

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Executive Summary

There is growing concern among Alaska Natives about the potential contaminant content of their diets, but the data available to evaluate the possible risks are fragmented. A number of studies of contaminants in various subsistence food species have been conducted but many of the people who consume these foods find that the studies do not answer the question of most fundamental concern to them: ***Is our subsistence food safe to eat, in the amounts we eat and in the ways we eat it?*** The long-term goal of our research is to help people evaluate the health benefits and potential risks of consuming subsistence foods and to enable people to make informed food choices. The objective of the Alaska Traditional Diet Survey was to address the first piece of evidence we need: to quantify the intake of subsistence foods among residents of villages in rural Alaska.

This report documents the importance of subsistence foods in the diets of rural Alaskans. It does not address an equally important aspect of the traditional subsistence lifestyle. For Alaska Natives, harvesting and eating subsistence foods are essential to personal, social, and cultural identity. We have shown that rural Alaskans consume large quantities of subsistence foods and are therefore at potential risk of exposure to contaminants that may be in those foods. The data to assess exposure are inadequate because many traditional subsistence foods have not been tested. The foods that most people consume in large amounts are the highest priority for testing, but we must not overlook the foods consumed in smaller amounts that also contribute, in combination, to potential exposure.

We present the following four general goals:

- As many species as possible should be tested, using appropriate sampling methods to fully represent each species in many locations throughout the state.
- All the tissues of fish and animals that are consumed should be tested.
- Foods should be tested both raw and as consumed.
- Plants, both from the sea and from the land, have often been overlooked in testing programs. Many plants foods are consumed, and some are consumed in large amounts. Many plants are also food sources for animals. Therefore, testing plants is a high priority.

Testing of subsistence foods is being conducted in a number of places, by a number of organizations, and for a wide variety of contaminants. We hope these organizations will coordinate their efforts to minimize duplication of testing activities and produce the greatest amount of information with the limited funds available. The above goals will be achieved only through strong partnerships and open lines of communication among many organizations, government agencies, health corporations, and tribal entities.

Final Report on the Alaska Traditional Diet Survey

I. Introduction

Subsistence foods are the fish, shellfish, marine mammals, terrestrial mammals, and plants that made up the Alaska Native diet before the arrival of Europeans in Alaska. These foods are still the core of the diet in many rural Alaskan villages. Residents of rural villages derive a large proportion of their diets, and many derive a large proportion of their income, from harvesting subsistence foods.

There is growing concern among Alaska Natives about the potential contaminant content of their diets but the data available to evaluate the possible risks are fragmented. A number of studies of contaminants in various subsistence food species have been conducted (http://www.amap.no/), but many of the people who consume these foods find that the studies do not answer the question of most fundamental concern to them: ***Is our subsistence food safe to eat, in the amounts we eat and in the ways we eat it?***

Investigators continue to monitor contaminant levels in food species but the other essential piece of the equation has not often been addressed: the potential human exposure level as measured by the amount and pattern of consumption of subsistence foods (1). We know from previous dietary surveys of Alaska Natives, and from anecdotal information, that people in rural villages eat very large amounts of subsistence foods throughout the year (2,3). Nevertheless, the consumption of subsistence foods has not been quantified in large, representative samples of rural Alaskans.

The long-term goal of our research is to help people evaluate the health benefits and potential risks of consuming subsistence foods and to empower people to make informed food choices. To do this, we need four pieces of information:

1. The intake of subsistence foods,
2. The contaminant content of subsistence foods,
3. The potential health effects of contaminants that may be present, and
4. The potential health effects of changing diets from subsistence to store foods.

The objective of the Alaska Traditional Diet Survey was to address the first piece of evidence we need: to quantify the intake of subsistence foods among residents of villages in rural Alaska.

II. Methods

The Alaska Traditional Diet Project (ATDP) was approved by the Alaska Area Institutional Review Board (IRB), the National Indian Health Service (IHS) IRB, and by village council resolutions in the 13 participating villages. In addition, the study was approved by the Human Subjects Protection Committees or Ethical Review Committees of the five Tribal Health Corporations to which the 13 villages belong.

The first step in the project was to establish an Oversight Committee open to all interested individuals and organizations in Alaska. During the two years of the study, 60 individuals participated in the Oversight Committee, representing a wide variety of tribal, state, federal, corporate, and not-for-profit organizations. A list of participants is included in the Acknowledgements.

The Oversight Committee provided: 1) operational advice, such as the appropriate ways to seek applications from villages and to compensate participants; and 2) technical input, such as fine-tuning the dietary survey instrument based on their knowledge of subsistence food intakes. The Oversight Committee convened face-to-face or by conference call at least monthly throughout the study and operated on a fully consensus basis.

Alaska is a large state, one-fifth the size of the continental US, and encompasses many diverse ecological and cultural regions. The ATDP solicited participation from all Alaska Native villages throughout the state, with the goal of having a broad representation of subsistence lifestyles (Appendix 1). We received 13 applications from

villages from five regional Tribal Health Corporations and were able to fund all applications (Figure 1).

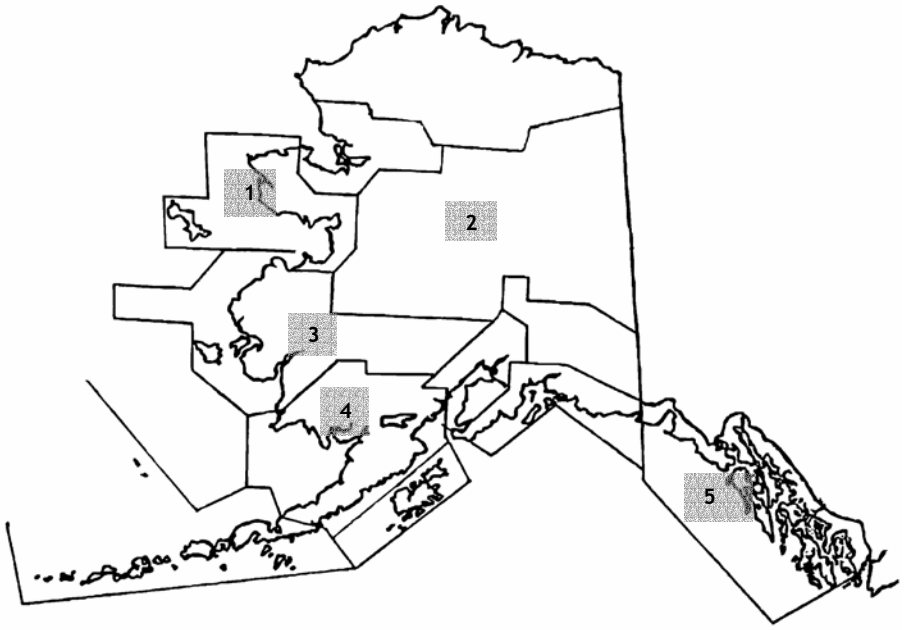

Figure 1. Participating villages were located in the following Regional Health Corporations: (1) Norton Sound Health Corporation, (2) Tanana Chiefs Conference, (3) Yukon-Kuskokwim Health Corporation, (4) Bristol Bay Area Health Corporation, and (5) SouthEast Alaska Regional Health Consortium.

The original plan was to have a few professional dietitians conduct interviews in all the participating villages but the Oversight Committee recommended training residents from each village to conduct the interviews. We therefore asked each village to designate two interviewers and one local study coordinator. In a few smaller villages, there was only one interviewer and in some villages the study coordinator was also an interviewer. The awards to villages covered supplies to conduct the study, wages for the interviewers and local coordinators, and travel expenses for sending the

interviewers to two days of training in Anchorage. The villages were permitted to include a budget item for compensating participants in the survey. Most villages opted to use the funds for a prize drawing, potluck, or other group-oriented activity for participants rather than providing cash compensation to individuals.

The goal of the ATDP was to measure the usual intake of a wide variety of foods, both subsistence and purchased, over the period of one year. We used an interviewer-administered Food Frequency Questionnaire (FFQ) (Appendix 3), which asked how often a person consumed each item on a list of foods and beverages, and the usual portion size of each item consumed. The draft FFQ was developed by Nobmann and Hamrick, based on their extensive experience in dietary assessment in Alaska, with additional input from Alaska Department of Fish and Game, Subsistence Division harvest data and their Community Profile Database (http://www.state.ak.us/adfg/wildlife/geninfo/hunting/harvest02.pdf , http://www.state.ak.us/local/akpages/FISH.GAME/subsist/geninfo/publctns/cpdb.htm) and the Alaska Native Science Commission's ongoing compilation of Native environmental knowledge and concerns (www.nativeknowledge.org). The validity of a FFQ depends on having an appropriate list of foods to ask people about. Every effort was made to create comprehensive lists of both subsistence and store foods for our questionnaire.

The draft FFQ was reviewed by the Oversight Committee, which made a number of recommendations about additional foods, preservation methods, and preparation methods that should be included in the questionnaire. Because the FFQ was long, we split it into a core module with 157 foods widely consumed throughout Alaska plus three

shorter regional modules with subsistence foods of more local availability to reduce the response burden. The FFQ interview generally lasted about an hour and 15 minutes; some lasted three hours or more. Participants sometimes asked to stop the interview and continue later; this was permitted.

We had the consent forms and FFQ translated into Iñupiaq and Central Yup'ik by native speakers because some residents in two of the regions, particularly elders, do not speak English as a first language. The consent form translations were back-translated into English by other native speakers to ensure that meaning was preserved. Some of the interviewers were bilingual; those who were not used bilingual assistants to help them interview participants who preferred to speak Iñupiaq or Central Yup'ik. Participating villages in the Southeast indicated that they did not need translations because the majority of their residents speak English.

Interviewers from each participating village came to Anchorage to be trained in FFQ administration. The interviewers were trained to administer the questionnaire in a standardized way, using a variety of three-dimensional food models, dishes, cups, bowls, and serving utensils to help the participants estimate their portion sizes. The interviewers also had a "Wild Food Resources" pictorial list of fish and game species (Appendix 4) and a copy of "Wild Edible and Poisonous Plants of Alaska" from the Cooperative Extension Service of the University of Alaska Fairbanks (May 1993; Appendix 5). These documents were used to assist in the identification of plant, fish, and animal food species.

FFQ and other retrospective dietary assessment techniques depend on the accuracy of participants' self-reports. The underlying question of our FFQ is: "How

often, on average, over the past 12 months, did you usually eat Food X?" Not only must the participant recall eating habits over a period of 12 months, he or she must also provide a "usual" amount eaten and a "usual" frequency of eating each food. This is easier for people with extremely regular dietary habits, or extremely monotonous diets, than for people who eat varied or highly seasonal diets. Another issue is the accuracy of portion size estimates. People who are not accustomed to measuring foods often have difficulty with portion sizes. Appropriate food models are helpful to aid participants in estimating portion sizes.

We limited recruitment to participants age 13 years and older because of the methodologic difficulties in obtaining valid FFQ responses from children or by proxy for infants and toddlers (4,5). Our study was conducted in the summer of 2002. Because there were no intercensal population estimates for 2002 by village broken down by sex and age stratum, we used the 2000 Census data (http://146.63.75.50/research/cgin/cenmaps/statemap.htm) to estimate the sex and age distribution of residents age 13 years and older in each participating village. In villages with fewer than 150 residents, we asked the interviewers to recruit as many eligible participants as possible. In larger villages, we asked the interviewers to recruit 80 men and women by age strata in approximate proportion to their presence in the census population. These were presented as guidelines rather than quotas and no one who was interested in participating was turned away.

Participants were not chosen through a random procedure or through a systematic sampling plan. They were a convenience sample of eligible teens and adults who were willing to participate in the interview. Participants were not

independent. Some were relatives living in the same households. In addition, it is common for people to share food with relatives in other households or with elders in the village. However, given the small size of the villages and the relationships among the residents, the samples were probably representative of their villages.

The interview forms were created in Cardiff TELE*form* Elite Version 6.1 (Cardiff Software, Inc., Vista, CA), which creates a paper form that can be filled out by hand and later scanned by the software. Interviewers used the paper forms to record responses and returned the completed forms to the Project Coordinator at the Alaska Native Epidemiology Center, who reviewed each questionnaire for completeness and consistency. The Project Coordinator had regular phone consultations with all interviewers and resolved any ambiguities in the forms. After this preliminary quality assurance step, the forms were scanned to create an input database of foods and beverages consumed. The scanning process was followed by human verification. Any ambiguous responses were flagged for review. Routine quality control also included manual duplicate entry of 10% of the scanned forms in batches of 100. There was less than a 1% error rate for the scanned forms.

The Cardiff software creates a computer data file compatible with data management and analysis packages such as SPSS (Version 11.5.0, SPSS, Inc. Chicago, IL). IDM Consulting developed an SPSS program linking the FFQ responses to the NDS Nutrient Data System nutrient content database (Nutrient Data System for Research, NDS Version 4.04_32, Nutrition Coordinating Center, Minneapolis, MN) to estimate nutrient intakes from the FFQ.

The Alaska subsistence diet includes many foods that are not found in standard nutrient content databases. Over the years, some subsistence foods have been analyzed. For subsistence foods with no nutrient content data available, we used substitutions (Appendix 6). In many cases, this meant using nutrient content data on a generic category (e.g., whale, seal) as a substitute for a particular species (e.g., beluga or bowhead whale, bearded or harbor seal). In other cases, the most similar available species was used (e.g., raccoon was substituted for porcupine; deer for moose, caribou, or elk). Animal marrow was consistently absent from the NDS database; the most appropriate available substitution was the fat of the same species. In all cases, the substitutions were made with the intention of matching the physiology and the trophic level of the originally reported species as closely as possible. In total, there were 157 substitutions in a total database of 283 items (55%) for all of the 13 study villages throughout Alaska. The substitutions were used only for the purpose of generating estimated nutrient intakes: the nutrient content of substitute foods was assigned to the originally reported foods. The originally reported foods were used to assess the relative importance of foods in the diet.

The substitutions probably introduced relatively little error in the estimation of nutrient intake. For example, the data available for “seal” in the database are probably appropriate for all individual species of seals eaten by the participants; the data for “whale” are probably appropriate for all species of whales eaten; and the data for deer muscle and organs are probably appropriate for moose, caribou, and elk. Similarly, substituting nutrient data from walrus kidney for seal kidney probably introduces relatively little error. Ideally, we would like to have nutrient content data derived from

direct analysis of each of the foods included in our questionnaire. The large number of substitutions -- involving relatively few kinds of animals and plants that are eaten in large quantities, such as moose, caribou, seal, whale, and traditional plant foods -- clearly emphasizes the need for more research on nutrient content of Alaska subsistence foods.

III. Analysis

The analysis data sets included:

- Gram weight of each food and beverage consumed by each participant,
- Nutrient content per gram of each food and beverage, and
- Nutrient intake of each participant from each food and beverage and total nutrient intake.

Data were analyzed in several ways to achieve various goals. We combined the responses of all participants in each region to rank foods by total amount consumed and to estimate the contribution of particular foods to nutrient intakes. We treated participants as individuals to estimate the proportion of people in each region who ate each food, the median and maximum total consumption of each food per person, and the nutrient intake per person to calculate the percent of people with low, appropriate, or high intakes of selected nutrients.

IV. Participants

There were 665 participants between the ages of 13 and 88 years from 13 villages in five regional health corporations in Alaska: two from the Norton Sound Health Corporation (NSHC) region, four from the Yukon-Kuskokwim Health Corporation (YKHC) region, four from the Bristol Bay Area Health Corporation (BBAHC) region, one from the Tanana Chiefs Conference (TCC) region, and two from the SouthEast Alaska Regional Health Consortium (SEARHC) region. There were 253 men and 401 women, and 11 people missing data on sex. There were 53 other people chosen for interviews who could not be contacted or who declined to be interviewed. The project therefore had a 93% participation rate. Most of the people who declined said they were not interested or were too busy (n = 37). Five other individuals did not give a specific reason for declining. Others who were selected to be interviewed could not be contacted (n = 10) or were not old enough (n = 1). Participation was not restricted by race or ethnicity. The populations of the 13 villages ranged from 67% to 97% Alaska Native and only 30 (5%) of the 665 participants were not Alaska Native.

The study had a good representation of elders age 55-64 years and 64+ years in all regions (Table 1). NSHC, BBAHC, and TCC had fewer teenagers in the sample than in the village and regional census populations, and correspondingly more adults age 35-54 years in NSHC and BBAHC, and more adults age 20-34 years in TCC. The age distributions in YKHC and SEARHC were similar to their local and regional census distributions.

Table 1. Age distributions of participants relative to 2000 Census populations in the participating villages and regions.

Age Stratum, years	Number in in sample	Distribution in sample	2000 Census Distribution	
			Participating Villages	Region
Norton Sound Health Corporation[1]				
13-19	17	11%	23%	19%
20-34	29	19%	32%	27%
35-54	75	50%	37%	30%
55-64	11	7%	3%	8%
65+	18	12%	6%	8%
Yukon-Kuskokwim Health Corporation[2]				
13-19	50	23%	20%	15%
20-34	79	37%	31%	32%
35-54	69	32%	34%	39%
55-64	10	5%	7%	9%
65+	5	3%	8%	5%
Bristol Bay Area Health Corporation				
13-19	13	10%	20%	18%
20-34	27	20%	24%	22%
35-54	63	48%	40%	43%
55-64	11	8%	8%	9%
65+	18	14%	9%	8%
Tanana Chiefs Conference				
13-19	2	6%	26%	19%
20-34	11	33%	18%	21%
35-54	11	33%	37%	41%
55-64	1	3%	15%	10%
65+	8	25%	4%	9%
SouthEast Alaska Regional Health Consortium				
13-19	19	15%	14%	13%
20-34	37	30%	23%	23%
35-54	46	37%	46%	45%
55-64	15	12%	11%	11%
65+	8	6%	6%	9%

[1] Age was missing for one participant
[2] Age was missing for 11 participants

V. Results

A. Food Consumption Patterns

In terms of total amounts of food consumed, sugared beverages such as Hi-C™, Tang™, and soda pop were in the top four items in all regions (Table 2). Eight species of fish were in the top 50 in the NSHC and YKHC regions, seven species of fish in the BBAHC region, two species of fish in the TCC region, and five species of fish plus shrimp in the SEARHC region, indicating the importance of fish and seafood in the participants' diets. Moose and/or caribou were in the top 50 for all regions except SEARHC, where deer made the list. Crowberries (*Empetrum nigrum*; eaten in NSHC, YKHC, and BBAHC), lowbush salmonberries (*Rubus chamaemorus*, eaten in NSHC and YKHC), and blueberries (*Vaccinium uliginosum*, eaten in YKHC, BBAHC, TCC, and SEARHC) were also important items in the diet.

Many foods were consumed by most of the participants (Table 3). White rice was a staple in nearly all regions, as were white bread and pilot bread. Between 86% and 96% of participants reported eating store vegetables by region, and a substantial number reported eating a wide variety of store fruits. Between 94% and 97% of participants in all regions reported eating chicken or turkey, and 90% or more reported eating beef in all regions except TCC. Although many people reported eating cheese and ice cream in all regions, milk was reported by between 71% and 77% of the respondents in only three regions.

Two thirds of more or the participants consumed several species of fish in all regions and many participants in SEARHC also consumed shellfish. Eighty-six percent

or more consumed moose and/or caribou in all regions except SEARHC, where 91% of participants consumed deer. Eighty-seven percent or more of the participants also consumed two kinds of wild berries in each region, although the species varied from region to region, and most participants in SEARHC also consumed two kinds of seaweed (*Porphyria laciniata* and *Salicornia pacifica*). Seventy-nine percent or more of participants also consumed geese in all regions except SEARHC.

Tables 2 and 3 show that nearly all participants consumed substantial amounts of store foods. On the positive side, fruits and vegetables appear on both lists. On the negative side, sugared soda pop, Hi-C™, and Tang™ were consumed in large amounts by many participants. This represents a large consumption of sugared beverages that potentially contribute to excess calories and increased risk of tooth decay. Sugared beverages generally offer little nutritional benefit although some are fortified with vitamin C and a few other nutrients.

The tables also show that subsistence fish and seafood, moose, caribou and deer, and subsistence plants were important elements of the diet in all the regions studied.

Table 2a. Top 50 foods reported by 151 participants in the Norton Sound Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are total consumption summed across all participants.

1. Soda pop, sugared (9,348 gal, ~74,782 lb)
2. Hi-C™, Tang™ (6,848 gal, ~54,784 lb)
3. Fruit juice (4, 804 gal, ~38,430 lb)
4. Soup (36,274 lb)
5. Milk (2,434 gal, ~20,202 lb)
6. **Tundra Tea (2,316 gal, ~19,221 lb)**[3]
7. Store vegetables (9,115lb)
8. Spaghetti (8,642lb)
9. White rice (6,974lb)
10. Apples (6,614 lb)
11. Applesauce (5,889 lb)
12. Peaches, apricots (5,799 lb)
13. Chicken eggs (5,716 lb)
14. **Caribou, muscle & organs (5,419 lb)**
15. **Herring (4,525 lb)**
16. **Red salmon (4,162 lb)**
17. **Whitefish (4,125 lb)**[4]
18. **Silver salmon (3,875 lb)**
19. Hamburger (3,363 lb)
20. Pilot bread (3,350 lb)[5]
21. White bread (3,291 lb)
22. Pizza (3,246 lb)
23. **Pink salmon (3,206 lb)**
24. Beef steak, roast (3,149 lb)
25. Canned meats (2,854 lb)
26. **Chum salmon (2,729 lb)**
27. Oranges (2,652 lb)
28. Potatoes (2,566 lb)
29. Pancakes (2,413 lb)
30. Syrup (2,404 lb)
31. **Seal oil, unspecified species (2,306 lb)**
32. Butter (2,099 lb)
33. Chicken, turkey (2,084 lb)
34. Bananas (1,926 lb)
35. **Tomcod (1,742 lb)**
36. Sugar, honey (1,663 lb)
37. Ice Cream (1,487 lb)
38. **Moose, muscle & organs (1,471 lb)**
39. **Lowbush salmonberries**[6] **(1,460 lb)**
40. Peanut butter (1,412 lb)
41. Dark bread (1,405 lb)
42. **King salmon (1,384 lb)**
43. Chocolate (1,310 lb)
44. Cheese (1,254 lb)
45. Fry bread (1,201 lb)
46. Mayonnaise (1,195 lb)
47. Hot Pockets™ (1,163 lb)
48. **Crowberries (1,125 lb)**[7]
49. Crisco™ (1,405 lb)
50. Margarine (1,083 lb)

[3] Tea made from the leaves of *Ledum decumbens*

[4] *Coregonus spp*.

[5] Large, unleavened round crackers similar to saltines but denser; have long shelf life

[6] *Rubus chamaemorus*

[7] *Empetrum nigrum*

Table 2b. Top 50 foods reported by 224 participants in the Yukon-Kuskokwim Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are total consumption summed across all participants.

