YUKON FIRST NATIONS' ASSESSMENT OF DIETARY BENEFIT/RISK

O. Receveur, N. Kassi, H. M. Chan, P. R. Berti, H. V. Kuhnlein

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TABLE OF CONTENTS

Page number

Summary iii

List of Tables and Figures vi

Foreword 1

Background, Purpose and Project Activities 2

Methods 6
Overview 6

Individual data 7
Food frequency questionnaire of traditional food 8
24-hour recall 9
Height and weight 10
Sociocultural questionnaire 10

Community data 11
Food price list 11
Harvest calendar 11
Food sample collection 11
Nutrient analyses 11
Contaminant analyses 13

Results 17
Overview of Yukon data 17
Sample characteristics 17
Traditional food consumption 17
Dietary intake 20
Body Mass Index 20
Food sample analyses 22
Nutrient composition 23
Contaminant concentrations 24
Dietary benefits and risks 26
Nutritional benefits and risks 27
Other benefits and risks 28
Exposure to contaminants 29

Findings in Perspective 35

Acknowledgements 37

Tables and Figures 38

References 142

Appendices

Appendix A. Research Agreement. 144
Appendix B. List of traditional food species used by Yukon First Nations. 150
Appendix C. Food samples collected 160
Appendix D. Published and unpublished sources of contaminant values . . . used in report 170

TABLE OF CONTENTS

Page number

Summary iii

List of Tables and Figures vi

Foreword 1

Background, Purpose and Project Activities 2

Methods 6
Overview 6

Individual data 7
Food frequency questionnaire of traditional food 8
24-hour recall 9
Height and weight 10
Sociocultural questionnaire 10

Community data 11
Food price list 11
Harvest calendar 11
Food sample collection 11
Nutrient analyses 11
Contaminant analyses 13

Results 17
Overview of Yukon data 17
Sample characteristics 17
Traditional food consumption 17
Dietary intake 20
Body Mass Index 20
Food sample analyses 22
Nutrient composition 23
Contaminant concentrations 24
Dietary benefits and risks 26
Nutritional benefits and risks 27
Other benefits and risks 28
Exposure to contaminants 29

Findings in Perspective 35

Acknowledgements 37

Tables and Figures 37

References 142

Appendices

Appendix A. Research Agreement. 144
Appendix B. List of traditional food species used by Yukon First Nations. 150
Appendix C. Food samples collected 160
Appendix D. Published and unpublished sources of contaminant values . . . used in report 170

SUMMARY

For Yukon First Nations, traditional food (food harvested from the local environment) has a central role in the life of the individual, the household and the community. Traditional food is reported being consumed on more than 50% of the days and includes over seventy species of animals and plants. Traditional food brings about improved diet quality as shown by the lower fat and saturated fat content of the diet when traditional food is consumed. Traditional food is also an important source of dietary energy, protein, iron and zinc. The increased physical activity associated with traditional food harvest, and the role of the traditional food system in cultural and social support systems are also likely to contribute to health. The economic value of traditional food is emphasized by the level of food insecurity common among Yukon First Nations: 39% of respondents reported having insufficient resources to purchase all the food they would need from the store if traditional food was not available; the average weekly Northern Food basket was priced at $164 in communities, compared to $128 in Whitehorse.

Food intake data presented in this report are used to assess benefits and risks of current food use. Traditional food provides nutritional, sociocultural and economic benefits. Benefits of market food include the availability of a well liked, inspected, and regular supply of a variety of food items. Risks associated with current food use were

assessed in terms of nutritional quality and the presence of chemical contaminants in traditional food. These data can also be used to calculate yearly traditional food consumption for comparisons with harvest studies.

In terms of nutritional quality, the diet of adults (20 years of age and over) appeared sufficient in most nutrients studied, with the possible exceptions of calcium and vitamin A. On days where traditional food was consumed, fat intake was close to dietary recommendations; when market food only was consumed, however, fat intake was excessive (40% of total energy) and saturated fat intake was above recommended levels. This pattern is of particular concern in the youngest age group who tended to report more market food use than the older age groups and may put them at higher risk of chronic disease (e.g., diabetes, heart disease, cancers). Overweight, another risk factor for chronic disease, was more common in middle-aged Yukon First Nations women (49%) than in the general population of middle-aged Canadian women (37%). In contrast, overweight was less common in young Yukon First Nations men than in young Canadian men. This difference disappeared, however, after the age of 60 where the occurrence of overweight was greater for Yukon First Nations men than for Canadian men of the same age.

It is therefore recommended that health and nutrition programmes target women and emphasize the benefits of physical activity, traditional food use, and calcium and

vitamin A-rich food sources. Attention should also be focused on the health and nutritional needs of elders.

Risks associated with traditional food consumption were evaluated considering exposure to four heavy metals (arsenic, mercury, cadmium and lead), and eight organochlorines (chlordane, chlorobenzene, dichlorodiphenyltrichloroethane (DDT), dieldrin, lindane, mirex, polychlorinated biphenyls (PCBs), toxaphene). Most of these contaminants were detected, at least in trace amounts, in all traditional food samples analyzed as part of this study. Overall, the risks associated with the observed levels of exposure were low and of no public health concern. The potential exists, however, for high consumers of trout and salmon species to exceed Tolerable Daily Intakes of toxaphene and chlordane. Health consequences of these levels of exposure are unknown and unlikely to be measurable. Nevertheless, since trout and salmon are important traditional food species for Yukon First Nations, it is recommended that consistent monitoring of these species be implemented and include regular measurements of toxaphene and chlordane.

LIST OF TABLES AND FIGURES

Table 1. Chronology of research activities 37

Table 2. List of project coordinators and interviewers 39

Table 3. Population and number of individual interviews by site and season . . . 40

Table 4. Number of individual interviews by gender and age group 40

Table 5. Study sample profile based on sociocultural questionnaire 41

Table 6. Traditional food species consumed in Yukon communities, ranked by the percent of sample consuming each species (Food Frequency Questionnaire) . . . 42

Table 7. Frequency of consumption of traditional food (% of population consuming food and average number of days per week foods are consumed, for consumers only) as measured by the Food Frequency Questionnaire, by season. 46

Table 8. Percentage of population consuming each traditional food species, by age group, as measured by the Food Frequency Questionnaire, winter and summer combined. 58

Table 9 (A-B). Mean number of species and parts consumed (mean ± SE) and percentage of population consuming food species by season and age group, as measured by the Food Frequency Questionnaire 62

Table 10. Daily intake (mean g ± SE) of traditional food recorded by the 24 hr-recall as consumed in late winter and fall combined, by gender and age group . . 64

Table 11. Average yearly consumption (kg/person/y) of main fish and land animal traditional food species[1] among Yukon First Nations, by gender and age group . .67

Table 12. Estimated intake of traditional food (g/person/day), averaged over late winter and fall, by gender and age group 68

Table 13 (A-B). Daily nutrient intake (mean ± SE), by season, gender, and age group 70

Table 14. Estimated intake of market food (g/person/day) averaged over late winter and fall, by gender and age group 72

Table