1. Hi-C™, Tang™ (17,338 gal, ~144,177 lb)
2. Soda pop, sugared (16,116 gal, ~ 134,013 lb)
3. Fruit juice (8,578 gal, ~ 71,336 lb)
4. Milk (3,751 gal, ~ 31,192 lb)
5. **King salmon (15,722 lb)**
6. White rice (15,715 lb)
7. Store vegetables (14,821 lb)
8. Spaghetti (12,776 lb)
9. Applesauce (11,341 lb)
10. **Moose muscle and organs (8,903 lb)**
11. Peaches, apricots (8,529 lb)
12. **Chum salmon (8,296 lb)**
13. Chicken eggs (8,399 lb)
14. **Caribou muscle and organs (7,157 lb)**
15. **Whitefish (6,338 lb)**[8]
16. **Silver salmon (5,968 lb)**
17. White bread (5,911 lb)
18. Oranges (5,422 lb)
19. Pizza (5,340 lb)
20. Pilot bread (5,046 lb)[9]
21. Apples (4,791 lb)
22. **Crowberries (4,695 lb)**[10]
23. Potatoes (4,577 lb)
24. Bananas (4,368 lb)
25. Hamburger (4,202 lb)
26. **Lowbush salmonberries (3,960 lb)**[11]
27. **Moose fat and marrow (3,943 lb)**
28. Cheese (3,754 lb)
29. Beef steak, roast (3,500 lb)
30. Chocolate (3,467 lb)
31. **Pike (3,015 lb)**
32. Ice cream (2,920 lb)
33. Sugar, honey (2,807 lb)
34. Chicken, turkey (2,741 lb)
35. **Seal oil (2,448 lb)**
36. Canned meats (2,307 lb)
37. **Herring (2,192 lb)**
38. Butter (2,066 lb)
39. Jelly, jam (2,001 lb)
40. **Tomcod (1,994 lb)**
41. **Caribou fat and marrow (1,959 lb)**
42. Hot Pockets™ (1,912 lb)
43. Crisco™ (1,836 lb)
44. Margarine (1,818 lb)
45. **Blackfish (1,803 lb)**[12]
46. **Blueberries (1,797 lb)**[13]
47. Peanut butter (1,692 lb)
48. Burritos (1,583 lb)
49. **Geese, unspecified (1,534 lb)**
50. Hot dogs (1,504 lb)

[8] *Coregonus spp*.
[9] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[10] *Empetrum nigrum*
[11] *Rubus chamaemorus*
[12] *Dallia pectoralis*
[13] *Vaccinium uliginosum*

Table 2c. Top 50 foods reported by 132 participants in the Bristol Bay Area Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are total consumption summed across all participants.

1. Fruit juice (67,680 lb, ~8,460 gal)
2. Hi-C™, Tang™ (45,359 lb, ~5,670 gal)
3. Soda pop, sugared (33,928 lb, ~4,421 gal)
4. Milk (31,381 lb, ~3,781 gal)
5. Store vegetables (30,449 lb)
6. White rice (17,705 lb)
7. Spaghetti (12,388 lb)
8. Applesauce (9,722 lb)
9. **Caribou, muscle and organs (7,038 lb)**
10. **Red salmon (6,354 lb)**
11. Peaches, apricots (5,634 lb)
12. **King salmon (5,076 lb)**
13. Chicken eggs (4,808 lb)
14. Sugar, honey (4,006 lb)
15. Apples (3,941 lb)
16. Hamburger (3,578 lb)
17. **Silver salmon (3,486 lb)**
18. Potatoes (3,382 lb)
19. Oranges (3,308 lb)
20. Bananas (3,265 lb)
21. Pizza (3,213 lb)
22. White bread (2,984 lb)
23. Chicken, turkey (2,908 lb)
24. Cheese (2,758 lb)
25. Chocolate (2,695 lb)
26. Ice cream (2,561 lb)
27. Soup (2,549 lb)
28. Beef steak, roast (2,473 lb)
29. **Chum salmon (2,532 lb)**
30. Pilot bread (2,406 lbs.)[14]
31. **Pink salmon (2,261 lb)**
32. **Caribou, fat and marrow (1,792 lb)**
33. Jelly, jam (1,877 lb)
34. **Moose, muscle and organs (1,832 lb)**
35. **Caribou/reindeer fat and marrow (1,792 lb)**
36. Butter (1,785 lb)
37. Pancakes (1,727 lb)
38. Hot Pockets™ (1,572 lb)
39. Canned meats (1,504 lb)
40. **Crowberries (1,458 lb)**[15]
41. Lunch meats (1,443 lb)
42. Crisco™ (1,433 lb)
43. Dark bread (1,402 lb)
44. Vegetable oil (1,375 lb)
45. Mayonnaise (1,322 lb)
46. Margarine (1,311 lb)
47. Blueberries (1,261 lb)[16]
48. Hot dogs (1,200 lb)
49. **Pike (1,171 lb)**
50. **Whitefish (1,607 lb)**[17]

[14] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[15] *Empetrum nigrum*
[16] *Vaccinium uliginosum*
[17] *Coregonus spp*.

Table 2d. Top 50 foods reported by 33 participants in the Tanana Chiefs Conference region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are total consumption summed across all participants.

1. Hi-C™, Tang™ (1,005 gal, ~8,044 lb)
2. Soda pop, sugared (831 gal, ~6,649 lb)
3. Milk (655 gal, ~5,241 lb)
4. Fruit juice (578 gal, ~4,627 lb)
5. Store vegetables (3,358 lb)
6. Soup (2,900 lb)
7. Spaghetti (1,457 lb)
8. Applesauce (1,174 lb)
9. Bananas (1,159 lb)
10. **Moose, muscle and organs (1,145 lb)**
11. Peaches, (951 lb)
12. Apples (844 lb)
13. White rice (809 lb)
14. Potatoes (780 lb)
15. Oranges (743 lb)
16. **King salmon (583 lb)**
17. Pizza (579 lb)
18. Cheese (528 lb)
19. Chicken eggs (485 lb)
20. Pilot bread (370 lb)[18]
21. Dark bread (356 lb)
22. Chicken, turkey (330 lb)
23. White bread (326 lb)
24. **Moose, fat and marrow (380 lb)**
25. Ice cream (259 lb)
26. **Silver salmon (243 lb)**
27. Vegetable oil (199 lb)
28. Hot Pockets™ (193 lb)
29. Hamburger (179 lb)
30. Sugar, honey (167 lb)
31. Peanut butter (155 lb)
32. Lunch meats (150 lb)
33. Margarine (149 lb)
34. Butter (149 lb)
35. Beef steak, roast (149 lb)
36. Pancakes (147 lb)
37. Jelly, jam (140 lb)
38. Mayonnaise (134 lb)
39. Burritos (128 lb)
40. **Blueberries (117 lb)**[19]
41. Bacon, sausage (112 lb)
42. Canned meats (106 lb)
43. Hot dogs (103 lb)
44. Syrup (98 lb)
45. Chocolate (97 lb)
46. Cake, pastries (97 lb)
47. Crisco™ (83 lb)
48. Cookies (83 lb)
49. Cereal (58 lb)
50. **Cranberries (54 lb)**[20]

[18] Large, unleavened round crackers similar to saltines but denser; have long shelf life

[19] *Vaccinium uliginosum*

[20] *Vaccinium vitis-idaea*

Table 2e. Top 50 foods reported by 125 participants in the SouthEast Alaska Regional Health Consortium region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are total consumption summed across all participants.

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1. Milk (3,899 gal, ~ 33,544 lb)
2. Soda pop, sugared (3,814 gal, ~30,509 lb)
3. Fruit juice (3,417 gal, ~ 27,335 lb)
4. Hi-C™, Tang™ (3,168 gal, ~ 25,345 lb)
5. Soup (17,273 lb)
6. Store vegetables (14,435 lb)
7. White rice (7,358 lb)
8. Spaghetti (6,337 lb)
9. Hamburger (4,780 lb)
10. Applesauce (4,191 lb)
11. Chicken eggs (4,163 lb)
12. **Deer muscle and organs (3,861 lb)**
13. Peaches, apricots (3,825 lb)
14. Potatoes (3,606 lb)
15. Bananas (3,512 lb)
16. Beef steak, roast (3,355 lb)
17. Chicken, turkey (3,200 lb)
18. White bread (2,674 lb)
19. Sugar, honey (2,438 lb)
20. Apples (2,438 lb)
21. **Red salmon (2,310 lb)**
22. Oranges (2,307 lb)
23. Ice cream (2,072 lb)
24. Vegetable oil (2,069 lb)
25. **King salmon (1,914 lb)**
26. Pizza (1,568 lb)
27. Cheese (1,516 lb)
28. Lunch meats (1,513 lb)
29. Chocolate (1,305 lb)
30. Dark bread (1,269 lb)
31. Canned meats (1,229 lb)
32. **Silver salmon (1,206 lb)**
33. Pork, ham (1,094 lb)
34. Mayonnaise (1,090 lb)
35. Kidney beans (1,049 lb)
36. Bacon, sausage (1,044 lb)
37. Pilot bread (1,037 lb)[21]
38. **Halibut (1,607 lb)**
39. **Blueberries (934 lb)[22]**
40. Margarine (913 lb)
41. Jelly, jam (908 lb)
42. Hot dogs (826 lb)
43. Cake, pastries (780 lb)
44. Hot Pockets™ (770 lb)
45. Burritos (749 lb)
46. Butter (698 lb)
47. Peanut butter (599 lb)
48. **Shrimp (561 lb)**
49. Pancakes (556 lb)
50. **Highbush salmonberries (532 lb)[23]**

[21] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[22] *Vaccinium uliginosum*
[23] *Rubus spectabilis* Pursh.

Table 3a. Top 50 foods in order of percent of 151 participants reporting the food in the Norton Sound Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are percent of participants reporting the food.

1. White rice (98)
2. **Crowerries (97)**[24]
3. **Lowbush salmonberries (97)**[25]
4. Beef steak, roast (96)
5. Chicken, turkey (96)
6. Soup (95)
7. **King salmon (94)**
8. Chicken eggs (94)
9. **Blueberries (93)**[26]
10. **Geese, unspecified (93)**
11. White bread (90)
12. Bacon, sausage (89)
13. **Caribou muscle (89)**
14. Cheese (89)
15. Spaghetti (89)
16. **Moose muscle (88)**
17. **Silver salmon (88)**
18. Bananas (88)
19. Pancakes (87)
20. Butter (87)
21. Pilot bread (87)[27]
22. Ice cream (86)
23. Store vegetables (86)
24. Applesauce (86)
25. **Chum salmon (85)**
26. **Bearded seal (85)**
27. Oranges (85)
28. **Tomcod (85)**
29. Hamburger (85)
30. Hi-C™, Tang™ (85)
31. Syrup (85)
32. **Whitefish (84)**[28]
33. Mayonnaise (83)
34. Soda pop, sugared (83)
35. **Snowgeese (82)**
36. Apples (81)
37. **Seal oil (80)**
38. Cake, pastries (76)
39. Pork, ham (76)
40. Canned meats (75)
41. Peaches, apricots (74)
42. Crisco™ (73)
43. Hot dogs (73)
44. Salty snacks, chips (72)
45. Potatoes (72)
46. Cereal (71)
47. French fries (71)
48. **Pink salmon (69)**
49. **Seagull eggs (69)**
50. Jelly, jam (69)

[24] *Empetrum nigrum*
[25] *Rubus chamaemorus*
[26] *Vaccinium uliginosum*
[27] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[28] *Coregonus spp*.

Table 3b. Top 50 foods in order of percent of 224 participants reporting the food in the Yukon-Kuskokwim Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are percent of participants reporting the food.

1. White rice (98)
2. **King salmon (98)**
3. Soup (97)
4. **Moose muscle (97)**
5. **Geese, unspecified (96)**
6. Chicken, turkey (96)
7. Pilot bread (95)[29]
8. White bread (95)
9. Beef steak, roast (93)
10. Fry bread (92)
11. Soda pop, sugared (92)
12. Oranges (92)
13. **Lowbush salmonberries (90)**[30]
14. Bananas (90)
15. Cake, pastries (90)
16. Ice cream (90)
17. Hamburger (90)
18. Spaghetti (90)
19. Chicken eggs (89)
20. Cheese (88)
21. Store vegetables (88)
22. **Crowberries (87)**[31]
23. **Caribou muscle (87)**
24. Apples (87)
25. Hi-C™, Tang™ (87)
26. **Seal oil (86)**
27. Mayonnaise (85)
28. Chocolate (85)
29. **Chum salmon (84)**
30. Bacon, sausage (84)
31. Pancakes (84)
32. Syrup (84)
33. **Blueberries (82)**[32]
34. **Whitefish (82)**[33]
35. Applesauce (81)
36. Fruit juice (80)
37. Salty snacks, chips (80)
38. Butter (78)
39. Pizza (78)
40. Pork, ham (78)
41. Canned meats (77)
42. Cereal (77)
43. French fries (75)
44. Hot dogs (74)
45. Jelly, jam (74)
46. Crisco™ (73)
47. Peanut butter (72)
48. Milk (71)
49. Potatoes (71)
50. **Pike (70)**

[29] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[30] *Rubus chamaemorus*
[31] *Empetrum nigrum*
[32] *Vaccinium uliginosum*
[33] *Coregonus spp*.

Table 3c. Top 50 foods in order of percent of 132 participants reporting the food in the Bristol Bay Area Health Corporation region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are percent of participants consuming the food.

1. White rice (99)
2. **Crowberries (98)**[34]
3. **Blueberries (98)** [35]
4. Chicken, turkey (97)
5. Pilot bread (96)[36]
6. Soup (96)
7. White bread (95)
8. Store vegetables (95)
9. **King salmon (93)**
10. Fry bread (93)
11. Pancakes (93)
12. **Red salmon (93)**
13. Chicken eggs (92)
14. Potatoes (92)
15. Mayonnaise (92)
16. Spaghetti (92)
17. Applesauce (92)
18. Beef steak, roast (91)
19. Syrup (91)
20. Bacon, sausage (90)
21. Crisco™ (90)
22. Cake, pastries (89)
23. Oranges (89)
24. **Caribou (88)**
25. **Geese, unspecified (88)**
26. **Lowbush salmonberries (88)**[37]
27. Cheese (88)
28. Vegetable oil (88)
29. Apples (88)
30. Bananas (88)
31. **Moose muscle (86)**
32. Hamburger (86)
33. **Silver salmon (86)**
34. **Cranberries (86)**[38]
35. Hot dogs (85)
36. Ice cream (85)
37. Pork, ham (84)
38. Jelly, jam (84)
39. **Ptarmigan (83)**
40. Canned meats (83)
41. Sugar, honey (83)
42. Fruit juice (82)
43. Peanut butter (80)
44. Cookies (80)
45. Hi-C™, Tang™ (80)
46. Cereal (80)
47. Milk (77)
48. French fries (77)
49. **Halibut (77)**
50. **Seal oil (77)**

[34] *Empetrum nigrum*
[35] *Vaccinium uliginosum*
[36] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[37] *Rubus chamaemorus*
[38] *Vaccinium vitis-idaea*

Table 3d. Top 50 foods in order of percent of 33 participants reporting the food in the Tanana Chiefs Conference region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are percent of participants consuming the food.

---

1. **King salmon (97)**
2. Bananas (97)
3. Soup (97)
4. **Moose muscle (94)**
5. Store vegetables (94)
6. Cheese (94)
7. Chicken, turkey (94)
8. Vegetable oil (94)
9. Potatoes (94)
10. Cereal (91)
11. Chicken eggs (91)
12. Mayonnaise (91)
13. Spaghetti (91)
14. **Blueberries (88)**[39]
15. **Cranberries (88)**[40]
16. Pilot bread (88)[41]
17. Syrup (88)
18. Apples (85)
19. Bacon, sausage (85)
20. Oranges (85)
21. Pancakes (82)
22. White rice (82)
23. **Geese, unspecified (79)**
24. **Silver salmon (79)**
25. Milk (79)
26. Pork, ham (79)
27. Ice cream (76)
28. Peaches, apricots (76)
29. Applesauce (73)
30. Cookies (73)
31. Pizza (73)
32. **Sheefish (70)**[42]
33. Cake, pastries (70)
34. Dark bread (70)
35. Hot dogs (70)
36. Peanut butter (70)
37. French fries (67)
38. Jelly, jam (67)
39. Fruit juice (67)
40. **Whitefish (64)**[43]
41. **Moose fat and marrow (64)**
42. **Raspberries (64)**[44]
43. Salty snacks, chips (64)
44. Butter (64)
45. Chocolate (64)
46. Sugar, honey (64)
47. Beef steak, roast (61)
48. White bread (61)
49. Hi-C™, Tang™ (61)
50. **Beaver (61)**

[39] *Vaccinium uliginosum*
[40] *Vaccinium vitis-idaea*
[41] Large, unleavened round crackers similar to saltines but denser; have long shelf life
[42] *Stenodus leucichthys*
[43] *Coregonus spp*.
[44] *Rubus idaeus*

Table 3e. Top 50 foods in order of percent of 125 participants reporting the food in the SouthEast Alaska Regional Health Consortium region. Subsistence foods are indicated by **bold** type. Numbers in parentheses are percent of participants consuming the food.

1.	White rice (98)	**27.**	**Black seaweed (87)[48]**
2.	Chicken eggs (97)	28.	Cake, pastries (87)
3.	Chicken, turkey (97)	29.	Salty snacks, chips (87)
4.	**Halibut (96)**	**30.**	**Silver salmon (86)**
5.	Cheese (96)	31.	Bananas (86)
6.	Store vegetables (96)	32.	Oranges (86)
7.	Spaghetti (96)	**33.**	**Dungeness crab (86)**
8.	**King Salmon (95)**	34.	White bread (86%)
9.	Pork, ham (95)	**35.**	**High bush salmonberries (85)[49]**
10.	Potatoes (95)		
11.	**Blueberries (94)[45]**	36.	Applesauce (85)
12.	**Shrimp (94)**	**37.**	**Yellow-eyed snapper (84)**
13.	Bacon, sausage (94)	38.	Jelly, jam (84)
14.	Mayonnaise (94)	39.	Hot dogs (82)
15.	**Red salmon (94)**	40.	Peanut butter (82)
16.	Hamburger (93)	41.	Apples (82)
17.	Vegetable oil (93)	42.	Lunch meats (82)
18.	**Deer muscle (91)**	43.	Pancakes (81)
19.	Pizza (91)	44.	Peaches, apricots (81)
20.	Soup (91)	45.	Fruit juice (80)
21.	Beef steak, roast (90)	46.	Sugar, honey (79)
22.	French fries (90)	**47.**	**Sea asparagus (79)[50]**
23.	Fry bread (90)	48.	Syrup (78)
24.	Pilot bread (90)[46]	49.	Soda pop, sugared (78)
25.	**Huckleberries (89)[47]**	**50.**	**King crab (78)**
26.	Ice cream (88)		

[45] *Vaccinium uliginosum*

[46] Large, unleavened round crackers similar to saltines but denser; have long shelf life

[47] *Vaccinum parvifolium*

[48] *Porphyria laciniata*

[49] *Rubus spectabilis* Pursh.

[50] *Salicornia pacifica*

B. Consumption of Subsistence Foods

We then turned to a more detailed consideration of subsistence food consumption. First, we sorted subsistence foods in order of the proportion of participants who consumed them. The list presented in Table 4 includes only subsistence foods reported by at least half the participants in each region. The list clearly emphasizes the importance of wild berries and a wide variety of fish, especially salmon, in all regions. The number of marine mammal foods was notable in the NSHC region and the consumption of shellfish was notable in SEARHC region.

Next, we sorted subsistence foods by the median[51] amount reported by those who consumed the food (Table 5). To give a sense of the variation in intakes among the participants, the table also presents the largest amount reported by any participant. The smallest amount reported for each food was 0 pounds. To facilitate comparison between Tables 4 and 5, the list of foods for each region in Table 5 is limited to the same number of foods as listed in Table 4. Another way to prioritize foods might be to sort them by the total amount reported by all individuals in the sample (Table 6).

It is clear that some subsistence foods were eaten by most people in large amounts, some foods were eaten by most people in moderate or small amounts, and some were eaten by only a few people. Some people reported eating far more of some foods than other people, and some people reported eating large quantities of foods that many other people didn't eat at all. When setting priorities for foods to be tested, there are competing needs. The basic risk assessment formula is:

Potential exposure = (amount of food consumed) x (contaminant content of food)

[51] Median: Half the participants consume more than the median and half consume less.

From a village or regional perspective, it is most important to test foods that most people eat in large amounts. From an individual perspective, it is important for each person to know about the foods that he or she eats in large amounts. This question may or may not be answered by a village or regional assessment. Ideally, all subsistence foods should be tested, but testing is expensive and funds are limited. To make appropriate choices of foods to test, we need to determine which foods have the greatest impact on the most people – a combination of how many people eat them and how much they eat.

Table 4a: Subsistence foods in order of percent of 151 participants reporting each food in the Norton Sound Health Corporation region.

	Food	% Eating	Pounds per Year	
			Median	Maximum
1.	Crowberries[52]	97	2	110
2.	Lowbush salmonberries[53]	97	2	48
3.	King salmon, cooked	94	1	61
4.	Blueberries[54]	93	2	111
5.	Geese, species unspecified	93	1	70
6.	Caribou muscle, cooked	89	5	194
7.	Moose muscle, cooked	88	3	102
8.	Silver salmon, cooked	88	2	92
9.	Bearded seal, muscle	85	2	68
10.	Chum salmon, dried	85	7	223
11.	Silver salmon, dried	85	5	679
12.	Tomcod	85	2	276
13.	Whitefish, other than dried[55]	84	3	789
14.	Snowgeese	81	1	34
15.	Seal oil	80	7	288
16.	Pink salmon, dried	69	7	679
17.	Seagull eggs	69	1	34
18.	King salmon, dried	68	2	102
19.	Red salmon, dried	67	7	679
20.	Red salmon, cooked	66	2	245
21.	Pink salmon, cooked	63	3	113
22.	Beluga muktuk	61	2	204
23.	Caribou muscle, dried	60	5	543
24.	Chum salmon, cooked	58	2	81
25.	Caribou heart	58	1	57
26.	Caribou marrow	54	1	136
27.	Seal intestines	52	1	23
28.	Walrus flipper	52	1	73
29.	Ptarmigan	51	1	43
30.	Walrus blubber	51	2	116
31.	Sheefish[56]	51	<1	53

[52] *Empetrum nigrum*
[53] *Rubus chamaemorus*
[54] *Vaccinium uliginosum*
[55] *Coregonus spp*.
[56] *Stenodus leucichthys*

Table 4b: Subsistence foods in order of percent of 224 participants reporting each food in the Yukon-Kuskokwim Health Corporation region.

	Food	% Eating	Pounds per Year	
			Median	Maximum
1.	King salmon, dried	98	19	611
2.	Moose muscle, cooked	97	18	540
3.	King salmon, cooked	96	7	196
4.	Geese, species unspecified	96	2	211
5.	Lowbush salmonberries[57]	90	6	375
6.	Caribou/reindeer muscle, cooked	87	7	391
7.	Crowberries[58]	87	5	1,168
8.	Seal oil	86	3	336
9.	Chum salmon, dried	84	13	543
10.	Chum salmon, cooked	83	3	589
11.	Blueberries[59]	82	5	148
12.	Whitefish, other than dried[60]	82	4	210
13.	Pike, dried	69	6	278
14.	Ptarmigan	67	1	40
15.	Silver salmon, cooked	67	3	196
16.	Blackfish[61]	67	2	180
17.	Lush fish[62]	66	1	31
18.	Swans	65	<1	21
19.	Tundra tea[63]	63	13	2,374
20.	Moose marrow	62	3	172
21.	Silver salmon, dried	62	10	679
22.	Moose heart	56	1	36
23.	Moose fat	55	9	272
24.	Bearded seal muscle	53	2	268
25.	Cranberries[64]	53	1	310
26.	Snowgeese	53	1	46
27.	Beluga muktuk	52	2	272

[57] *Rubus chamaemorus*
[58] *Empetrum nigrum*
[59] *Vaccinium uliginosum*
[60] *Coregonus spp*.
[61] *Dallia pectoralis*
[62] *Lota lota*
[63] Tea made from leaves of *Ledum decumbens*
[64] *Vaccinium vitis-idaea*

Table 4c: Subsistence foods in order of percent of 132 participants reporting each food in the Bristol Bay Area Health Corporation region.

	Food	% Eating	Pounds per Year	
			Median	Maximum
1.	Crowberries[65]	98	7	73
2.	Blueberries[66]	98	5	83
3.	King salmon, dried	93	9	272
4.	Red salmon, cooked	93	7	1,472
5.	King salmon, cooked	92	5	196
6.	Red salmon, dried	92	10	272
7.	Caribou muscle, cooked	88	9	272
8.	Geese, unspecified	88	1	20
9.	Lowbush salmonberries[67]	88	5	74
10.	Moose muscle, cooked	86	5	136
11.	Silver salmon, cooked	86	4	196
12.	Cranberries[68]	86	1	31
13.	Caribou muscle, dried	84	11	435
14.	Ptarmigan	83	2	99
15.	Moose marrow	80	2	39
16.	Halibut, other than dried	77	1	183
17.	Seal oil	77	1	35
18.	Caribou marrow	77	3	272
19.	Seagull eggs	75	1	45
20.	Silver salmon, dried	72	8	272
21.	Moose heart	69	1	56
22.	Moose fat	69	2	80
23.	Caribou heart	68	1	272
24.	Chum salmon, cooked	67	4	196
25.	Whitefish, other[69]	66	3	150
26.	Pike, dried	66	3	389
27.	Trout, other	65	3	45
28.	Caribou fat	65	5	58
29.	Chum salmon, dried	64	7	272
30.	Smelt, other	64	4	28
31.	Beaver	64	2	87
32.	Clams	63	<1	1
33.	Smelt, dried	61	7	100
34.	Whitefish, dried	61	3	243
35.	Caribou liver	61	2	272
36.	Moose liver	60	2	56

[65] *Empetrum nigrum*
[66] *Vaccinium uliginosum*
[67] *Rubus chamaemorus*
[68] *Vaccinium vitis-idaea*
[69] *Coregonus spp*.

37.	Mallards	57	1	15
38.	Pink salmon, cooked	54	7	272
39.	Huckleberries[70]	53	2	42
40.	Porcupine	52	2	87

[70] *Vaccinium parvifolium*

Table 4d: Subsistence foods in order of percent of 33 participants reporting each food in the Tanana Chiefs Conference region.

	Food	% Eating	Pounds per Year	
			Median	Maximum
1.	King salmon, cooked	97	7	49
2.	King salmon, dried	97	8	68
3.	Moose muscle, cooked	94	29	97
4.	Blueberries[71]	88	2	12
5.	Cranberries[72]	88	1	8
6.	Geese, species unspecified	79	<1	1
7.	Silver salmon, cooked	79	3	19
8.	Sheefish[73]	70	<1	8
9.	Moose heart	67	<1	5
10.	Moose liver	67	<1	1
11.	Moose marrow	64	1	29
12.	Raspberries[74]	64	<1	8
13.	Silver salmon, dried	64	8	59
14.	Whitefish[75]	64	1	10
15.	Beaver	61	<1	6

[71] *Vaccinium uliginosum*
[72] *Vaccinium vitis-idaea*
[73] *Stenodus leucichthys*
[74] *Rubus idaeus*
[75] *Coregonus spp.*

Table 4e: Subsistence foods in order of percent of 125 participants reporting each food in the SouthEast Alaska Health Corporation region.

	Food	% Eating	Pounds per Year	
			Median	Maximum
1.	Halibut, other than dried	96	6	52
2.	King salmon, cooked	95	3	74
3.	Blueberries[76]	94	2	79
4.	Shrimp	94	2	44
5.	Red salmon, dried	94	9	194
6.	Red salmon, cooked	93	14	140
7.	Deer muscle, cooked	91	9	113
8.	Huckleberries[77]	89	1	79
9.	Black seaweed[78]	87	<1	1
10.	Silver salmon, cooked	86	3	295
11.	Dungeness crab	86	<1	7
12.	Highbush salmonberries[79]	85	2	79
13.	King salmon, dried	85	6	272
14.	Yellow eyed red snapper	84	1	51
15.	Sea asparagus[80]	79	2	62
16.	King crab	78	<1	2
17.	Silver salmon, dried	76	4	125
18.	Clams	74	<1	2
19.	Halibut, dried	73	2	136
20.	Deer liver	66	2	87
21.	Black cod	54	1	17
22.	Cod, other	54	1	17
23.	Ling cod	54	1	30

[76] *Vaccinium uliginosum*
[77] *Vaccinium parvifolium*
[78] *Porphyria laciniata*
[79] *Rubus spectabilis* Pursh.
[80] *Salicornia pacifica*

Table 5a. Median[81] amounts of subsistence foods eaten by 151 participants in the Norton Sound Health Corporation region.

	Food	Pounds per Year		% Eating
		Median	Maximum	
1.	Fireweed jelly[82]	26	26	1
2.	Herring, dried	13	584	45
3.	Cod, other	11	158	4
4.	Cod, dried	9	158	4
5.	Chum salmon, dried	7	223	85
6.	Pink salmon, dried	7	679	69
7.	Seal oil	7	288	80
8.	Red salmon, dried	7	679	67
9.	Caribou muscle, dried	5	543	60
10.	Silver salmon, dried	5	679	85
11.	Caribou muscle, cooked	5	194	89
12.	Whitefish, dried[83]	5	1,019	43
13.	Harbor seal muscle	5	23	9
14.	Arctic Cisco	4	45	4
15.	Pink salmon, cooked	3	113	63
16.	Moose muscle, cooked	3	102	88
17.	Smelt, dried	3	33	6
18.	Highbush salmonberries[84]	3	5	1
19.	Whitefish, other than dried	3	789	84
20.	Smelt, other	3	421	42
21.	Lowbush salmonberries[85]	2	148	97
22.	Huckleberries[86]	2	2	1
23.	Crowberries[87]	2	110	97
24.	Red salmon, cooked	2	245	66
25.	Chum salmon, cooked	2	81	58
26.	Wild onions[88]	2	35	18
27.	Silver salmon, cooked	2	92	88
28.	Gray whale muscle	2	7	10
29.	Tomcod	2	276	85
30.	Chum salmon, raw or frozen	2	86	11
31.	Blueberries[89]	2	111	93
32.	King salmon, dried	2	102	68

[81] Median: Half the participants ate more than the median and half ate less than the median.
[82] Jelly made from the flowers of *Epilobium angustifolium*
[83] *Coregonus spp*.
[84] *Rubus spectabilis* Pursh.
[85] *Rubus chamaemorus*
[86] *Vaccinium parvifolium*
[87] *Empetrum nigrum*
[88] *Allium spp*.
[89] *Vaccinium uliginosum*

Table 5b. Median amounts of subsistence foods eaten by 224 participants in the Yukon-Kuskokwim Health Corporation region.

	Food	Pounds per Year		% Eating
		Median	Maximum	
1.	Suckers[90]	187	187	< 1
2.	Red salmon, raw/frozen	157	157	< 1
3.	Elderberries[91]	127	127	< 1
4.	Snowy Owl	96	192	< 1
5.	Pink salmon, raw/frozen	67	67	< 1
6.	Fireweed jelly[92]	47	94	1
7.	Pacific sole	38	38	< 1
8.	Trout, dried	29	45	1
9.	King salmon, dried/smoked	19	611	98
10.	Moose muscle, cooked	18	540	97
11.	Murre eggs	15	28	1
12.	Chum salmon, dried/smoked	13	543	84
13.	Tundra tea[93]	13	2,374	63
14.	Silver salmon, raw/frozen	13	56	3
15.	Cod, dried	12	60	2
16.	Silver salmon, dried/smoked	10	679	62
17.	Red salmon, dried/smoked	10	136	27
18.	Puffin eggs	9	9	< 1
19.	Murres	9	9	< 1
20.	Deer muscle, dried	9	56	< 1
21.	Moose fat	9	272	55
22.	Arctic Cisco	8	114	7
23.	Caribou/reindeer muscle, dried	7	435	40
24.	Whitefish, dried[94]	7	2,853	37
25.	Caribou/reindeer muscle, cooked	7	391	87
26.	King salmon, cooked	7	196	96
27.	Pike, dried	6	278	69

[90] *Catostomus spp*.
[91] *Sambucus racemosa*
[92] Jelly made from the flowers of *Epilobium angustifolium*
[93] Tea made from the leaves of *Ledum decumbens*
[94] *Coregonus spp.*

Table 5c. Median amounts of subsistence foods eaten by 132 participants in the Bristol Bay Area Health Corporation region.

	Food	Pounds per Year		% Eating
		Median	Maximum	
1.	Needle fish[95]	34	34	1
2.	Caribou muscle, dried	11	435	84
3.	Red salmon, dried	10	272	92
4.	King salmon, dried	9	272	93
5.	Caribou muscle, cooked	9	272	88
6.	Silver salmon, dried	8	272	72
7.	Wild onions[96]	8	15	2
8.	Crowberries[97]	7	73	98
9.	Pink salmon, dried	7	272	47
10.	Smelt, dried	7	100	61
11.	Chum salmon, dried	7	272	64
12.	Pink salmon, cooked	7	272	54
13.	Red salmon, cooked	7	1,472	2
14.	Blueberries[98]	5	83	98
15.	Lowbush salmonberries[99]	5	74	88
16.	Elderberries[100]	5	196	92
17.	Moose muscle, cooked	5	136	86
18.	Caribou fat	5	58	65
19.	Ringed seal liver	5	6	2
20.	Smelt, other	4	28	64
21.	Ringed seal kidney	4	6	2
22.	Murre eggs	4	56	33
23.	Silver salmon, cooked	4	196	86
24.	Roots, not further specified	4	4	2
25.	Chum salmon, cooked	4	196	68
26.	Beluga muscle	4	39	21
27.	Cod, dried	3	15	9
28.	Caribou marrow	3	272	77
29.	Beluga muktuk	3	39	33
30.	Beluga liver	3	5	2
31.	Pike, dried	3	390	66
32.	Rose hips	3	4	5
33.	Whitefish, dried[101]	3	243	61
34.	Ringed seal muscle	3	6	2

[95] *Ammodytes hexapterus*
[96] *Allium spp*.
[97] *Empetrum nigrum*
[98] *Vaccinium uliginosum*
[99] *Rubus chamaemorus*
[100] *Sambucus racemosa*
[101] *Coregonus spp*.

35.	Trout, other	3	45	65
36.	Northern fur seal muscle	3	5	2
37.	Red salmon, raw or frozen	3	34	15

Table 5d. Median amounts of subsistence foods eaten by 33 participants in the Tanana Chiefs Conference region.

	Food	Pounds per Year		% Eating
		Median	Maximum	
1.	Moose muscle, cooked	29	97	94
2.	King salmon, raw/frozen	11	11	3
3.	Silver salmon, raw/frozen	9	9	3
4.	King salmon, dried	8	68	97
5.	Silver salmon, dried	8	58	64
6.	King salmon, cooked	7	49	97
7.	Moose fat	7	78	48
8.	Red salmon, cooked	6	10	6
9.	Chum salmon, dried	6	7	18
10.	Red salmon, dried	5	10	9
11.	Silver salmon, cooked	3	19	79
12.	Halibut, dried	3	3	3
13.	Blueberries[102]	2	12	88
14.	Spruce bark tea	2	3	6
15.	Caribou muscle, dried	1	2	30

[102] *Vaccinium uliginosum*

Table 5e: Median amounts of subsistence foods eaten by 125 participants in the SouthEast Alaska Regional Health Consortium region.

	Food	Pounds per Year		% Eating
		Median	Maximum	
1.	Red salmon, cooked	14	140	93
2.	Chum salmon, raw/frozen	10	19	2
3.	Red salmon, dried	9	194	94
4.	Deer muscle, cooked	9	113	91
5.	Lowbush salmonberries[103]	7	24	22
6.	King salmon, dried	6	272	85
7.	Halibut	6	52	96
8.	Deer muscle, dried	5	113	47
9.	Chum salmon, dried	5	58	22
10.	Silver salmon, dried	4	125	76
11.	Pink salmon, dried	4	67	20
12.	Harbor seal kidney	3	3	1
13.	King salmon, cooked	3	74	95
14.	Silver salmon, cooked	3	295	86
15.	Smelt, dried	3	23	6
16.	Red salmon, raw/frozen	3	112	16
17.	Rose hips	3	29	3
18.	Blueberries[104]	2	79	94
19.	Highbush salmonberries[105]	2	79	85
20.	Elk marrow	2	2	1
21.	Shrimp	2	44	94
22.	Moose fat	2	2	1
23.	Elderberries[106]	2	22	24

[103] *Rubus chamaemorus*
[104] *Vaccinium uliginosum*
[105] *Rubus spectabilis* Pursh.
[106] *Sambucus racemosa*

Table 6a. Total amount of subsistence foods reported by 151 participants in the Norton Sound Health Corporation region.

	Food	Total pounds Per year	% Eating
1.	Herring, dried	4,525	45
2.	Caribou/reindeer muscle, dried	3,027	60
3.	Red salmon, dried	2,887	67
4.	Silver salmon, dried	2,780	85
5.	Pink salmon, dried	2,357	69
6.	Seal oil	2,306	80
7.	Whitefish, dried[107]	2,223	43
8.	Caribou/reindeer muscle, cooked	1,979	89
9.	Chum salmon, dried	1,907	85
10.	Whitefish, other than dried	1,902	84
11.	Tomcod	1,742	1
12.	Lowbush salmonberries[108]	1,460	97
13.	Moose muscle, cooked	1,291	88
14.	Crowberries[109]	1,125	97
15.	Blueberries[110]	1,081	93
16.	Red salmon, cooked	1,031	66

[107] *Coregonus spp*.
[108] *Rubus chamaemorus*
[109] *Empetrum nigrum*
[110] *Vaccinium uliginosum*

Table 6b. Total amount of subsistence foods reported by 224 participants in the Yukon-Kuskokwim Health Corporation region.

	Food	Total pounds Per year	% Eating
1.	King salmon, dried	12,164	98
2.	Tundra tea[111]	10,449	63
3.	Moose muscle, cooked	6,990	97
4.	Chum salmon, dried	5,911	84
5.	Crowberries[112]	4,685	87
6.	Silver salmon, dried	4,374	62
7.	Whitefish, dried[113]	4,089	37
8.	Lowbush salmonberries[114]	3,952	90
9.	Caribou/reindeer muscle, cooked	3,449	87
10.	Pike, dried	3,008	69
11.	King salmon, cooked	2,984	96
12.	Moose fat	2,909	55
13.	Caribou/reindeer muscle, dried	2,546	40
14.	Seal oil	2,442	86
15.	Chum salmon, cooked	2,270	83
16.	Whitefish, other than dried	2,235	82
17.	Herring, dried	2,187	43
18.	Blackfish[115]	1,799	67
19.	Blueberries[116]	1,793	82
20.	Geese, species not specified	1,531	96
21.	Silver salmon, cooked	1,462	67
22.	Red salmon, dried	1,258	27
23.	Beluga muktuk	1,242	52
24.	Caribou/reindeer fat	1,198	43
25.	Smelt, dried	1,178	36
26.	Bearded seal muscle	1,131	53
27.	Moose marrow	1,035	62

[111] Tea made from leaves of *Ledum decumbens*
[112] *Empetrum nigrum*
[113] *Coregonus spp*.
[114] *Rubus chamaemorus*
[115] *Dallia pectoralis*
[116] *Vaccinium uliginosum*

Table 6c. Total amount of subsistence foods reported by 132 participants in the Bristol Bay Area Health Corporation region.

	Food	Total pounds Per year	% Eating
1.	King salmon, dried	3,343	93
2.	Red salmon, cooked	3,171	93
3.	Caribou muscle, dried	3,116	84
4.	Red salmon, dried	3,058	92
5.	Caribou muscle, cooked	2,332	88
6.	Silver salmon, dried	2,067	72
7.	King salmon, cooked	1,519	92
8.	Chum salmon, dried	1,487	64
9.	Crowberries[117]	1,458	98
10.	Silver salmon, cooked	1,322	86
11.	Blueberries[118]	1,261	98
12.	Pike, dried	1,171	66
13.	Pink salmon, cooked	1,155	54
14.	Pink salmon, dried	1,075	47
15.	Moose muscle, cooked	1,062	86
16.	Whitefish, dried[119]	1,032	61

[117] *Empetrum nigrum*
[118] *Vaccinium uliginosum*
[119] *Coregonus spp*.

Table 6d. Total amount of subsistence foods reported by 33 participants in the Tanana Chiefs Conference region.

	Food	Total pounds Per year	% Eating
1.	Moose muscle, cooked	1,127	94
2.	King salmon, dried	583	97
3.	King salmon, cooked	320	97
4.	Moose fat	312	49
5.	Silver salmon, dried	243	64

Table 6e. Total amount of subsistence foods reported by 125 participants in the in the SouthEast Alaska Regional Health Consortium region.

	Food	Total pounds Per year	% Eating
1.	Deer muscle, cooked	2,320	91
2.	Red salmon, dried	2,310	94
3.	Red salmon, cooked	2,199	93
4.	King salmon, dried	1,914	85
5.	Silver salmon, dried	1,206	76
6.	Silver salmon, cooked	1,107	86
7.	Halibut, other than dried	1,010	96

C. Parts of Animals Eaten

Some nutrients in foods are concentrated in particular parts of plants or animals. The liver of animals, for example, is an especially rich source of vitamin A. The muscle of cold-water fish and the fat of arctic marine mammals are rich sources of omega-3 fatty acids, which are protective against heart disease and other chronic diseases. The fat of land mammals and birds, and bird eggs, are major sources of saturated fats in the diet, which are risk factors for heart disease and possibly for cancer.

Some contaminants are concentrated in specific organs or tissues of animals and specific parts of plants. For example, persistent organic pollutants (POPs) are found in the fat of animals (http://www.amap.no/). Some heavy metals are concentrated in the liver or kidneys of marine and terrestrial mammals (http://www.amap.no/).

For many subsistence foods, we asked about the parts of the animals or birds eaten (Table 7). In NSHC, YKHC, and BBAHC, participants ate substantial amounts of moose and caribou fat, marrow, liver, and kidney. In SEARHC, participants ate deer marrow and liver. In NSHC, YKHC, and BBAHC, participants ate substantial amounts of seal and Beluga whale oil, muktuk from various species of whale, and walrus blubber. Participants from NSHC and YKHC also ate the liver and kidney of some marine mammals. Participants in NSHC, YKHC, and BBAHC ate several types of adult wild birds (in some cases in large amounts), as well as the eggs from a variety of wild bird species.

Table 7a. Parts of Animals Eaten: Total pounds per year summed across 151 participants in two villages in the Norton Sound Health Corporation region.

Land Mammals

	Muscle	Fat	Marrow	Liver	Kidney	Heart	Not Specified
Beaver							5
Caribou	5,006	720	341	128	30	255	
Lynx							<1
Moose	1,434	143	215	73	16	91	
Musk Ox							26
Muskrat							<1
Porcupine							<1
Rabbit							33
Squirrel							3

Marine Mammals

	Oil	Muktuk, Blubber	Muscle	Liver	Heart	Kidney	Intestine	Flipper	Lung
Bear, Polar			739						
Seal, Bearded			647	88		31		96	
Seal, Harbor			106	19		8			
Seal, Ringed			16	5		3			
Seal, Spotted			121	10		6			
Seal, unspecified	2,306				46		118		23
Walrus, Pacific		474	318	24		9		441	
Whale, Beluga	824	607	177	75		11			
Whale, Bowhead		84	6	1					
Whale, Gray		162	36						

Table 7a, continued, Norton Sound Health Corporation.

Birds	Adults	Eggs
Brandt	213	
Crane	47	
Duck, Old Squaw	568	
Eider, Common	82	
Eider, Spectacled	8	
Geese, Snow	384	
Geese, unspecified	481	
Loon		85
Mallard	246	
Murre	9	454
Owl, Snowy	<1	
Pintail	181	
Ptarmigan	175	63
Puffin	9	139
Sea Gull		274
Snipe		48
Swan	38	
Tern		87

Table 7b: Parts of Animals Eaten: Total pounds per year summed across 224 participants in four villages in the Yukon-Kuskokwim Health Corporation region.

Land mammals

	Muscle	Fat	Marrow	Liver	Kidney	Heart	Not specified
Bear, brown	39	88					
Beaver							349
Caribou	5,996	1,198	762	165	21	979	
Deer	161		42	3	<1		
Lynx							6
Moose	6,990	2,909	1,035	160	595	351	
Musk Ox							18
Muskrat							17
Porcupine							119
Rabbit							156
River Otter							6
Squirrel							17

Marine Mammals

	Oil	Muktuk, Blubber	Muscle	Liver	Heart	Kidney	Intestine	Flipper	Lung
Seal, bearded			1,131	422	128			249	
Seal, harbor				641		83			
Seal, northern fur		1							
Seal, ringed			148	215		19			
Seal, spotted			798			65			
Seal, unspecified	2,442						458		330
Walrus, Pacific		377	116	14		108		54	
Whale, beluga	179	1,242	159	17		69			
Whale, bowhead		15							
Whale, gray		232	16						

Table 7b, continued, Yukon-Kuskokwim Health Corporation.

Birds	Adults	Eggs
Brandt	261	
Cormorant	4	
Crane	159	
Duck, Old Squaw	31	
Eider, Common	141	
Eider, Spectacled	2	
Geese, Snow	248	
Geese, unspecified	1,531	
Golden Eye	15	
Loon		40
Mallard	292	
Murre	9	29
Owl, Snowy	192	
Phalaropes	2	
Pintail	79	
Ptarmigan	550	186
Puffin		9
Sandpiper	3	
Scaup	53	
Sea Gull		397
Snipe	<1	13
Spruce Hen	8	
Swan	140	
Teal, Green Wing	58	
Tern	<1	14

Table 7c. Parts of Animals Eaten: Total pounds per year summed across 132 participants in four villages in the Bristol Bay Area Health Corporation region.

Land Mammals

	Muscle	Fat	Marrow	Liver	Kidney	Heart	Not Specified
Bear, Grizzly/brown	4	21					
Beaver							303
Caribou	5,448	809	983	667	398		
Lynx							<1
Moose	1,062	496	450	370	142	258	
Musk Ox							<1
Porcupine							254
Rabbit							45
River Otter							58
Squirrel							19

Marine Mammals

	Oil	Muktuk, Blubber	Muscle	Liver	Heart	Kidney	Intestine	Flipper	Bone
Pacific Walrus		105	100	3		1			
Seal, Bearded			42	1		1			
Seal, Harbor			107	25		4			15
Seal, Northern Fur			5						
Seal, Ringed			12	9		8			
Seal, Spotted			215	19		9			
Seal, unspecified	327				26		26		
Whale, Beluga	13	197	149	7					
Whale, Bowhead		44	1						
Whale, Grey		2							

Table 7c, continued, Bristol Bay Area Health Corporation

Birds	Adults	Eggs
Brandt	8	
Cormorant	<1	
Crane	18	
Duck, Old Squaw	20	
Eider, Common	26	
Eider, Spectacled	2	
Geese, Snow	3	
Geese, unspecified	204	
Golden Eye	3	
Loon		1
Mallard	117	
Murre		410
Pintail	30	
Ptarmigan	574	31
Sea Gull		277
Snipe		1
Spruce Hen	63	
Swan	9	
Teal, Green Wing	13	
Tern		66

Table 7d. Parts of Animals Eaten: Total pounds per year summed across 33 participants in the village in the Tanana Chiefs Conference Region.

Land Mammals

	Muscle	Fat	Marrow	Liver	Kidney	Heart	Not Specified
Beaver							20
Caribou	53		1			1	
Moose	1,127	312	68	8	3	10	
Rabbit							8

Marine Mammals

	Oil	Muktuk	Muscle	Liver	Heart	Kidney	Intestine	Flipper	Lung
Seal, Harbor			2						
Seal, unspecified	3								
Whale, Beluga		1							
Whale, Bowhead						1			

Birds

	Adults	Eggs
Crane	<1	
Duck, Mallard	4	
Duck, Old Squaw	<1	
Geese	8	
Grouse, Spruce	10	
Ptarmigan	9	

Table 7e. Parts of Animals Eaten: Total pounds per year summed across 125 participants in two villages in the SouthEast Alaska Regional Health Consortium region.

Land Mammals

	Muscle	Fat	Marrow	Liver	Kidney	Heart	Not Specified
Caribou	12	2	2	2		2	
Deer	3,278	318	583	1			
Elk	5		2	1		1	
Bear, Brown	<1						
Bear, Black	1						
Moose	2	2	4				

Marine Mammals

	Oil	Muktuk	Muscle	Liver	Heart	Kidney	Intestine	Flipper	Lung
Whale, Beluga		1	1						
Whale, Bowhead		1							
Seal, Harbor			43	46	83				
Seal, Spotted			4	2	3				
Seal, unspecified	16								

Birds

	Adults	Eggs
Duck, Mallard		7
Duck, Old Squaw	1	
Eider, Common	1	
Geese, unspecified	10	
Grouse, Spruce	1	
Pintail	<1	
Ptarmigan	8	
Sea Gull		10

D. Food Preparation Methods

Food preparation methods can change the nutrient content of food relative to its raw or unprocessed state. This is taken into account in the nutrient content databases that are used in most dietary analyses. Preparation methods may also change the potential contaminant content of foods, either by removing, concentrating, or changing the form of contaminants. Unfortunately, there is almost no information on the contaminant content of subsistence foods *as consumed*.

We were able to use our data to describe the most common ways of preparing some food species, which may provide guidance about the most important food preparation methods to test in the future (Table 8). In general, participants reported eating salmon dried or smoked in larger quantities than cooked from fresh. We have information on preparation methods for only a few of the other fish species mentioned. The dominant preparation method for each type of fish varied by region. Caribou muscle was eaten dried in larger amounts than cooked from fresh in NSHC and BBAHC, and eaten cooked in larger amounts than dried in all other regions. In SEARHC, deer muscle was eaten cooked from fresh in larger quantities than dried.

Apart from berries, we did not gather detailed information on the parts of plants used or their preparation methods. This is an important area for future research.

Table 8a. Preparation Methods: Total pounds per year summed across 151 participants in the Norton Sound Health Corporation region.

Fish	Dried, Smoked, or Salted	Cooked	Raw or Frozen	Unspecified
Arctic Cisco				67
Blackfish[120]				45
Burbot				13
Cod, unspecified	206			206
Dolly Varden				157
Grayling				15
Halibut	<1			15
Herring	4,525			
Lushfish[121]				6
Needlefish[122]				<1
Pike	30			
Salmon, Chum	1,907	618	204	
Salmon, King	681	462	241	
Salmon, Pink	2,357	742	107	
Salmon, Red	2,887	1,031	244	
Salmon, Silver	2,780	833	261	
Sheefish[123]				161
Smelt	55			771
Sucker[124]				1
Tomcod				1,742
Trout, unspecified	38			235
Whitefish[125]	2,223			1,902

Land Mammals

	Dried	Cooked
Caribou muscle	3,027	1,979
Moose muscle		1,291

[120] *Dallia pectoralis*
[121] *Lota lota*
[122] *Ammodytes hexapterus*
[123] *Stenodus leucichthys*
[124] *Catostomus spp*.
[125] *Coregonus spp.*

Table 8b. Food Preparation Methods: Total pounds per year summed across 224 participants in the Yukon-Kuskokwim Health Corporation region.

Fish	Dried, Smoked, or Salted	Cooked	Raw or Frozen	Unspecified
Blackfish[126]				180
Burbot				223
Cod, unspecified	85			10
Dolly Varden				116
Grayling				105
Halibut	203			126
Herring	2,188			
Irish Lord				8
Lushfish[127]				454
Needlefish[128]				66
Pike	3,008			
Salmon, chum	5,911	2,270	97	
Salmon, king	12,264	2,984	439	
Salmon, pink	879	444	67	
Salmon, red	1,258	670	157	
Salmon, silver	4,374	1,462	119	
Sheefish[129]				508
Smelt	1,178			415
Sole, Pacific				38
Sucker[130]				187
Trout, unspecified	58			168
Whitefish[131]	4,089			2,235

Land Mammals	Dried	Cooked
Moose muscle		6,990
Caribou muscle	2,456	3,449
Deer muscle	68	93

[126] *Dallia pectoralis*
[127] *Lota lota*
[128] *Ammodytes hexapterus*
[129] *Stenodus leucichthys*
[130] *Catostomus spp.*
[131] *Coregonus spp*.

Table 8c. Food Preparation Methods: Total pounds per year summed across 132 participants in the Bristol Bay Area Health Corporation Region.

Fish	Dried, Smoked, or Salted	Cooked	Raw or Frozen	Unspecified
Blackfish[132]				31
Burbot				29
Cod, unspecified	63			58
Dolly Varden				226
Grayling				257
Halibut	209			455
Herring	623			
Irish Lord				<1
Lushfish[133]				16
Needlefish[134]				34
Pacific Sole				2
Pike	1,171			
Salmon, Chum	1,487	985	59	
Salmon, King	3,343	1,519	215	
Salmon, Pink	1,075	1,155	32	
Salmon, Red	3,058	3,171	125	
Salmon, Silver	2,067	1,330	89	
Sheefish[135]				4
Smelt	947			475
Sucker[136]				30
Trout, unspecified	411			421
Tomcod				60
Whitefish[137]	1,032			575

Land Mammals	Dried	Cooked
Caribou muscle	3,116	2,332
Moose muscle		1,062

[132] *Dallia peectoralis*
[133] *Lota lota*
[134] *Ammodytes hexapterus*
[135] *Stenodus leucichthys*
[136] *Catostomus spp.*
[137] *Coregonus spp.*

Table 8d. Food Preparation Methods: Total pounds per year summed across 33 participants in the Tanana Chiefs Conference region.

Fish	Dried, Smoked, or Salted	Cooked	Raw or Frozen	Unspecified
Blackfish[138]				<1
Burbot				12
Clams				<1
Dolly Varden				2
Grayling				11
Halibut	3			20
King crab				<1
Pike				8
Salmon, King	583	320	11	
Salmon, Chum	26	9		
Salmon, Silver	243	140	9	
Salmon, Red	19	11		
Sheefish[139]				33
Shrimp				7
Smelt				1
Trout, unspecified	<1			3
Whitefish[140]	14			32

Land Mammals	Dried	Cooked
Caribou muscle	13	40
Moose muscle		1,127

[138] *Dallia pectoralis*
[139] *Stenodus leucichthys*
[140] *Coregonus spp.*

Table 8e. Food Preparation Methods: Total pounds per year summed across 125 participants in the SouthEast Alaska Regional Health Consortium region.

Fish	Dried, Smoked, or Salted	Cooked	Raw or Frozen	Unspecified
Blackfish[141]				11
Burbot				2
Cod, unspecified	7			88
Cod, Black				104
Cod, Ling				97
Dolly Varden				54
Grayling				<1
Halibut	597			1,010
Herring				62
Hooligan[142]				86
Rock fish[143]				52
Salmon, King	1,914	900	286	
Salmon, Chum	257	133	20	
Salmon, Silver	1,206	1,107	33	
Salmon, Red	2,300	2,199	202	
Salmon, Pink	213	273	19	
Smelt	44			46
Trout	2			100
Whitefish[144]	1			
Yellow Eyed Red Snapper				322

Land Mammals

	Dried	Cooked
Caribou muscle	5	7
Deer muscle	958	2,320

[141] *Dallia pectoralis*
[142] *Thaleicthys pacificus*
[143] *Sebastes spp.*
[144] *Coregonus spp*.

E. Estimated Nutrient Intakes

The FFQ was not designed to rigorously measure individual nutrient intakes or dietary adequacy. Although we can produce estimated nutrient intakes for the participants, these lack the precision necessary to evaluate nutritional status for clinical or counseling purposes. Within broad limits, we can identify individuals who have clearly high intakes of fat or sugar, and we can identify individuals who might have low intakes of important nutrients.

The estimated consumption of selected nutrients was compared to sex- and age-appropriate Dietary Reference Intakes (http://www.nap.edu/catalog/10609.html). We estimated the proportion of individuals with intakes below recommended levels for protein, omega-3 fatty acids, total dietary fiber, vitamin C, folate, vitamin B12, vitamin A, iron, and calcium. We classified individuals whose estimated intakes for these nutrients were less than 100% of the recommendation as having *potentially* low intakes. This is a conservative approach because the FFQ method tends to inflate energy and nutrient intakes relative to other assessment methods (4,5). It is possible that the true proportion of participants with low dietary intakes was underestimated in our survey.

We also estimated the proportion of individuals with intakes of total fat, saturated fat, and sugar above recommended levels. The recommendations for total and saturated fat are given as percent of total energy intake ($\leq$30% and <10%, respectively) so they should be unaffected by any inflation of energy and nutrient estimates (Gibson 1990). We set the criterion for high sugar intake as more than 20 teaspoons per day.

Few participants reported low intakes of protein, vitamin A, or vitamin B12 in any region (Figure 2). One fifth or more of the participants had low intakes of omega-3 fatty

acids in all the regions, and more than one fifth had low intakes of folate in most regions. More than half the participants in all the regions had low intakes of fiber and calcium. Seventy-five percent or more of the participants had higher than recommended intakes of total fat and saturated fat in all regions. High sugar intakes were common in only two regions.

Low omega-3 fatty acid, folate, fiber, and calcium intakes and high fat intakes are not unique to Alaska Natives. They are common statewide and in the lower 48 as well (http://www.cdc.gov/nchs/about/major/nhanes). The low calcium intakes of many participants may be due in part to low consumption of dairy products. However, we may have underestimated calcium consumption because we do not have complete information on the calcium content of subsistence foods.

Adequate folate intakes may protect against heart disease in adults and are known to protect against birth defects. For most people in the lower 48, the main source of folate in the diet is fortified grain products such as bread and especially cold cereal. However, there are other sources of folate, including orange juice, some kinds of berries, rose hips, leafy greens, asparagus, and liver. Many subsistence plant foods have not been analyzed for folate content so we may have underestimated folate consumption in this survey.

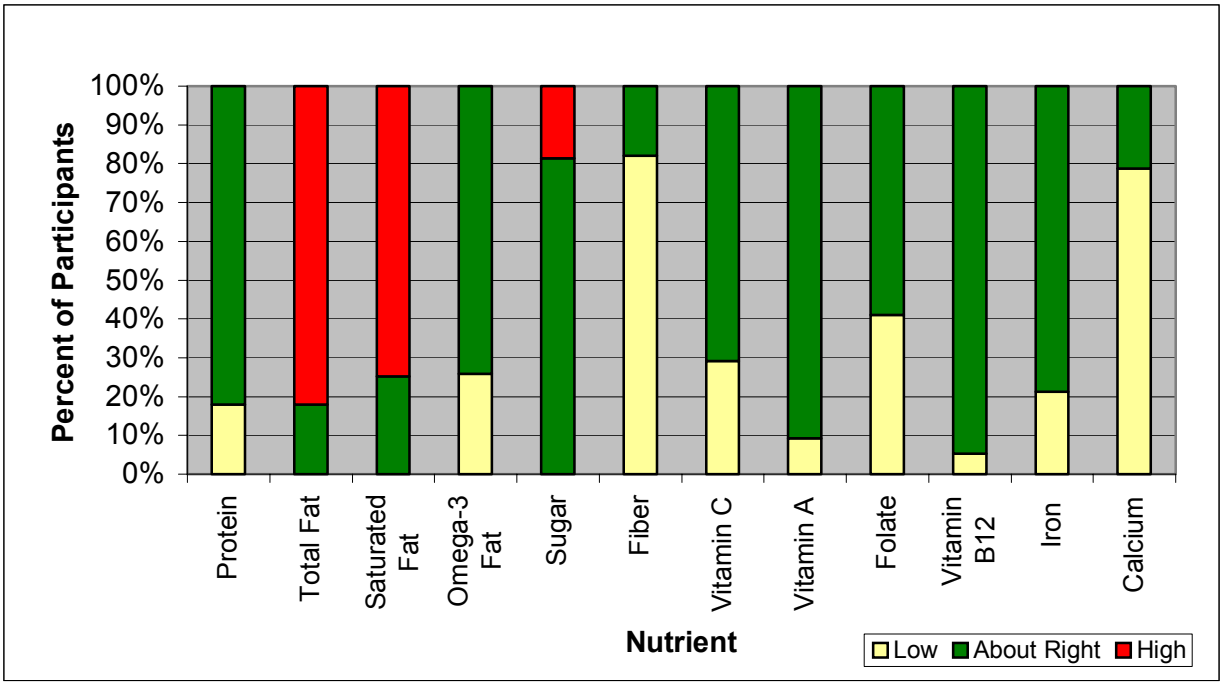

Figure 2a. Estimated prevalence of nutrient intakes departing from recommendations among 151 participants in the Norton Sound Health Corporation region.

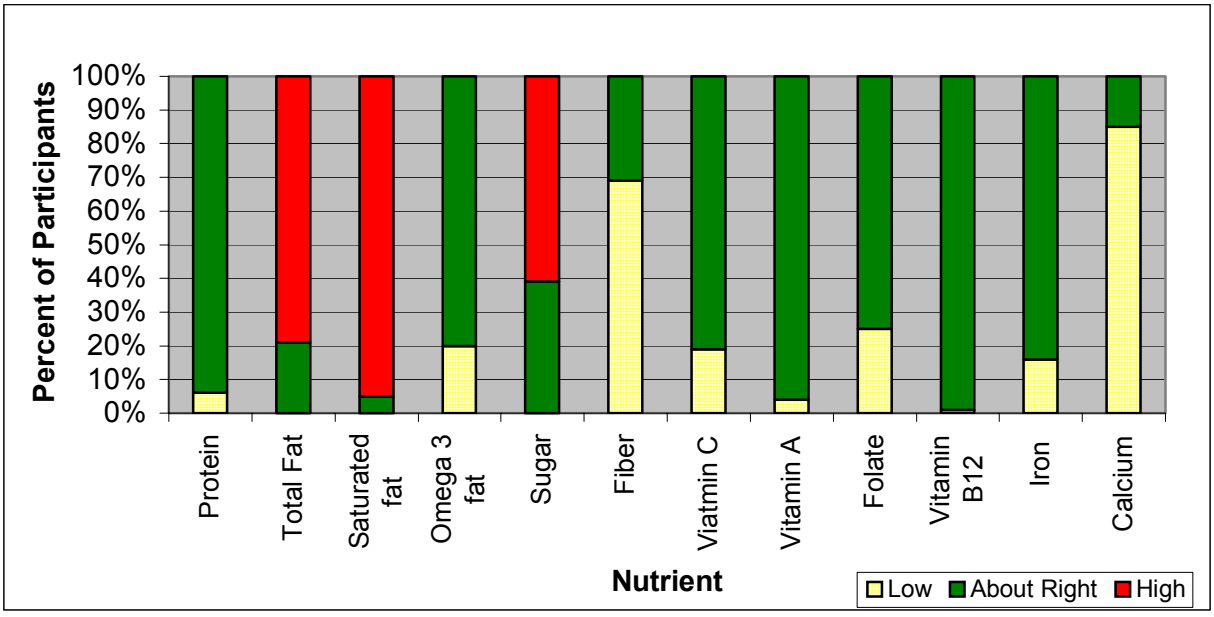

Figure 2b. Estimated prevalence of nutrient intakes departing from recommendations among 224 participants in the Yukon-Kuskokwim Health Corporation region.

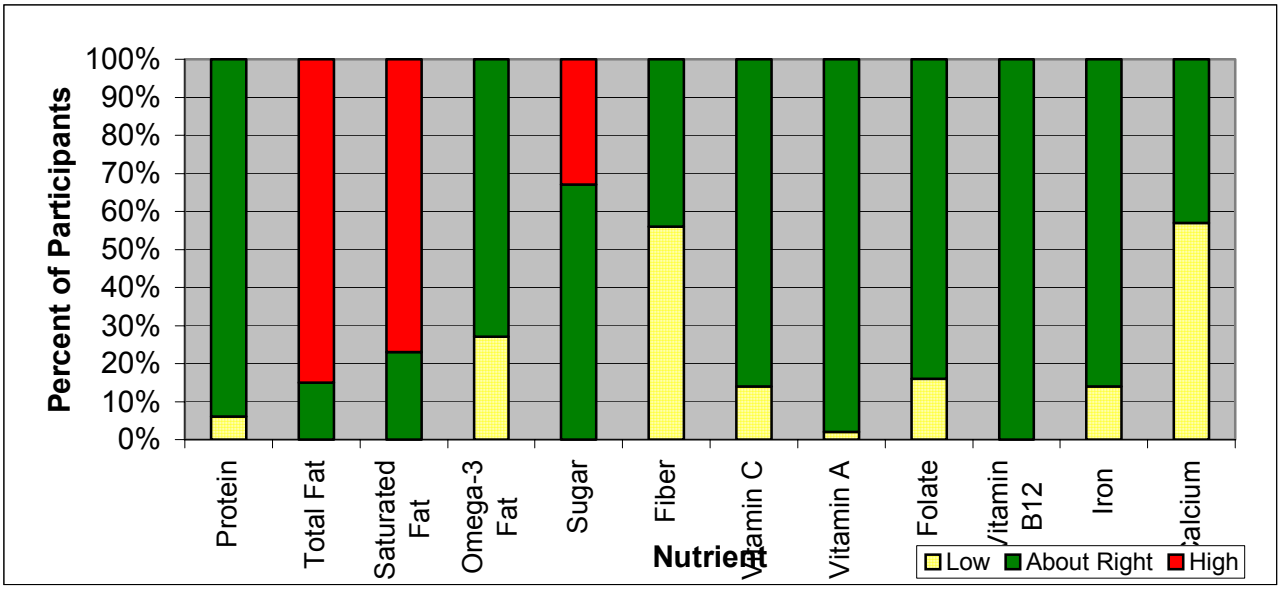

Figure 2c. Estimated prevalence of nutrient intakes departing from recommendations among 132 participants in the Bristol Bay Area Health Corporation region.

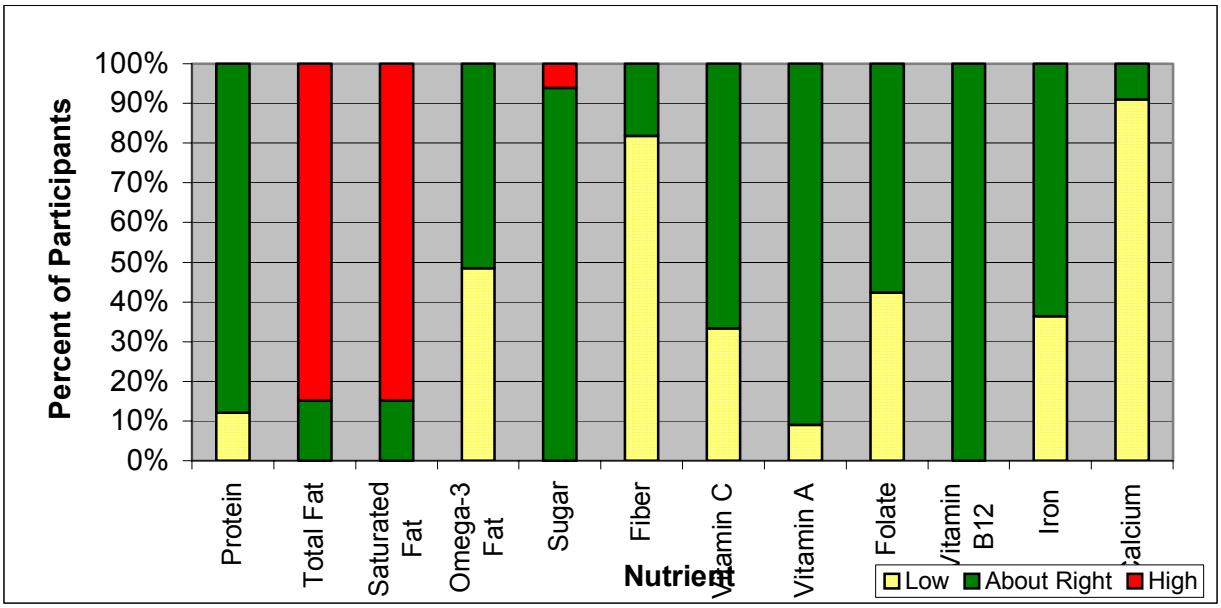

Figure 2d. Estimated prevalence of nutrient intakes departing from recommendations among 33 participants in the Tanana Chiefs Conference region.

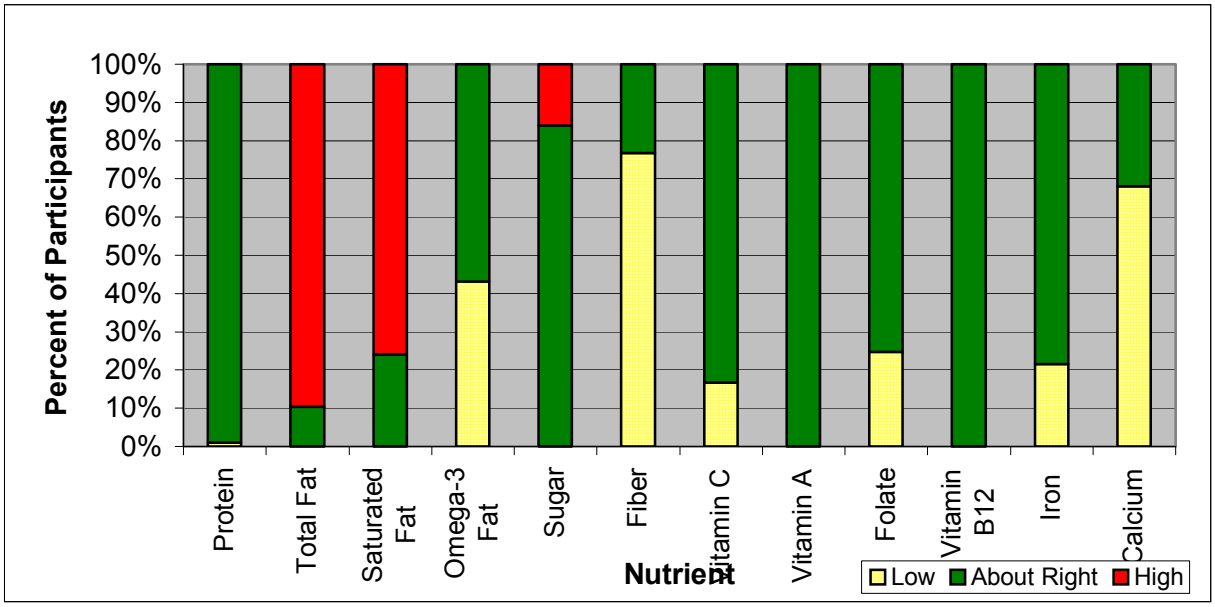

Figure 2e. Estimated prevalence of nutrient intakes departing from recommendations among 125 participants in the SouthEast Alaska Regional Health Consortium region.

F. Food Sources of Selected Nutrients

Foods were grouped as follows for assessing contributions to nutrient intakes:

- All store meats and poultry, including processed meats such as lunchmeats, canned meats, and hot dogs
- All dairy products and chicken eggs
- All grain products
- Mixed dishes, including pizza, Hot Pockets™, etc.
- All store vegetables
- All store fruits and 100% fruit juices
- Sugared beverages, including soda pop, Hi-C™, Tang™ and fruit-flavored drinks
- Salmon, all species
- All other species of subsistence fish and seafood
- Moose and caribou, all tissues
- Deer, all tissues
- Marine mammals (whale, walrus, and seal), all tissues
- All other subsistence game species, including terrestrial mammals, birds, and bird eggs
- Sweeteners (sugar, honey, syrup) and candy
- Vegetable fats
- Subsistence berries
- Other subsistence plants

Each category of food that contributed at least 1% of a nutrient was tabulated and we accounted for at least 90% of the intake of each nutrient on a population basis (Table 9).

Subsistence foods accounted for between 12% and 34% of total energy intake by region. They contributed substantial amounts of protein, vitamin B12, and iron in all regions and accounted for 96% or more of all the omega-3 fatty acids consumed by the participants, because they are dense in these nutrients. Subsistence foods contributed substantial amounts of vitamin A to the diet in all regions except TCC. Subsistence foods contributed total fat and saturated fat to the diets, but no refined sugar. Subsistence foods were not dense sources of fiber, vitamin C, folate, or calcium.

Table 9a. Food sources of nutrients among 151 participants in the Norton Sound Health Corporation region. Subsistence foods are indicated by **bold** type.

Food Source of Energy	Percent
Grain products	13
Sugared beverages	12
Store meat and poultry	10
Dairy products and chicken eggs	9
Vegetable fats	8
Marine mammals	**8**
Salmon	**7**
Store fruits and juices	7
Moose and caribou	**5**
Mixed dishes	5
Sweeteners and candy	5
Other subsistence fish species	**4**
TOTAL	93

Food Sources of Protein	
Salmon	**29**
Store meat and poultry	13
Other subsistence fish species	**13**
Moose and caribou	**10**
Dairy products and chicken eggs	8
Grain products	7
Mixed dishes	5
Marine mammals	**4**
Other subsistence game species	**3**
Store vegetables	3
TOTAL	95

Food Sources of Total Fat	Percent
Marine mammals	**18**
Vegetable fats	18
Store meat and poultry	16
Dairy products and chicken eggs	15
Moose and caribou	**6**
Salmon	**6**
Grain products	6
Other subsistence fish species	**5**
Mixed dishes	4
Other subsistence game species	**2**
TOTAL	96

Food Sources of Saturated Fat	
Dairy products and chicken eggs	29
Store meat and poultry	18
Vegetable fats	11
Moose and caribou	**9**
Marine mammals	**7**
Salmon	**5**
Grain products	5
Mixed dishes	5
Sweeteners and candy	4
TOTAL	93

Food Sources of Omega-3 Fatty Acids	
Marine mammals	**58**
Other subsistence fish species	**16**
Salmon	**23**
TOTAL	97

Table 9a, continued, Norton Sound Health Corporation.

Food Sources of Refined Sugar	Percent
Sugared beverages	40
Sweeteners and candy	28
Grain products	9
Store fruits and juices	15
TOTAL	92

Food Sources of Dietary Fiber	
Store fruits and juices	27
Grain products	27
Store vegetables	21
Mixed dishes	9
Subsistence berries	**8**
Sugared beverages	3
Sweeteners and candy	3
TOTAL	98

Food Sources of Vitamin C	
Sugared beverages	37
Store fruits and juices	53
Grain products	3
Store vegetables	3
Subsistence berries	**2**
TOTAL	98

Food Sources of Vitamin A	Percent
Marine mammals	**41**
Store vegetables	21
Dairy products and chicken eggs	16
Store fruits and juices	4
Vegetable fats	4
Moose and caribou	**3**
Salmon	**3**
Other subsistence game species	**1**
TOTAL	93

Food Sources of Folate	
Store fruits and juices	29
Grain products	29
Mixed dishes	9
Store vegetables	6
Dairy products and chicken eggs	6
Salmon	**5**
Store meat and poultry	3
Marine mammals	**2**
Moose and caribou	**1**
TOTAL	90

Food Sources of Vitamin B12	
Salmon	**41**
Other subsistence fish species	**18**
Moose and caribou	**18**
Marine mammals	**8**
Store meat and poultry	5
Dairy products and chicken eggs	4
TOTAL	94

Table 9a, continued, Norton Sound Health Corporation.

Food Sources of Iron	Percent
Grain products	19
Marine mammals	**18**
Moose and caribou	**12**
Store meat and poultry	10
Salmon	**10**
Mixed dishes	6
Sugared beverages	4
Other subsistence fish species	**4**
Other subsistence game species	**4**
Dairy products and chicken eggs	3
TOTAL	90

Food Sources of Calcium	Percent
Dairy products and chicken eggs	36
Mixed dishes	15
Grain products	10
Other subsistence fish species	**7**
Sugared beverages	6
Store fruits and juices	6
Salmon	**5**
Store meat and poultry	3
Store vegetables	3
Sweeteners and candy	2
TOTAL	93

Table 9b. Food sources of nutrients among 224 participants in the Yukon-Kuskokwim Health Corporation region. Subsistence foods are indicated by **bold** type.

Food Source of Energy	Percent
Sugared beverages	16
Grain products	12
Salmon	**12**
Moose and caribou	**10**
Dairy products and chicken eggs	8
Store fruits and juices	7
Vegetable fats	7
Store meat and poultry	7
Marine mammals	**6**
Mixed dishes	5
Other subsistence fish species	**4**
Sweeteners and candy	3
Other subsistence game species	**2**
TOTAL	99

Food Sources of Protein	
Salmon	**32**
Other subsistence fish species	**13**
Moose and caribou	**13**
Store meat and poultry	9
Dairy products and chicken eggs	8
Grain products	7
Marine mammals	**6**
Mixed dishes	5
Other subsistence game species	**4**
TOTAL	97

Food Sources of Total Fat	Percent
Moose and caribou	**17**
Vegetable fats	16
Salmon	**15**
Dairy products and chicken eggs	14
Marine mammals	**11**
Store meat and poultry	11
Grain products	4
Mixed dishes	4
Other subsistence fish species	**3**
TOTAL	95

Food Sources of Saturated Fat	
Dairy products and chicken eggs	25
Moose and caribou	**22**
Salmon	**12**
Store meat and poultry	12
Vegetable fats	10
Marine mammals	**5**
Grain products	5
Mixed dishes	5
Other subsistence game species	**3**
TOTAL	99

Food Sources of Omega-3 Fatty Acids	
Salmon	**51**
Marine mammals	**38**
Other subsistence fish species	**10**
TOTAL	99

Table 9b, continued, Yukon-Kuskokwim Health Corporation

Food Sources of Refined Sugar	Percent
Sugared beverages	50
Sweeteners and candy	21
Store fruits and juices	11
Grain products	9
Store vegetables	2
TOTAL	93

Food Sources of Dietary Fiber	
Grain products	26
Store vegetables	21
Store fruits and juices	19
Subsistence berries	**14**
Mixed dishes	9
Sugared beverages	4
TOTAL	93

Food Sources of Vitamin C	
Sugared beverages	45
Store fruits and juices	44
Store vegetables	4
Subsistence berries	**3**
TOTAL	96

Food Sources of Vitamin A	Percent
Marine mammals	**59**
Store vegetables	12
Dairy products and chicken eggs	9
Moose and caribou	**6**
Salmon	**4**
Vegetable fats	3
Store fruits and juices	2
TOTAL	95

Food Sources of Folate	
Store fruits and juices	30
Grain products	26
Marine mammals	**10**
Mixed dishes	8
Store vegetables	6
Dairy products and chicken eggs	5
Salmon	**3**
Subsistence berries	**3**
Store meat and poultry	2
TOTAL	93

Food Sources of Vitamin B12	
Salmon	**44**
Moose and caribou	**20**
Marine mammals	**16**
Other subsistence fish species	**10**
Dairy products and chicken eggs	4
Store meat and poultry	3
TOTAL	97

Table 9b, continued, Yukon-Kuskokwim Health Corporation.

Food Sources of Iron	Percent
Marine mammals	**24**
Grain products	16
Salmon	**15**
Moose and caribou	**13**
Sugared beverages	6
Store meat and poultry	5
Mixed dishes	5
Other subsistence game species	**4**
Other subsistence fish species	**3**
Store vegetables	3
Dairy products and chicken eggs	2
TOTAL	96

Food Sources of Calcium	Percent
Dairy products and chicken eggs	38
Mixed dishes	15
Sugared beverages	9
Grain products	9
Store fruits and juices	7
Salmon	**6**
Other subsistence fish species	**5**
Moose and caribou	**2**
Subsistence berries	**2**
TOTAL	93

Table 9c. Food sources of nutrients among 132 participants in the Bristol Bay Area Health Corporation region. Subsistence foods are indicated by **bold** type.

Food Source of Energy	Percent
Grain products	14
Dairy products and chicken eggs	11
Salmon	**10**
Store fruits and juices	10
Store meat and poultry	9
Sweeteners and candy	8
Vegetable fats	8
Moose and caribou	**7**
Sugared beverages	7
Mixed dishes	4
Store vegetables	4
TOTAL	92

Food Sources of Protein	
Salmon	**32**
Store meat and poultry	13
Moose and caribou	**12**
Dairy products and chicken eggs	11
Grain products	8
Other subsistence fish species	**8**
Mixed dishes	4
Store vegetables	4
Store fruits and juices	3
TOTAL	95

Food Sources of Total Fat	Percent
Vegetable fats	23
Dairy products and chicken eggs	18
Store meat and poultry	15
Moose and caribou	**13**
Salmon	**11**
Grain products	6
Sweeteners and candy	4
Mixed dishes	3
Marine mammals	**3**
TOTAL	96

Food Sources of Saturated Fat	
Dairy products and chicken eggs	30
Store meat and poultry	15
Moose and caribou	**15**
Vegetable fats	12
Salmon	**8**
Sweeteners and candy	7
Mixed dishes	4
Grain products	4
TOTAL	95

Food Sources of Omega-3 Fatty Acids	
Salmon	**71**
Marine mammals	**16**
Other subsistence fish species	**11**
TOTAL	98

Table 9c, continued, Bristol Bay Area Health Corporation.

Food Sources of Refined Sugar	Percent
Sweeteners and candy	48
Sugared beverages	20
Store fruits and juices	16
Grain products	8
Store vegetables	3
Dairy products and chicken eggs	2
TOTAL	97

Food Sources of Dietary Fiber	
Store vegetables	30
Store fruits and juices	23
Grain products	23
Subsistence berries	**7**
Mixed dishes	6
Sweeteners and candy	4
TOTAL	93

Food Sources of Vitamin C	
Store fruits and juices	64
Sugared beverages	23
Store vegetables	6
Grain products	3
TOTAL	96

Food Sources of Vitamin A	Percent
Moose and caribou	**32**
Store vegetables	31
Dairy products and chicken eggs	14
Marine mammals	**6**
Vegetable fats	4
Store fruits and juices	4
Salmon	**3**
Subsistence plants	**1**
TOTAL	95

Food Sources of Folate	
Store fruits and juices	36
Grain products	29
Store vegetables	9
Mixed dishes	6
Dairy products and chicken eggs	5
Moose and caribou	**4**
Salmon	**3**
Store meat and poultry	3
TOTAL	95

Food Sources of Vitamin B12	
Salmon	**42**
Moose and caribou	**38**
Other subsistence fish species	**5**
Dairy products and chicken eggs	5
Store meat and poultry	4
TOTAL	94

Table 9c, continued, Bristol Bay Area Health Corporation.

Food Sources of Iron	Percent
Grain products	23
Moose and caribou	**17**
Salmon	**13**
Store meat and poultry	8
Store vegetables	7
Marine mammals	**6**
Mixed dishes	6
Other subsistence game species	**5**
Store fruits and juices	4
Sugared beverages	3
Dairy products and chicken eggs	3
TOTAL	95

Food Sources of Calcium	Percent
Dairy products and chicken eggs	46
Mixed dishes	12
Grain products	9
Store fruits and juices	8
Sweeteners and candy	4
Salmon	**4**
Store vegetables	4
Sugared beverages	4
Store meat and poultry	3
TOTAL	94

Table 9d. Food sources of nutrients among 33 participants in the Tanana Chiefs Conference region. Subsistence foods are indicated by **bold** type.

Food Source of Energy	Percent
Grain products	15
Dairy products	13
Sugared beverages	12
Store fruits and juices	11
Moose and caribou	**10**
Vegetable fats	10
Salmon	**8**
Store meat and poultry	7
Mixed dishes	6
Store vegetables	5
TOTAL	97

Food Sources of Protein	
Salmon	**24**
Dairy products	18
Moose and caribou	**16**
Store meat and poultry	12
Grain products	10
Mixed dishes	7
Store vegetables	7
Store fruits and juices	3
TOTAL	97

Food Sources of Total Fat	Percent
Vegetable fats	24
Dairy products	21
Moose and caribou	**19**
Store meat and poultry	12
Salmon	**11**
Grain products	7
Mixed dishes	5
Store vegetables	1
TOTAL	100

Food Sources of Saturated Fat	
Dairy products	35
Moose and caribou	**21**
Store meat and poultry	12
Vegetable fats	11
Salmon	**7**
Mixed dishes	6
Grain products	6
TOTAL	98

Food Sources of Omega-3 Fatty Acids	
Salmon	**94**
Other subsistence fish species	**3**
TOTAL	97

Table 9d, continued, Tanana Chiefs Conference

Food Sources of Refined Sugar	Percent
Sugared beverages	38
Store fruits and juices	25
Sweeteners and candy	17
Grain products	11
Store vegetables	5
Dairy products	2
Store meat and poultry	1
TOTAL	99

Food Sources of Dietary Fiber	
Store vegetables	34
Store fruits and juices	29
Grain products	21
Mixed dishes	6
Subsistence berries	**3**
Sugared beverages	2
TOTAL	95

Food Sources of Vitamin C	
Store fruits and juices	47
Sugared beverages	36
Store vegetables	11
TOTAL	94

Food Sources of Vitamin A	Percent
Store vegetables	52
Dairy products	23
Vegetable fats	6
Store fruits and juices	5
Salmon	**4**
Moose and caribou	**3**
Grain products	3
TOTAL	96

Food Sources of Folate	
Store fruits and juices	30
Grain products	30
Store vegetables	18
Mixed dishes	8
Dairy products	6
Sugared beverages	1
TOTAL	93

Food Sources of Vitamin B12	
Salmon	**62**
Dairy products	13
Moose and caribou	**12**
Store meat and poultry	5
Mixed dishes	3
Grain products	2
TOTAL	97

Table 9d, continued, Tanana Chiefs Conference

Food Sources of Iron	Percent
Grain products	28
Moose and caribou	**15**
Salmon	**13**
Store vegetables	11
Mixed dishes	8
Sugared beverages	6
Store meat and poultry	6
Store fruits and juices	5
TOTAL	92

Food Sources of Calcium	Percent
Dairy products	55
Mixed dishes	14
Grain products	8
Store fruits and juices	6
Store vegetables	5
Sugared beverages	5
Salmon	**3**
TOTAL	96

Table 9e. Food sources of nutrients among 125 participants in the SouthEast Alaska Regional Health Consortium region. Subsistence foods are indicated by **bold** type.

Food Source of Energy	Percent
Store meat and poultry	17
Grain products	14
Dairy products	12
Vegetable fats	11
Salmon	**9**
Store fruits and juices	8
Sugared beverages	8
Sweeteners and candy	6
Mixed dishes	4
Store vegetables	4
Deer	**3**
TOTAL	96

Food Sources of Protein	
Salmon	**28**
Store meat and poultry	23
Dairy products	14
Deer	**8**
Grain products	7
Mixed dishes	5
Other subsistence fish species	**4**
Store vegetables	4
TOTAL	93

Food Sources of Total Fat	Percent
Vegetable fats	27
Store meat and poultry	27
Dairy products	17
Salmon	**10**
Grain products	6
Deer	**3**
Mixed dishes	3
Sweeteners and candy	3
TOTAL	96

Food Sources of Saturated Fat	
Dairy products	30
Store meat and poultry	27
Vegetable fats	13
Salmon	**7**
Grain products	6
Sweeteners and candy	5
Mixed dishes	5
Deer	**4**
TOTAL	97

Food Sources of Omega-3 Fatty Acids	
Salmon	**88**
Other subsistence fish species	**8**
TOTAL	96

Table 9e, continued, SouthEast Alaska Regional Health Consortium

Food Sources of Refined Sugar	Percent
Sweeteners and candy	43
Sugared beverages	21
Store fruits and juices	14
Grain products	12
Store vegetables	3
TOTAL	93

Food Sources of Dietary Fiber	
Store vegetables	31
Store fruits and juices	22
Grain products	21
Mixed dishes	6
Subsistence plants	**6**
Store meats	4
Sweeteners and candy	3
TOTAL	93

Food Sources of Vitamin C	
Store fruits and juices	55
Sugared beverages	25
Store vegetables	11
TOTAL	91

Food Sources of Vitamin A	Percent
Deer	**32**
Store vegetables	26
Dairy products	19
Marine mammals	**5**
Salmon	**5**
Store fruits and juices	3
TOTAL	90

Food Sources of Folate	
Grain products	28
Store fruits and juices	27
Store vegetables	13
Dairy products	8
Mixed dishes	7
Store meat and poultry	6
Salmon	**4**
TOTAL	93

Food Sources of Vitamin B12	
Salmon	**41**
Deer	**34**
Store meat and poultry	8
Dairy products	8
Other subsistence fish species	**5**
TOTAL	96

Table 9e, continued, SouthEast Alaska Regional Health Consortium

Food Sources of Iron	Percent
Grain products	24
Store meat and poultry	17
Salmon	**14**
Deer	**10**
Store vegetables	9
Mixed dishes	7
Dairy products and chicken eggs	4
Store fruits and juices	4
Sugared beverages	3
TOTAL	92

Food Sources of Calcium	Percent
Dairy products and chicken eggs	55
Mixed dishes	11
Grain products	8
Store fruits and juices	5
Store meat and poultry	4
Store vegetables	4
Salmon	**3**
Sugared beverages	3
TOTAL	93

G. Comparison With Previous Alaska Native Dietary Studies

There are relatively few published data on the dietary intakes of Alaska Natives. Nine articles were published in peer-reviewed journals between 1962 and 2003 (6-14). We also found three monographs (2,15,16), three book chapters (17-19), and two theses (3,20). However, these 17 publications are based on only seven discrete dietary studies.

It is difficult to compare the studies for several reasons. First, the studies used different methods to assess dietary intakes. Second, the sex and age distributions of the samples, rural or urban residence, and the relative dependence on subsistence foods varied across the samples. Third, the results are reported in a variety of formats that prevent direct comparisons.

Some general trends can be identified in the previous studies. First, there was substantial regional and seasonal variation in food intake patterns among Alaska Natives. Second, there has been an increasing use of store foods (2,12) and, in particular, the consumption of sugared beverages has been high and increasing for many years (10,12). Third, the intakes of some nutrients were reported to be low in some samples, including fiber, vitamin A, B vitamins, vitamin C, folate, iron, and calcium (2,10,15). Fourth, many important nutrients in Alaska Native diets come from subsistence foods, notably vitamin A, vitamin B12, omega-3 fatty acids, iron, and protein (2,13,21).

The Alaska Traditional Diet Project findings are consistent with previous studies that reported high intakes of sugared beverages (e.g., Tang™, Hi-C™, and sugared soda pop) and reliance on many store-bought staple foods such rice, spaghetti, and

bread. Nevertheless, we also found substantial reliance on many subsistence foods such as fish, terrestrial mammals, marine mammals, and wild plants. In contrast to some previous studies, few participants in the ATDP had low estimated intakes of vitamin A, vitamin B12, or iron. Consistent with previous studies, many participants in the ATDP reported high total fat and saturated fat intakes and low fiber, vitamin C, folate, and calcium intakes.

H. Participants' Attitudes About Subsistence and Store Foods

Seventy-four percent of participants said using subsistence foods was very important to them, 13% said it was somewhat important, and only 13% said using subsistence foods did not matter to them. Forty-seven percent said they consumed about the same amount of subsistence foods as they had five years ago, 27% said they consumed less, and 26% said they consumed more.

The reasons given for eating more traditional food now than 5 years ago included the belief that subsistence foods are healthier and more nutritious than store foods, preferring the taste of subsistence foods, subsistence foods are less expensive than store foods, and the expressly stated cultural importance of subsistence foods (Table 10). The reasons given for eating less subsistence foods now included not having anyone to hunt for the family, working at a job or not having time to hunt and gather, living away from the village, lack of transportation to hunt and gather, and not having the traditional knowledge to hunt and gather. However, the most common reason given was a reduction in the availability or quality of fish and animals. Only two people expressed the belief that store food is more nutritious than subsistence food, although several people commented that store food was easily available and convenient.

At the beginning of the questionnaire, we also asked several open-ended questions about attitudes and concerns about foods. These questions were asked without prompting about specific topics or issues. The most common concerns expressed about subsistence food were observations of fish and animals with parasites, diseases, or lesions; reduced numbers of fish and animals; and the possible presence of contaminants in fish and animals (Table 11). The most common concerns expressed

about store foods were poor quality, expense, and the presence of additives and pesticides. Only one person reported eating less subsistence food now because of concerns about the safety of those foods, although there were many comments about unhealthy fish and animals, contamination, or generally reduced quality of subsistence foods. It appears that fears about safety have not yet caused these participants to avoid subsistence foods, but the anxiety they expressed is nevertheless real.

Table 10a. Reasons given for changing the amount of traditional food consumed by participants in the Norton Sound Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Why do you eat more traditional food now than 5 years ago?

Cultural importance of subsistence foods (6)
Have learned to hunt and/or prepare foods from elders (4)
Subsistence food is healthier or more nutritious than store food (3)
Prefer the taste of subsistence food (2)
Subsistence foods are less expensive than store foods (2)
Like it better now (1)
Have transportation now (1)

Why do you eat less traditional food now than 5 years ago?

Fewer fish and animals are available (14)
Don't hunt anymore (10)
Store food is available (9)
Weather is changing (7)
No one to hunt for me/us (5)
Working or no time for subsistence (5)
Loss of knowledge and skills for subsistence (5)
Living away from village (4)
Getting older or health problems (3)
Store food more nutritious (2)
Can afford to buy store food (1)
Lack of transportation to hunt and fish (1)
Ate too much when younger (1)

* Not all participants responded to this question and some participants gave more than one answer.

Table 10b. Reasons given for changing the amount of traditional food consumed by participants in the Yukon-Kuskokwim Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Why do you eat more traditional food now than 5 years ago?

Prefer the taste of subsistence food (18)
Subsistence food is healthier or more nutritious than store food (16)
Cultural importance of subsistence food (15)
Like it better now (14)
Moved back to village (7)
Subsistence foods are easily available (6)
Subsistence foods are less expensive than store foods (5)

Why do you eat less traditional food now than 5 years ago?

Fewer fish and animals are available (18)
Store food is available (15)
No one to hunt for me/us (6)
Living away from village (6)
Hunting restrictions, regulations, and license requirements (6)
Store food is easier to prepare than subsistence food (5)
Store food adds variety to diet (3)
Family prefers store food (3)
Loss of knowledge and skills for subsistence (3)
Can afford to buy store food (2)
Prefer taste of store food (2)
Working or no time for subsistence (2)
Fear about quality or safety of subsistence foods (1)

---

* Not all participants responded to this question and some participants gave more than one answer.

Table 10c. Reasons given for changing the amount of traditional food consumed by participants in the Bristol Bay Area Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Why do you eat more traditional food now than 5 years ago?

- Subsistence food is healthier or more nutritious than store food (9)
- Cultural importance of subsistence food (7)
- Subsistence foods are less expensive than store foods (4)
- Prefer the taste of subsistence food (3)
- Moved back to the village (2)
- Subsistence foods easily available (2)
- No stores (2)
- Learning more about subsistence foods (1)
- Have transportation to hunt now (1)

Why do you eat less traditional food now than 5 years ago?

- Fewer fish and animals are available (9)
- Greater availability of store food (6)
- Hunting restrictions, regulations, and license requirements (3)
- Living away from village (2)
- Working or no time for subsistence (2)
- Fear about contaminants in subsistence foods (1)
- Reduced meat consumption (1)
- Food allergies (1)

* Not all participants responded to this question and some participants gave more than one answer.

Table 10d. Reasons given for changing the amount of traditional food consumed by participants in the Tanana Chiefs Conference region. Numbers in parentheses are the number of comments on each topic.*

Why do you eat more traditional food now than 5 years ago?

Subsistence food is healthier or more nutritious than store food (7)
Moved back to village (3)
Subsistence foods are less expensive than store foods (3)
Cultural importance of subsistence food (1)

Why do you eat less traditional food now than 5 years ago?

Lack of transportation to gather and hunt (8)
Loss of knowledge and skills for subsistence (4)
No one to hunt for me/us (3)
Fewer fish and animals are available (1)

* Not all participants responded to this question and some participants gave more than one answer.

Table 10e. Reasons given for changing the amount of traditional food consumed by participants in the SouthEast Alaska Regional Health Consortium region. Numbers in parentheses are the number of comments on each topic.*

Why do you eat more traditional food now than 5 years ago?

Cultural importance of subsistence food (28)
Moved back to village (18)
Like it better now (10)
Subsistence food is healthier or more nutritious than store food (5)
Subsistence foods are easily available (4)
Prefer the taste of subsistence food (3)
Subsistence foods are less expensive than store foods (2)

Why do you eat less traditional food now than 5 years ago?

Lack of transportation to gather and hunt (11)
Family prefers store food (1)
Can afford to buy store food (1)
Working or no time for subsistence (1)

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* Not all participants responded to this question and some participants gave more than one answer.

Table 11a. Concerns about foods among participants in the Norton Sound Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Subsistence Foods
Unsafe storage or preparation methods (17)
Reduced numbers of fish and animals (13)
Fish, animals, and plants with parasites, diseases, or lesions (7)
Sewage contamination of fish and animals (5)
Chemical contamination of fish and animals (3)
Reduced size of fish and animals (3)
Restrictions, regulations, and license requirements (1)
Store Foods
Poor quality, not fresh, spoiled (32)
Expensive (27)
Additives and preservatives (3)
Poor selection (3)

* Not all participants answered this question and some participants gave more than one answer.

Table 11b. Concerns about foods among participants in the Yukon-Kuskokwim Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Subsistence Foods	
	Fish and animals with parasites, diseases, or lesions (35)
	Chemical contaminants in fish and animals (19)
	Reduced numbers of fish and animals (16)
	Reduced size of fish and animals (5)
	Changes in taste and other quality of fish and animals (4)
	Sewage contamination of fish and animals (3)
	Unsafe preparation or storage methods (3)
Store Foods	
	Poor quality, not fresh, spoiled (51)
	Expensive (29)
	Additives and preservatives (11)
	Contaminants and pesticides (8)
	Poor selection (1)

* Not all participants answered this question and some participants gave more than one answer.

Table 11c. Concerns about foods among participants in the Bristol Bay Area Health Corporation region. Numbers in parentheses are the number of comments on each topic.*

Subsistence Foods
Fish and animals with parasites, diseases, or lesions (22)
Chemical contaminants in fish and animals (11)
Reduced numbers of fish and animals (5)
Tranquilizers used on animals (4)
Restrictions, regulations, and license requirements (2)
Competition from commercial and sports users (2)
Sewage contamination of fish and animals (1)
Unsafe preparation or storage methods (1)
Store Foods
Additives and preservatives (32)
Expensive (28)
Poor quality, not fresh, spoiled (13)
Afraid of Mad Cow and other diseases (5)
Contaminants and pesticides (4)

* Not all participants answered this question and some participants gave more than one answer.

Table 11d. Concerns about foods among participants in the Tanana Chiefs Conference region. Numbers in parentheses are the number of comments on each topic.*

Subsistence Foods
Chemical contaminants in fish and animals (8)
Fish and animals with parasites, diseases, or lesions (6)
Reduced numbers of fish and animals (5)
Store Foods
Expensive (13)
Additives and preservatives (8)
Poor quality, not fresh, spoiled (2)
Genetically modified (2)
Contaminants and pesticides (1)

* Not all participants answered this question and some participants gave more than one answer.

Table 11e. Concerns about foods among participants in the SouthEast Alaska Regional Health Consortium region. Numbers in parentheses are the number of comments on each topic.*

Subsistence Foods

Fish and animals with parasites, diseases, or lesions (24)
Competition from commercial and sport users (20)
Reduced numbers of fish and animals (15)
Chemical contaminants in fish and animals (9)
Restrictions, regulations, and license requirements (6)
Sewage contamination of fish and animals (2)
Unsafe preparation and storage methods (2)
Changes in taste and other quality of fish and animals (1)

Store Foods

Poor quality, not fresh, spoiled (35)
Unknown and unnecessary ingredients (24)
Additives and preservatives (19)
Expensive (14)
Contaminants and pesticides (13)
Poor selection (1)
Too much fat (1)

---

* Not all participants answered this question and some participants gave more than one answer.

VI. Conclusion

This report documents the importance of subsistence foods in the diets of rural Alaskans. It does not address the economic necessity of using subsistence foods although there is ample evidence from other studies about the expense of store foods in rural Alaska (http://www.uaf.edu/ace/fcs/fcs.html). The majority of rural Alaskans could not afford to replace subsistence foods with store foods.

This report does not address an equally important aspect of the traditional subsistence lifestyle. For Alaska Natives, harvesting and eating subsistence foods are essential to personal, social, and cultural identity. Many participants volunteered this reason for eating subsistence foods. Examples of their spontaneous statements include, “Because eating native food is important,” “Eating traditional food is my way of life,” and “[it is the] Eskimo way of life.” The scientific team who prepared this report are not Alaska Natives and do not live a subsistence lifestyle so we are not qualified to comment on these issues. We refer the reader to the many eloquent statements about subsistence on the Alaska Native Science Commission website (www.nativeknowledge.org) and in two videos produced by the Aleutian/Pribilof Island Association’s ”Dietary Benefits and Risks in Alaskan Villages Project.” The videos are available from Sue Unger in Anchorage at 907-222-4215 or sueu@apiai.org.

The goal of the ATDP was to identify the most commonly consumed subsistence foods to help villages prioritize foods to be tested for contaminants. We have shown that rural Alaskans consume large quantities of subsistence foods and are therefore at potential risk of exposure to contaminants that may be in those foods. The data to

assess exposure are inadequate because many traditional subsistence foods have not been tested. The foods that most people consume in large amounts are the highest priority for testing, but we must not overlook the foods consumed in smaller amounts that also contribute, in the aggregate, to potential exposure.

We present the following four general goals:

- As many species as possible should be tested, using appropriate sampling methods to fully represent each species in many locations throughout the state.
- All the tissues of fish and animals that are consumed should be tested.
- Foods should be tested both raw and as consumed.
- Plants, both from the sea and from the land, have often been overlooked in testing programs. Many plants foods are consumed and some are consumed in large amounts. Many plants are also food sources for animals. Therefore, testing plants is a high priority.

Testing of subsistence foods is being conducted in a number of places, by a number of organizations, and for a wide variety of contaminants. We hope these organizations will coordinate their efforts to minimize duplication of testing activities and to produce the greatest amount of information with limited funds available. The above goals will be achieved only through strong partnerships and open lines of communication among many organizations, government agencies, and the Tribal health corporations and other Tribal entities.

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Appendices

Appendix 1: Request for Applications for the Alaska Traditional Diet Project

Appendix 2: Informed Consent Forms

Appendix 3: Food Frequency Questionnaires

Appendix 4: Wild Food Resources Guide

Appendix 5: "Wild Edible and Poisonous Plants of Alaska," Cooperative Extension Service, University of Alaska Fairbanks, 300C-00028, revised May, 1993.

Appendix 6: Subsistence Foods Substitutions

Appendix 1

Request for Applications for the Alaska Traditional Diet Project

ALASKA TRADITIONAL DIET PROJECT
PROPOSAL APPLICATION FORM

21 DECEMBER 2001

From The Alaska Native Health Board
For additional information contact:

Mike Bradley
Principal Investigator
Ph: 907-743-6119
Fax: 907-563-2001
Email: mbradley@anhb.org

Please indicate how you prefer to be contacted, by:
Phone [ ]
fax [ ]
email [ ]

Angela Ross
Project Coordinator
Ph: 907-743-6121
Fax: 907-563-2001
Email: aross@anhb.org

Applications must be received by 1 February 2002. Applications can be faxed to 907-563-2001 or mailed to:

ANHB – ATDP Project Coordinator
4201 Tudor Centre Suite 105
Anchorage Alaska 99508

Grant recipients will be required to enter into a grant agreement with the Alaska Native Health Board which outlines specific grant requirements. This application form will serve as the work plan for the project and the grant agreement. A brief final report and a follow-up financial report will be required. *When possible, please keep responses within the space provided. However additional information may be attached if necessary.*

ADMINISTRATIVE INFORMATION

Applicant Information:

Community name:_____ Telephone number:_____

Applicants Name:_____ Fax number: _____

Title or Position:_____ Email (if available):_____

Address: _____

_____

PROJECT WORKPLAN

I. COMMUNITY INFORMATION

a. Tribal Resolution
A resolution from the tribe for participation in the project should be included in your application. Please see attached resolution form. You may use this or draft one of your own.

b. Community Population: Approximate number of people in your community:

c. Community Capacity and Support for Completion of the Survey

Interviewers: Identify two interviewers who will administer the survey. Complete the Interviewer Information Form attached to this application.

Community participation is vital for the success of this project. Describe your efforts to obtain community participation in this project by answering the following questions:

How was community support obtained and what has been done to date to enlist participation in the project?

_____

_____

_____

_____

_____

_____

How will community support be maintained to ensure completion of the project?

_____

_____

_____

_____

_____

_____

How many people in your community do you estimate would be willing to participate in the survey?

II. PROJECT DESCRIPTION

Project Timeline
February 1: Application forms are due by close of business via fax or mail
February 4 – 8: Applicants are selected and notified.
February 11 – 15: Teleconferences with selected communities to finalize the survey instruments.
February 25 – March 1: Two-day interviewer training in Anchorage.
March – April: Administer surveys to community residents.
April 30: Submit completed interview forms to ANHB.

August: A draft report on analysis of the data will be shared with participating tribes.
September 1: Communities must submit a brief final report and follow-up financial report to ANHB for final allocation of the award.
September: Final reports will be completed and submitted to ATSDR and participating communities.

Describe your plans for conducting the survey by completing your timeline below:

TIMELINE

DATE	EVENT
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

TIMELINE (continued)

DATE	EVENT

III. BUDGET NARRATIVE

Show how much money you are requesting from the Alaska Native Health Board and what you will spend it on. We suggest you use the format below for your budget. You may want to base your budget on the cost per interview for administering the survey. Each survey interview is anticipated to last approximately 90 minutes.

Salaries for interviewers:
Total Hours: _____
Rate per hour: _____
Total: _____
fringe benefits: _____
Total salary: _____

Reimbursement for survey participants:
Reimbursement can be in any form, i.e. money, food, drawing for prize, etc.

Type of reimbursement planned:
_____

_____

Amount per participant: _____
Number of participants: _____
Total amount: _____

Supplies: _____

Overhead/Indirect costs:
Indirect rate: _____
Total: _____

Travel, lodging and perdiem for 3 days in Anchorage for both interviewers:
Travel (X2): _____
Per diem for at least 3 days (X2): _____
Lodging in Anchorage for (X2) at least 3 days: _____
Other: _____
Total Amount: _____

TOTAL: _____

ALASKA TRADITIONAL DIET PROJECT

Community Interviewer Information

Interviewer Name:

Address:

Phone number:

Fax number:

Email (if available)

Current Position:

Previous jobs:

Education:

Previous experience conducting interviews (if any):

I agree to: become an interviewer for the ATDP, participate in a teleconference to complete the survey sometime during the week of February 11 – 15, attend interviewer training in Anchorage the week of 25 February – 1 March and complete the survey interviews and return the forms to ANHB by 30 April.

I also understand that information which I collect during participant interviews is confidential.

_____

Signature

ALASKA TRADITIONAL DIET PROJECT

Community Interviewer Information

Interviewer Name:

Address:

Phone number:

Fax number:

Email (if available)

Current Position:

Previous jobs:

Education:

Previous experience conducting interviews (if any):

I agree to: become an interviewer for the ATDP, participate in a teleconference to complete the survey sometime during the week of February 11 – 15, attend interviewer training in Anchorage the week of 25 February – 1 March and complete the survey interviews and return the forms to ANHB by 30 April.

I also understand that information which I collect during participant interviews is confidential.

_____

Signature

RESOLUTION SUPPORTING
THE ALASKA TRADITIONAL DIET PROJECT

IRA Council: _____

Address: _____

_____

_____

_____

Phone number: _____
Fax number: _____
Email: _____

Resolution Number: _____

A Resolution supporting participation in the Alaska Traditional Diet Project for the (your IRA council) _____

WHEREAS, The (your IRA council)_____ is the governing body of the Tribe, and,

WHEREAS, The (your IRA council) _____ is applying for the Alaska Traditional Diet Project submitted to the Alaska Native Health Board to provide training, program development, and technical assistance for two interviewers.

NOW THEREFORE BE IT RESOLVED, the (your IRA council)

_____ hereby applies for the project submitted by the Alaska Native Health Board.

This resolution was passed this ____ day of _____, 200_ at (your IRA

Council) _____ meeting by a vote of ____ for and ____ against with ____ absent.

_____ **_____**
IRA President/CEO **Secretary**

_____ **_____**
Name **Name**

Appendix 2

Informed Consent Forms

Alaska Traditional Diet Research Project

Informed Consent Form

3/11/2002

The Alaska Native Health Board, **____(insert participating regional health corporation here)___**, and other groups interested in health are doing a survey about what people in Alaska eat. This research will help us learn two things: (1) the nutritional value of what people eat and (2) risk of exposure to contaminants that might be in foods. This is good for the people of Alaska as a whole because it will help us understand the benefits and risks of their diet.

There is no risk to you if you agree to be interviewed. You will be asked about what you usually eat. The interview will take about 1 hour. To thank you for being interviewed,

_____

[based on consensus in each community the form of compensation chosen by the local oversight committee will be inserted here. The following forms of compensation were chosen by villages in the Alaska Traditional Diet Project. The consent form for each community was modified to include their compensation of choice.]

-- we will pay you $25.

-- you will have a chance in a drawing for one of 7 prizes of $75.00 each.

-- we will pay you $20 and you will have a chance in a drawing for 1 gift certificate of $250.

-- we will give you a healthy foods basket worth $20.

-- you will have a chance in a drawing for one of 4 gift certificates worth $125 each.

-- you will have a chance in a drawing for art work by local artists.

-- you will have a chance in a drawing for the following: $150 First Prize, $100 Second Prize, 10 other prizes at $10 each; plus you will be invited to a potluck dinner for participants.

-- you will have a chance in a drawing to win a chainsaw and gas.

-- you will have a chance in a drawing to win one of 2 round trip airline tickets to Fairbanks.

-- you will have a chance in a drawing to win one of 10 prizes of $100.

-- the community will hire a fiddler and have a party for participants.

We will send you a personal analysis of your answers to the questionnaire that will tell you about your diet. You may want to share this information with your health care giver.

Please read the following statement and if you agree to be interviewed, please sign and date it.

Informed Consent Statement

I understand that I will be asked about what I eat. My answers will be used, with the answers from other people in my village and from people in other villages in Alaska, to learn about the health benefits and the possible risks of Alaskan diets.

I understand that my answers will be private. My name will not be used in any reports. The name of my village may be used in reports. A record of my answers, without my name, will be kept at the Alaska Native Health Board. The other groups that will analyze the answers (IDM Consulting and the Institute for Circumpolar Health, University of Alaska) may also keep a record of my answers in a way that cannot be linked to me personally.

A final report about the diet survey will be made to my village and local tribal council, to the regional Native Health Corporations, and to the general public. The final report will include only average information from all people in the study, not individual answers.

I understand that being interviewed is completely voluntary at all times. I understand that I can stop the interview at any time. There are no penalties for deciding not to be interviewed and there are no penalties for stopping the interview.

If I have questions about the survey, I can contact

Michael Bradley, D.V.M., M.P.H.
Alaska Native Health Board
3500 Woodland Drive, # 500
Anchorage, AK 99517

Phone (800) 478-2426
Fax (907) 563-2001
Email mbradley@anhb.org

If I am worried about the project, the interviewer, or the contractors, I can contact

David H. Barrett, M.D.
Chairman, Alaska Area Institutional Review Board
Alaska Native Medical Center
4315 Diplomacy Drive
Anchorage, AK 99508
907-729-2062

I have read this consent form / This consent form has been read to me **(cross out the one that does <u>not</u> apply; if consent was read to the participant, the reader must sign below)**. I have had a chance to ask questions. I understand the study and I agree to be interviewed.

_____ _____

Signature of adult participant (18 years and older) Date

_____ _____

Signature of teen participant (13-17 years) Date

For participants less than18 years old, a parent or legal guardian must also sign this form.

I consent to having my child complete this survey.

_____ _____

Signature of Parent or Guardian Date

_____ _____

Signature of reader of statement, if applicable Date

Appendix 3

Food Frequency Questionnaires

PLEASE USE A BLACK OR BLUE PEN TO FILL OUT THIS FORM

For optimum accuracy, please print carefully and avoid contact with the edges of the box.
The following will serve as an example:

1	2	3	4	5	6	7	8	9	0

Mark choice boxes like: ☒

NOT like: ☑

Alaska Traditional Diet Project

Nutrition Questionnaire

Frequency of Traditional and Western Food Use
(Compiled all regions)

6777433535

"Please answer each question as best you can. Give us a rough idea, if you are not sure."

1. Community number: ☐☐

Individual number: ☐☐☐

2. Time diet interview started ☐☐:☐☐ ☐ am ☐ pm

3. Gender ☐ Male ☐ Female

a. If female, are you pregnant? ☐ Yes ☐ No

b. If female, are you breast feeding? ☐ Yes ☐ No

4. Language used for interview? ☐ English ☐ Other - list _____

5. Today's date ___ / ___ / ___ (mm / dd / yy)

6. Weight ☐☐☐ pounds

Height ☐ feet ☐☐ inches

7. Age ☐☐ years

8. Name of community _____ a. Number of years in this community ☐☐

9. Which ethnic groups do you identify with? *(check all that apply)*

- ☐ Aleut
- ☐ Alutiiq
- ☐ Athabaskan
- ☐ Inupiaq
- ☐ Tlingit
- ☐ Yup'ik/Cup'ik
- ☐ Haida
- ☐ Tsimshian
- ☐ Other/Mixed _____
- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Asian/Pacific Islander
- ☐ Hispanic

Consumption of traditional wild food has a spiritual and cultural significance to many people. The following questions will help us understand the importance of traditional foods in the total diet.

How important is eating traditional food to you? ☐ Very important ☐ Somewhat important ☐ Doesn't matter

Do you think that you are eating more, less or about the same amount of traditional food than,

5 years ago? ☐ More now ☐ Less now ☐ About the same amount

15 years ago? ☐ More now ☐ Less now ☐ About the same amount

If more or less, why? _____

Do you have any concerns about traditional foods? ☐ Yes ☐ No

If yes, please describe. *(i.e. physical abnormalities of animals harvested)*

Do you have any concerns about store-bought foods? ☐ Yes ☐ No

If yes, please describe.

"This form asks about your usual eating habits in the past year. This includes all meals or snacks, at home or eating out. There are three kinds of questions for each food: what time of year, how often, and how much.

First, we will ask WHAT TIME OF YEAR you usually ate each food. Did you eat the food regularly all year, or did you only eat the food during certain months of the year (seasonal). If you only ate a food seasonally, tell me which months you commonly ate it. Tell me 'never' if the food was not eaten during the last year.
Second, we will ask HOW OFTEN, on average, you ate each food during the past year or season. Tell me the number of times you ate each food per day, week, month, or year.
And last, we will ask HOW MUCH of each food you usually ate. Sometimes we ask how many you eat, such as 1 egg, 2 eggs, etc. ON THE DAYS YOU EAT IT. Sometimes we ask 'how much'. (Show the food model listed for each food.) 'Choose the amount that looks the most like the serving size you usually eat. Do you usually eat a serving about one-half this size, this size, two times this size, or 3 times or more compared to this model?'"

Local Wild Foods

Use chicken model unless otherwise noted.

Do you eat salmon? ☐ Yes ☐ No
(If no, go on to next food.)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? Compared to models 0.5, 1, 2, or 3 or >
King salmon, dried, smoked or salted	☐	☐	_____	☐	☐	☐	☐	☐	☐
King salmon, raw or frozen	☐	☐	_____	☐	☐	☐	☐	☐	☐
King salmon, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Silver salmon, dried, smoked or salted	☐	☐	_____	☐	☐	☐	☐	☐	☐
Silver salmon, raw or frozen	☐	☐	_____	☐	☐	☐	☐	☐	☐
Silver salmon, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Red salmon, dried, smoked or salted	☐	☐	_____	☐	☐	☐	☐	☐	☐
Red salmon, raw or frozen	☐	☐	_____	☐	☐	☐	☐	☐	☐
Red salmon, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pink salmon, dried, smoked or salted	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pink salmon, raw or frozen	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pink salmon, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chum salmon, dried, smoked or salted	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chum salmon, raw or frozen	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chum salmon, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐

If you eat salmon, do you eat, fish heads? ☐ Yes ☐ No
fish skin? ☐ Yes ☐ No
fish other parts? ☐ Yes ☐ No If yes, which parts? _____

Do you eat fish other than salmon? ☐ Yes ☐ No

(If no, go on to next food.)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Burbot	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cod, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cod, other	☐	☐	_____	☐	☐	☐	☐	☐	☐
Blackfish	☐	☐	_____	☐	☐	☐	☐	☐	☐
Dolly Varden	☐	☐	_____	☐	☐	☐	☐	☐	☐
Grayling	☐	☐	_____	☐	☐	☐	☐	☐	☐
Halibut, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Halibut, other	☐	☐	_____	☐	☐	☐	☐	☐	☐
Smelt/Candlefish, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Smelt/Candlefish, other	☐	☐	_____	☐	☐	☐	☐	☐	☐
Trout, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Trout, other	☐	☐	_____	☐	☐	☐	☐	☐	☐
Whitefish, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Whitefish, other	☐	☐	_____	☐	☐	☐	☐	☐	☐

If you eat other fish, do you eat, fish heads? ☐ Yes ☐ No

fish skin? ☐ Yes ☐ No

fish other parts? ☐ Yes ☐ No If yes, which parts? _____

Do you eat seafood other than fish? ☐ Yes ☐ No

(If no, go on to next food.)

King Crab	☐	☐	_____	☐	☐	☐	☐	☐	☐
Clams	☐	☐	_____	☐	☐	☐	☐	☐	☐
Shrimp	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat sea mammals? ☐ Yes ☐ No

(If no, go on to next food.)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Beluga muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Beluga liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Beluga muktuk	☐	☐	_____	☐	☐	☐	☐	☐	☐
Beluga kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Beluga oil *(use 1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bowhead muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bowhead liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bowhead muktuk	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bowhead kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bearded Seal/Oogruk, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bearded Seal/Oogruk, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bearded Seal/Oogruk, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Harbor/Hair Seal, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Harbor/Hair Seal, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Harbor/Hair Seal, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Harbor/Hair Seal, bone	☐	☐	_____	☐	☐	☐	☐	☐	☐
Northern Fur Seal, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Northern Fur Seal, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Northern Fur Seal, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ringed Seal, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ringed Seal, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ringed Seal, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spotted Seal, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐

Sea Mammals cont.	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Mont	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Spotted Seal, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spotted Seal, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pacific Walrus, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pacific Walrus, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pacific Walrus, blubber	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pacific Walrus, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Seal Oil *(use 1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat land animals? ☐ Yes ☐ No

(If no, go on to next food.)

Caribou/reindeer muscle, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer muscle, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer marrow	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer fat	☐	☐	_____	☐	☐	☐	☐	☐	☐
Caribou/reindeer, heart	☐	☐	_____	☐	☐	☐	☐	☐	☐
Deer muscle, dried	☐	☐	_____	☐	☐	☐	☐	☐	☐
Deer muscle, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Deer, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Deer, marrow	☐	☐	_____	☐	☐	☐	☐	☐	☐
Deer, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Grizzly/Brown bear muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Grizzly/Brown bear bone	☐	☐	_____	☐	☐	☐	☐	☐	☐

Land animals cont.	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Grizzly/Brown bear, fat	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, muscle, cooked	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, heart	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, fat	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, marrow	☐	☐	_____	☐	☐	☐	☐	☐	☐
Moose, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat blood from sea mammals or land animals? ☐ Yes ☐ No

If yes, which? _____

Do you eat the following parts from sea mammals or land animals?

☐ Tongue ☐ Nose ☐ Stomach lining ☐ Other - list _____

Do you eat wild birds? ☐ Yes ☐ No

(If no, go on to next food.)

Cormorants (Shags)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Common Eider	☐	☐	_____	☐	☐	☐	☐	☐	☐
Geese	☐	☐	_____	☐	☐	☐	☐	☐	☐
Mallards	☐	☐	_____	☐	☐	☐	☐	☐	☐
Oldsquaw duck	☐	☐	_____	☐	☐	☐	☐	☐	☐
Raven	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat wild berries? ☐ Yes ☐ No

(Use cup model)

(If no, go on to next food)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Blackberries or crowberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Blueberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cranberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Lowbush Salmonberries or cloudberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Highbush Salmonberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rose Hips	☐	☐	_____	☐	☐	☐	☐	☐	☐
Raspberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Huckleberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Elderberries	☐	☐	_____	☐	☐	☐	☐	☐	☐
Strawberries	☐	☐	_____	☐	☐	☐	☐	☐	☐

Water *(Use glass model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

Where do you usually get your drinking water? *choose one*

☐ Private well
☐ Bottled
☐ Ice
☐ Lake
☐ Stream/River
☐ Rain
☐ Spring
☐ Municipal system
☐ Other: _____

Store Bought Foods

Do you eat store bought meats? ☐ Yes ☐ No

(If no, go on to next food.)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Beef, steak, roast including in frozen dinners	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hamburger, cheeseburger, meatloaf	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chicken or turkey	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pork or ham	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chicken eggs *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hot dogs *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Bacon, sausage *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Luncheon meats *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Canned meats/Spam	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cheese *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

When you eat chicken, do you
- ☐ Avoid eating the skin
- ☐ Sometimes eat the skin
- ☐ Often eat the skin
- ☐ N/A

What is the most common method that you use to prepare chicken?
- ☐ Baked
- ☐ Fried
- ☐ Grilled
- ☐ Boiled/in stew or soup
- ☐ N/A

Do you eat the following store bought foods?

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
White rice *(cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
White potato, not fried *(cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
French fries, fried potatoes *(cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
White bread or rolls *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Dark bread *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pilot bread *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Fry bread *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pancake *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cereal, any kind *(bowl model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

If you do eat cereal, what cereal do you eat most often? *(choose only one)*

- ☐ Bran Buds, Raisin Bran, Fruit-N-Fiber, other fiber cereal
- ☐ Product 19, Just Right, Total
- ☐ Corn Flakes, Cheerios, Special K
- ☐ Sugar coated cereal like Frosted Flakes, etc.
- ☐ Cooked cereal like oatmeal

Do you eat the following store bought foods?

Ice cream, ice cream bars *(cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Salty snack chips *(bowl model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Peanut butter *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Margarine *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Butter *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Mayonnaise, salad dressing *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cake, doughnuts, pastry, pie *(How many pieces?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cookies *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chocolate candy bars *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sugar/honey *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Jelly/jam *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Syrup *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Crisco *(1.model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Vegetable oil *(1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat the following store-bought vegetables?
Including canned, frozen, fresh, and any preparation
(Use cup model unless otherwise noted)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Tomatoes	☐	☐	_____	☐	☐	☐	☐	☐	☐
Lettuce or green salad	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sweet potatoes or yams	☐	☐	_____	☐	☐	☐	☐	☐	☐
Green beans, corn or peas	☐	☐	_____	☐	☐	☐	☐	☐	☐
Kidney beans, baked beans, soup beans	☐	☐	_____	☐	☐	☐	☐	☐	☐
Brussels sprouts, cauliflower, broccoli	☐	☐	_____	☐	☐	☐	☐	☐	☐
Carrots	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you eat the following store-bought fruits?
Including canned, frozen, fresh, and any preparation
(Use cup model unless otherwise noted)

Peaches, apricots	☐	☐	_____	☐	☐	☐	☐	☐	☐
Orange *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Apple *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Banana *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Applesauce, fruit cocktail or other canned fruit	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you drink the following beverages?
(Use glass model unless otherwise noted)

100% Juice *(all kinds)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Orange juice	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hi-C, Tang, Koolaid	☐	☐	_____	☐	☐	☐	☐	☐	☐
Milk (any kind)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Regular soda (not diet)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Coffee or tea *(cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

When you drink milk, what kind do you usually drink?

- ☐ Whole/regular milk
- ☐ 2% low fat
- ☐ 1% low fat
- ☐ Skim/non-fat (including powdered)
- ☐ Evaporated
- ☐ Other
- ☐ Don't know

Do you eat the following mixed dishes or products?
(Use bowl model unless otherwise noted)

	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Soup w/ rice, noodles, macaroni	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spaghetti, pasta w/ tomato sauce	☐	☐	_____	☐	☐	☐	☐	☐	☐
Burritos *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hot Pockets *(How many?)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pizza *(vegetable topping)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pizza *(meat topping)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

Are there any other foods from the store you eat more than once a week? ☐ Yes ☐ No

_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐

Do you take vitamin or mineral supplements (or pills)? ☐ Yes ☐ No
If yes, give names(and brands, if possible) and amounts.
example: vitamin C -500 mg-Nature Valley
Centrum multivitamin: 1 per day

									How many pills or tablets? 0.5, 1, 2, or 3 or >
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐

Arctic and Sub-arctic Coast Wild Foods

"Please tell me if you eat any of these wild foods"

Community number: ☐☐ Individual number: ☐☐☐

Use chicken model unless otherwise noted.

Sea Mammals	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Bearded Seal, flipper	☐	☐	_____	☐	☐	☐	☐	☐	☐
Gray Whale, bone	☐	☐	_____	☐	☐	☐	☐	☐	☐
Gray Whale, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Gray Whale, muktuk	☐	☐	_____	☐	☐	☐	☐	☐	☐
Polar Bear, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Polar Bear, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Porpoise	☐	☐	_____	☐	☐	☐	☐	☐	☐
Seal, heart	☐	☐	_____	☐	☐	☐	☐	☐	☐
Seal, intestines	☐	☐	_____	☐	☐	☐	☐	☐	☐
Seal, lung	☐	☐	_____	☐	☐	☐	☐	☐	☐
Walrus, flipper	☐	☐	_____	☐	☐	☐	☐	☐	☐

Fish other than salmon

Arctic Cisco	☐	☐	_____	☐	☐	☐	☐	☐	☐
Herring (dried)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Irish Lord	☐	☐	_____	☐	☐	☐	☐	☐	☐
Lush Fish	☐	☐	_____	☐	☐	☐	☐	☐	☐
Needle Fish	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pacific Sole	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pike (dried)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sheefish	☐	☐	_____	☐	☐	☐	☐	☐	☐
Suckers	☐	☐	_____	☐	☐	☐	☐	☐	☐
Tomcod	☐	☐	_____	☐	☐	☐	☐	☐	☐

Land Animals	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Beaver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Lynx	☐	☐	_____	☐	☐	☐	☐	☐	☐
Muskrat	☐	☐	_____	☐	☐	☐	☐	☐	☐
Muskox	☐	☐	_____	☐	☐	☐	☐	☐	☐
Porcupine	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rabbit	☐	☐	_____	☐	☐	☐	☐	☐	☐
River/land Otter	☐	☐	_____	☐	☐	☐	☐	☐	☐
Squirrel	☐	☐	_____	☐	☐	☐	☐	☐	☐

Plants
(Use cup model)

Beach greens	☐	☐	_____	☐	☐	☐	☐	☐	☐
Fiddleheads	☐	☐	_____	☐	☐	☐	☐	☐	☐
Fireweed Jelly	☐	☐	_____	☐	☐	☐	☐	☐	☐
Mouse food	☐	☐	_____	☐	☐	☐	☐	☐	☐
Other wild greens	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rhubarb	☐	☐	_____	☐	☐	☐	☐	☐	☐
Roots	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sourdock	☐	☐	_____	☐	☐	☐	☐	☐	☐
Tundra Tea	☐	☐	_____	☐	☐	☐	☐	☐	☐
Wormwood	☐	☐	_____	☐	☐	☐	☐	☐	☐
Wild Celery	☐	☐	_____	☐	☐	☐	☐	☐	☐
Wild Onions	☐	☐	_____	☐	☐	☐	☐	☐	☐
Wild Spinach	☐	☐	_____	☐	☐	☐	☐	☐	☐

Wild Birds	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per				How much each time?
					Day	Week	Month	Year	0.5, 1, 2, or 3 or >
Arctic Tern	☐	☐	_____	☐	☐	☐	☐	☐	☐
Brandts	☐	☐	_____	☐	☐	☐	☐	☐	☐
Crane	☐	☐	_____	☐	☐	☐	☐	☐	☐
Green-wing Teal	☐	☐	_____	☐	☐	☐	☐	☐	☐
Golden Eye	☐	☐	_____	☐	☐	☐	☐	☐	☐
Gulls	☐	☐	_____	☐	☐	☐	☐	☐	☐
Kittiwakes	☐	☐	_____	☐	☐	☐	☐	☐	☐
Murres	☐	☐	_____	☐	☐	☐	☐	☐	☐
Phalaropes	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pintail	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ptarmigan	☐	☐	_____	☐	☐	☐	☐	☐	☐
Puffin	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sandpiper	☐	☐	_____	☐	☐	☐	☐	☐	☐
Scaup	☐	☐	_____	☐	☐	☐	☐	☐	☐
Snipes	☐	☐	_____	☐	☐	☐	☐	☐	☐
Snowgeese	☐	☐	_____	☐	☐	☐	☐	☐	☐
Snowy Owl	☐	☐	_____	☐	☐	☐	☐	☐	☐
Speckled Eider, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Speckled Eider, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spruce Hen	☐	☐	_____	☐	☐	☐	☐	☐	☐
Swans	☐	☐	_____	☐	☐	☐	☐	☐	☐

Wild Bird Eggs	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Week	Month	Year	How much each time? 0.5, 1, 2, or 3 or >
Loon eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Murre eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Ptarmigan eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Puffin eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Snipe eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Tern eggs	☐	☐	________	☐	☐	☐	☐	☐	☐
Seagull eggs	☐	☐	________	☐	☐	☐	☐	☐	☐

Other Local Foods

List those eaten more than once a week.

________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐
________	☐	☐	________	☐	☐	☐	☐	☐	☐

Is there anything else about the survey or about foods that you want to mention?

____

____

Time diet interview ended ☐☐:☐☐ ☐ am ☐ pm

Interviewer initials ☐☐☐

Thank you very much for your help!

7766443737

Interior/Yukon Kuskokwim Wild Foods

"Please tell me if you eat any of these wild foods"

Community number: ☐☐

Individual number: ☐☐☐

Use chicken model unless otherwise noted.

Fish other than salmon	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Eels	☐	☐	_____	☐	☐	☐	☐	☐	☐
Lush fish livers	☐	☐	_____	☐	☐	☐	☐	☐	☐
Longnose sucker	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pike	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sheefish	☐	☐	_____	☐	☐	☐	☐	☐	☐

Small Land Animals									
Beaver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Muskrats	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rabbit	☐	☐	_____	☐	☐	☐	☐	☐	☐

Wild Birds									
Cranes	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ptarmigan	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spruce grouse	☐	☐	_____	☐	☐	☐	☐	☐	☐

Plants
(Use cup model)

Spruce Bark, tea	☐	☐	_____	☐	☐	☐	☐	☐	☐

Other Local Foods

List those eaten more than once a week.	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐

Is there anything else about the survey or about foods that you want to mention?

_____

_____

Time diet interview ended ☐☐:☐☐ ☐ am ☐ pm

Interviewer initials ☐☐☐

Thank you very much for your help!

Southeast Alaska Wild Foods

"Please tell me if you eat any of these wild foods"

Community number: ☐☐

Individual number: ☐☐☐

Use chicken model unless otherwise noted.

Fish other than salmon	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per: Day	Per: Week	Per: Month	Per: Year	How much each time? 0.5, 1, 2, or 3 or >
Black Cod	☐	☐	_____	☐	☐	☐	☐	☐	☐
Herring	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hooligan (Eulachon)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Hooligan (Eulachon), grease *(use 1. model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ling Cod	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rock fish	☐	☐	_____	☐	☐	☐	☐	☐	☐
Smelt	☐	☐	_____	☐	☐	☐	☐	☐	☐
Yellow Eye/Red Snapper	☐	☐	_____	☐	☐	☐	☐	☐	☐

Seafood other than fish

Abalone	☐	☐	_____	☐	☐	☐	☐	☐	☐
Blue Mussels, raw	☐	☐	_____	☐	☐	☐	☐	☐	☐
Blue Mussels, boiled	☐	☐	_____	☐	☐	☐	☐	☐	☐
Chitons/badarkis (gumboots)	☐	☐	_____	☐	☐	☐	☐	☐	☐
Cockles	☐	☐	_____	☐	☐	☐	☐	☐	☐
Dungeness Crab	☐	☐	_____	☐	☐	☐	☐	☐	☐
Geoduck	☐	☐	_____	☐	☐	☐	☐	☐	☐
Octopus	☐	☐	_____	☐	☐	☐	☐	☐	☐
Razor Clams	☐	☐	_____	☐	☐	☐	☐	☐	☐
Rock Scallops	☐	☐	_____	☐	☐	☐	☐	☐	☐

Seafood other than fish cont.	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Sea Cucumber *(use cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sea Urchins *(use cup model)*	☐	☐	_____	☐	☐	☐	☐	☐	☐

Wild Birds

Cormorant eggs	☐	☐	_____	☐	☐	☐	☐	☐	☐
Pintail Duck	☐	☐	_____	☐	☐	☐	☐	☐	☐
Ptarmigan	☐	☐	_____	☐	☐	☐	☐	☐	☐
Puffin	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sea Gull eggs	☐	☐	_____	☐	☐	☐	☐	☐	☐
Spruce Grouse	☐	☐	_____	☐	☐	☐	☐	☐	☐

Land Animals

Elk, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Elk, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Elk, marrow	☐	☐	_____	☐	☐	☐	☐	☐	☐
Elk, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Elk, heart	☐	☐	_____	☐	☐	☐	☐	☐	☐
Black Bear, muscle	☐	☐	_____	☐	☐	☐	☐	☐	☐
Black Bear, liver	☐	☐	_____	☐	☐	☐	☐	☐	☐
Black Bear, kidney	☐	☐	_____	☐	☐	☐	☐	☐	☐
Black Bear, heart	☐	☐	_____	☐	☐	☐	☐	☐	☐

Plants *(Use cup model)*	Never	Year round	If seasonal, specify months	Number of times you eat a portion	Per Day	Per Week	Per Month	Per Year	How much each time? 0.5, 1, 2, or 3 or >
Black Seaweed	☐	☐	_____	☐	☐	☐	☐	☐	☐
Devil's club	☐	☐	_____	☐	☐	☐	☐	☐	☐
Goose tongue	☐	☐	_____	☐	☐	☐	☐	☐	☐
Indian Celery	☐	☐	_____	☐	☐	☐	☐	☐	☐
Kelp, Marosystis	☐	☐	_____	☐	☐	☐	☐	☐	☐
Licorice Root	☐	☐	_____	☐	☐	☐	☐	☐	☐
Red Sea Ribbon	☐	☐	_____	☐	☐	☐	☐	☐	☐
Salmonberry sprouts	☐	☐	_____	☐	☐	☐	☐	☐	☐
Sea Asparagus	☐	☐	_____	☐	☐	☐	☐	☐	☐
Wild Rice	☐	☐	_____	☐	☐	☐	☐	☐	☐

Other Local Foods

List those eaten more than once a week.

_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	_____	☐	☐	☐	☐	☐	☐

Is there anything else about the survey or about foods that you want to mention?

_____

_____

Time diet interview ended ☐☐:☐☐ ☐ am ☐ pm

Interviewer initials ☐☐☐

Thank you very much for your help!

7868503939

Appendix 4

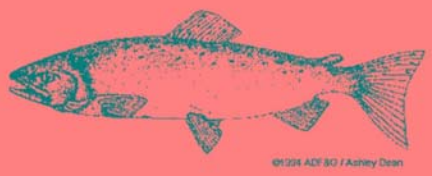
Wild Food Resources Guide

Animal Resource Guide

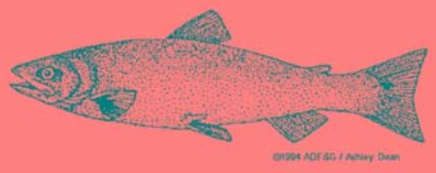
Chinook Salmon:

Also called quinnat, tyee, tule, blackmouth, and King. Chinook are the largest of all salmon and have black spots on their back, dorsal fin, and the whole tail.

Coho Salmon:
Also called silver Salmon. Coho are silver in color with small black spots on their back, dorsal fin, and on the top of their tail.



Sockeye Salmon:
Also called red or blueback Salmon. Sockeye salmon have large black spots and are green blue on the top, silver on the sides, and white to silver on their bellies.



Pink Salmon:

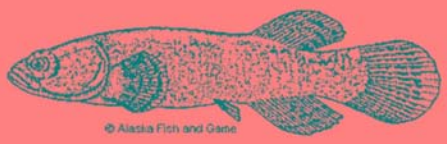
Also called humpback, or humpy. Pink salmon are blue on top, silver on their sides, and have a large "hump" on their backs.

Chum Salmon:

Also called dog salmon, or calico salmon. Chum salmon are blue with vertical green and purple bars with large teeth. The females have a dark horizontal line on their sides.

Burbot:
Also called lawyer, loache, ell pout, methy, lush, lingcod, and mud shark. Burbot have mottled olive-black or brown skin interspersed with yellow patches and barbell.

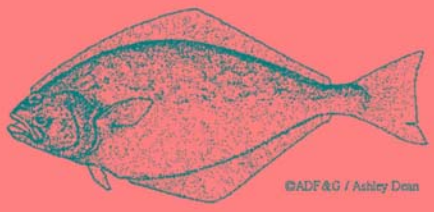
Blackfish:
Normally only 8 inches long, they are dark green or brownish on their upper halves, and pale on their lower halves.



Dolly Varden:
Dolly Varden are found in rivers, streams, and lakes and are generally silvery green or brown on the dorsal surface and red or orange spots on their sides. Mature males have a red belly.

Grayling:
Grayling's dorsal fin has red or purple spots while their other fins are brown. They are generally 11 or 12 inches in length.

Halibut:
Halibut is a flatfish with both eyes on one side of the body. They are generally brown on their backs and pale on their bellies.



Smelt/Candlefish:
Also known as hooligan or Eulachon. They grow to about 10 inches and are blue silver in color and change to gray brown when they spawn.

Trout

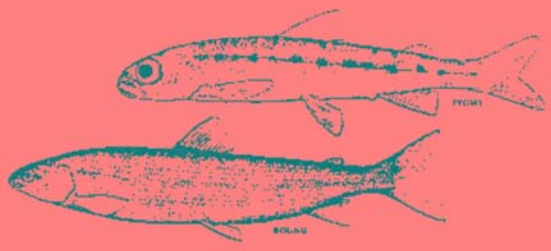
Cutthroat Trout:
Found in large lakes and streams, they average 18 inches long and can get as large as 24 inches. They are bluish-silver with dark colored backs.

Lake Trout:
Flesh of the lake trout is from creamy white to deep orange, but their skin varies depending on the season. Lake trout lack pink spots on their tail.

Rainbow Trout:
Coloration varies from age to habitat to maturity and to sex, though they are generally blue-silver to green on their backs with a pink stripe horizontal on their sides, and a pale belly with 12 rays on the fin.

Steelhead Trout:
Steelhead trout closely resemble rainbow trout, except they are more streamline and are more silver in color. Steelhead Trout live part of their lives in seawater.

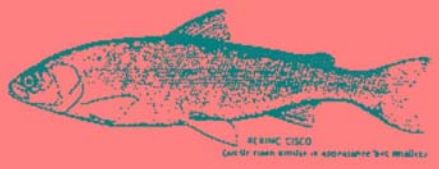
Whitefish



There are two large species of whitefish, not shown here, along with these seven smaller species.

Round and Pygmy Whitefish: Both species have rounded bodies and pointed snouts. Their upper jaw extends past the lower jaw. The round whitefish get to 16 inches in length and the pygmy get to 8 inches.

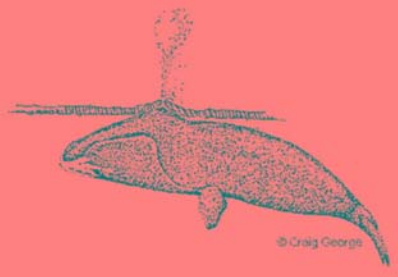
Broad and Humpback Whitefish: These include the three other small species, termed as ciscoes. All of these have small heads and long, wide bodies. Their mouths tend to the ground because they are bottom feeders. The broad whitefish are larger then the humpback whitefish with a deeper head and more pointed nose.



Pacific Herring:
Herring grow to about 9 inches long and are blue-green with silver sides. The pacific herring has large scales.

Beluga Whale:
Also called Puugzaq, Cetuaq, and Sisuaq.

Bowhead Whale:
Also called agviq and aghveq.



Gray Whale:
Gray Whales have a hump where a dorsal fin should be with 9 to 12 bumps after the hump. Gray whales are gray in color.

Bearded Seal:
Also called mukluk or oogruk. Bearded Seals grow to about 93 inches long and up to 750 pounds.

Harbor Seal:
Also called Hair seals. Harbor seals grow to about 180 pounds.

Northern Fur Seal:
Males grow to between 400 and 600 pounds while females grow to between 90 and 110 pounds.

Ribbon Seal:
Also called qasruliq, kukupak, and qaigullik.

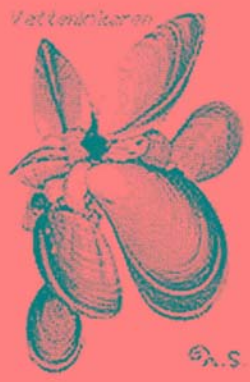
Ringed Seal:
Also called Natchek or niknik. Ringed seals grow to about 5 feet long and 150 pounds.

Spotted Seal:
Also called issuriq, gazigyaq, and qasigiaq. Spotted seals grow up to 67 inches and weigh as much as 270 pounds.

Pacific Walrus:
Considered the mainstay of many Eskimo villages.

Dungeness Crab:
Dungeness crabs grow to about 8 inches and 2 or 3 pounds.

Blue Mussels:
Also called Common Mussel, they can grow up to 4 inches long.



Geoduck:
Geoducks grow to about 3 pounds.

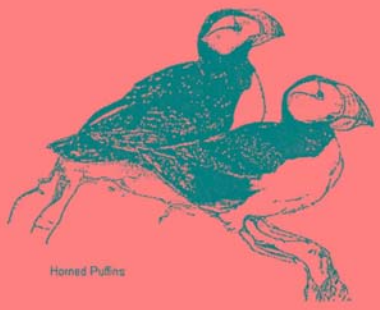
Chitons:
Also called badarkis or gumboots. Chitons have 8 plates that interlock. Chitons are sometimes spiny or furry.

Sea Cucumber:
Sea Cucumbers grow up to 20 inches in length.

Sea Urchin:
The tips of Urchin spines are purple to light purple.

Abalone:
Abalone grow to about 5 and a half inches. They have six holes on their side and their colors are molted.

Horned Puffin:
Horned Puffins are also called katukh-puk. Males and females are the same color.



Horned Puffins

Spruce Grouse:
Commonly called spruce hens or spruce chickens. Spruce grouse in the interior and south-central Alaska have a brown-tipped tail; those in the southeast have white-tipped feathers.

Pintail Duck:
Males have a brown head, white body, and gray back and wings. Females are gray-brown with gray feet.

Oldsquaw Duck:
Oldsquaw ducks have white crowns, necks, backs, flanks, and bellies. Their chests are black. Females are brown with pale circling their necks and white flanks.

Willow Ptarmigan:
Ptarmigan weigh up to 1.5 pounds and has white wings year round.

Willow Ptarmigan
© R.T. Wallen

Brant:
Also called Brent Goose. They are very dark in color with creamy to white sides.

Eider:
Eider males have bold black and white patterns while females have muted black, gray, and brown patterns.

Raven:
Ravens are black in color. They make a distinctive "kaw" sound.

Phalarope:
Phalarope are also called Nimishuruk. In winter, both male and female have the same coloration, gray with dark bills and light bellies, in summer males have a rust-red neck and females have a rust-red back and neck.

Kittiwake:
Kittiwakes have white heads, necks, bellies, and tails. They have a yellow beak.

Murre:
Murres have dark backs, necks, heads, and tails with white bellies.

Cormorant:
Cormorants are completely black when mature; when young they are shades of brown.

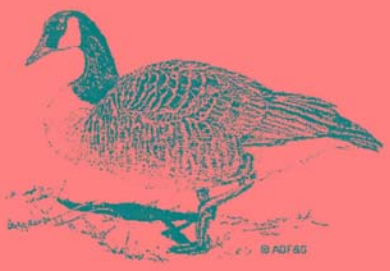
Scaup:
There are two types of Scaup; greater scaup and lesser scaup.

Lesser Scaup

Greater Scaup

Snow Geese:
With the exception of black wing tips, snow geese are completely white.

Canadian Geese:
Depending upon the subspecies, they can be from 3 to 10 pounds.



Swans:
Both Tundra and Trumpeter swans are white with a black mask over their eyes. Their young are ash gray in color.

Glaucous-winged Gulls:
Commonly called Seagulls.

Resources

http://www.state.ak.us/local/akpages/FISH.GAME/adfghome.htm

http://www.wa.gov/wdfw/fish/forage/forage.htm

http://museum.gov.ns.ca/mnh/nature/nsbirds/bns0028.htm

http://www.aces.edu/department/extcomm/publications/anr/anr-905/anr-905.html

http://tmblmac19.tmbl.gu.se/Vattenkikaren/fakta/arter/mollusca/bivalvia/mytiedul/mytied2e.html

http://www.ocean.udel.edu/mas/seafood/bluemussel.html

http://www.britannica.com/eb/article?eu=71952&tocid=0&query=sucker%20and%20carp

http://www.mbr.nbs.gov/id/framlst/i1200id.html

http://www.absc.usgs.gov/research/Fisheries/fish_proj_loc.htm

http://www.encyclopedia.com/articles/44938.html

http://www.mstpa.com/sheefish.html

http://www.pac.dfo-mpo.gc.ca/ops/fm/shellfish/Geoduck/biology_geoduck.htm

http://home.inreach.com/burghart/

http://home.inreach.com/burghart/wcoast.html

http://www.afsc.noaa.gov/kodiak/photo/cuke.htm

http://www.seasky.org/reeflife/sea2d1.html

http://www.acsonline.org/factpack/graywhl.htm

http://www.acsonline.org/factpack/graywhl.htm

http://www.marinemammalcenter.org/learning/education/whales/gray.asp

http://duckcentral.com/species.html

http://www.birdsofbritain.co.uk/bird-guide/brent-goose.htm

http://duckcentral.com/oldsquaw.html

http://birding.about.com/library/fg/blfg-brantabernicla.htm?IAM=intelliseek&terms=brant

http://www.mbr.nbs.gov/id/framlst/i0400id.html

http://www.mbr.nbs.gov/id/framlst/i0300id.html

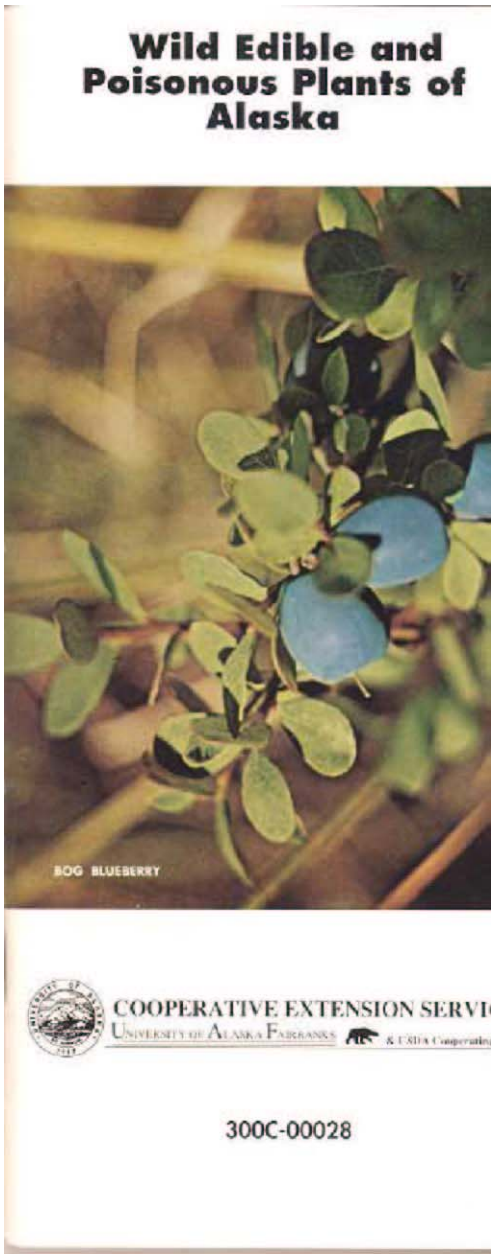
http://www.mbr.nbs.gov/id/framlst/i1480id.html

http://www.mbr.nbs.gov/id/framlst/i1490id.html

http://museum.gov.ns.ca/mnh/nature/nsbirds/bns0065.htm

http://museum.gov.ns.ca/mnh/nature/nsbirds/bns0066.htm

Appendix 5
"Wild Edible and Poisonous Plants of Alaska"
Cooperative Extension Service
University of Alaska Fairbanks
300C-00028
revised May, 1993



"Wild Edible and Poisonous Plants of Alaska" can be ordered for $5.00 from the University of Alaska Cooperative Extension Service by calling the State Publication & Distribution Center at 1-877-520-5211. For more information please see the University of Alaska Cooperative Extension Service publications webpage at http://www.uaf.edu/ces/publications/index.html

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Appendix 6

Subsistence Foods Substitutions

Foods with Missing Nutrient Values and Substitutions

Food listed on Survey Form	Food Substituted from NCC Database*
Arctic Tern	duck, wild, skin eaten
Beach greens	vegetables, Alaskan foods, wild greens - cooked
Bearded Seal flipper	game, seal, cooked
Bearded seal/oogruk	game, seal, cooked
Bearded seal/oogruk, kidney	game, walrus, meat, cooked
Bearded seal/oogruk, liver	game, walrus, liver
Beluga meat	game, whale, meat, cooked
Beluga, kidney	game, whale, meat, cooked
Beluga, liver	game, walrus, liver
Beluga, muktuk	game, whale, skin and fat (muktuk)
Beluga, oil	fats, animal, whale blubber
Black Bear, heart	heart, unknown type
Black Bear, kidney	kidney, unknown type
Black bear, liver	liver, unknown type
Black bear, muscle	game, bear
Black Cod	cod, cooked from fresh or frozen, Pacific
Black seaweed	seaweed, dehydrated
Blackberries or crowberries (Empetrum nigrum)	blackberries, fresh
Blue Mussels, boiled	mussel, cooked from fresh or frozen
Blue Mussels, raw	mussel, raw
Bowhead kidney	game, whale, meat, cooked
Bowhead liver	game, walrus, liver
Bowhead muktuk	game, whale, skin and fat (muktuk)
Brandts	goose, skin eaten
Caribou/reindeer heart	venison or deer, heart
Caribou/reindeer kidney	venison or deer, kidney
Caribou/reindeer, dried.	game, caribou, Amount eaten multiplied by 1.6
Caribou/reindeer, liver	liver, venison
Caribou/reindeer, marrow	fats, animal, caribou
Chitons/badarkis (gumboots)	fish and seafood, other type, cooked from fresh or frozen
Cockles	mussel, cooked from fresh or frozen
Common eider	game, duck (wild), skin eaten
Cormorant eggs	eggs, duck (Used 1 duck egg based on Pelagic Cormorant= 26", duck = 22").
Cormorants	game, fowl - unknown type, skin eaten
Crane	game, fowl - unknown type, skin eaten
Deer, marrow	fats, animal, venison or wild game
Devil's club	vegetables, Alaskan foods, wild greens - cooked
Elk, marrow	fats, animal, venison or wild game
Elk, heart	heart, venison
Elk, kidney	kidney, venison
Elk, liver	liver, venison
Fiddleheads	greens, unknown type, cooked from fresh
Fireweed Jelly	jelly, regular
Geese	goose, skin eaten
Geoduck	fish and seafood, unknown type, cooked from fresh or frozen

Foods with Missing Nutrient Values and Substitutions

Food listed on Survey Form	Food Substituted from NCC Database*
Golden Eye	game, fowl - unknown type, skin eaten
Goose tongue (seaside plantain, Plantago maritima L.)	vegetables, Alaskan foods, wild greens - cooked
Gray whale, bone	game, whale, meat, cooked
Gray Whale, muktuk	game, whale, skin and fat (muktuk)
Gray Whale, muscle	game, whale, meat, cooked
Grayling	trout, cooked from fresh or frozen, rainbow
Green-wing Teal	game, fowl - unknown type, skin eaten
Grizzly/Brown bear bone	game, bear
Grizzly/Brown bear muscle	game, bear
Grizzly/brown bear, fat	fats, animal, venison or wild game
Gulls	game, fowl - unknown type, skin eaten
Halibut, dried	halibut, smoked
Harbor/Hair Seal, bone	game, seal, cooked
Harbor/Hair Seal, kidney	game, seal, cooked
Harbor/Hair seal, liver	liver, walrus
Harbor/Hair seal, muscle	game, seal, cooked
Herring, dried	herring, cooked from fresh or frozen, Pacific (3oz / 0.7 conversion factor)=4.3 oz
High-bush salmonberries (Rubus spectabilis Pursh.)	salmonberries
Hooligan (Eulachon) grease	oils, herring
Huckleberries	blueberries, fresh
Indian Celery	vegetables, Alaskan foods, wild greens - cooked
Irish Lord	fish and seafood, unknown type, cooked from fresh or frozen
Kelp, marosystis	kelp
Kittiwakes	game, fowl - unknown type, skin eaten
Licorice Root	potato, boiled, with skin
Longnose sucker	fish and seafood, sucker - white, cooked from fresh or frozen
Loon egg	eggs, duck(1loon egg = .75 duck egg based on 1loon egg=1.5 med chicken egg, and 1 duck egg = 2 med chicken eggs.
Lush fish livers, (burbot and lush fish the same)	fish and seafood, burbot, cooked from fresh or frozen
Lynx	game, raccoon
Mallards	game, duck (wild), skin eaten
Moose heart	venison or deer, heart
Moose, fat	fats, animal, venison or wild game
Moose, kidney	kidney, venison
Moose, liver	liver, venison
Moose, marrow	fats, animal, venison or wild game
Mouse food	seeds, unknown type of seeds, unsalted
Murre eggs	eggs, duck, based on murre = 17", and ducks = 22" long.
Murres	game, fowl - unknown type, skin eaten
Muskox	game, bison or buffalo
Northern Fur seal muscle	game, seal, cooked

Foods with Missing Nutrient Values and Substitutions

Food listed on Survey Form	Food Substituted from NCC Database*
Northern fur seal, kidney	game, seal, cooked
Northern fur seal, liver	game, walrus, liver
Oldsquaw duck	game, duck (wild), skin eaten
Pacific Sole	sole, cooked from fresh or frozen
Pacific Walrus, kidney	game, walrus, meat, cooked
Phalaropes	game, fowl - unknown type, skin eaten
Pike	pike, northern
Pike, dried	pike, northern 3 oz / 0.7=4.3
Pintail Duck	game, duck (wild), skin eaten
Polar bear liver	game, walrus, liver
Polar Bear, muscle	game, bear
Porcupine	game, raccoon
Porpoise	game, seal, cooked
Ptarmigan	game, grouse, skin eaten
Ptarmigan eggs	eggs, whole, cooked (1= 1 medium chicken egg)
Puffin	game, duck (wild), skin eaten
Puffin eggs	eggs, duck , 0.5 based on Puffin = 15" long, Duck = 22" long.
Raven	game, fowl - unknown type, skin eaten
Razor clams	clams, cooked from fresh or frozen
Red sea ribbon	seaweed, dehydrated
Ringed Seal, kidney	game, seal, cooked
Ringed Seal, liver	liver, walrus
Ringed Seal, meat	game, seal, cooked
River/land Otter	game, beaver
Rock scallops	scallops
Roots	potato, boiled, with skin
Rose Hips	berries, strawberries, fresh
Salmon, Chum - dried, smoked or salted	salmon, smoked
Salmon, Chum - raw or frozen.	salmon, cooked from fresh or frozen, chum (keta) x 0.8
Salmon, King - raw or frozen.	salmon, cooked from fresh or frozen, chinook (king) x 0.8
Salmon, Pink - raw or frozen.	salmon, cooked from fresh or frozen, pink (humpback) x 0.8
Salmon, Red - raw or frozen.	salmon, cooked from fresh or frozen, sockeye (red) x 0.8
Salmon, Red- dried, smoked or salted	salmon, dried - pink salmon
Salmon, Silver - dried, smoked or salted	salmon, dried - pink salmon
Salmon, Silver - raw or frozen.	salmon, cooked from fresh or frozen, coho (silver) x 0.8
Salmonberry sprouts	vegetables, Alaskan foods, wild greens - cooked
Sandpiper	game, fowl - unknown type, skin eaten
Scaup	game, duck (wild), skin eaten
Sea asparagus (beach asparagus or glasswort)	vegetables, Alaskan foods, wild greens - cooked
Sea cucumber	fish and seafood, unknown type, cooked from fresh or frozen
Seagull egg	eggs, duck (based on 1 seagull egg = 3 med chicken eggs, 1 duck egg= 2 med chicken eggs, = 0.6 duck eggs.)

Foods with Missing Nutrient Values and Substitutions

Food listed on Survey Form	Food Substituted from NCC Database*
Sea urchins	fish and seafood, unknown type, cooked from fresh or frozen
Seal, heart	game, seal, cooked
Seal, intestines	game, seal, cooked
Seal, lung	game, seal, cooked
Sheefish	fish and seafood, unknown type, cooked from fresh or frozen
Smelt	fish and seafood, smelt - rainbow
Snipes	game, fowl - unknown type, skin eaten
Snipe eggs	eggs, duck , 0.3 based on Snipe = 10" long, Duck= 22" long
Snowgeese	goose, skin eaten
Snowy Owl	game, fowl - unknown type, skin eaten
Speckled Eider, liver	pate, chicken liver, homemade
Speckled Eider, muscle	game, duck (wild), skin eaten
Spotted Seal, kidney	game, seal, cooked
Spotted Seal, liver	liver, walrus
Spotted Seal, meat	game, seal, cooked
Spruce bark tea	tea, herbal
Spruce grouse	game, grouse, skin eaten
Swans	game, fowl - unknown type, skin eaten
Tern eggs	eggs, duck , 0.5 based on 1 tern egg=1 medium chicken egg, 1 duck egg = 2 medium chicken eggs.
Trout, dried	trout, smoked
Tundra Tea	tea, herbal
Walrus, flipper	game, walrus, meat, cooked
Whitefish, dried	fish and seafood, whitefish, smoked
Wild Celery	celery, cooked
Wild Greens	vegetables, Alaskan foods, wild greens - cooked
Wild Onions	onion, green (young), raw
Wild Rice	potato, boiled, with skin
Wild Spinach, or sourdock (Rumexarcticus Trautv.)	dock (sourdock) - cooked
Wormwood, a plant made into a medicinal tea	tea, herbal
Yellow Eye/Red Snapper	snapper

*Values from Nutrition Coordinating Center, University of Minnesota,Nutrition Data System 4.04_32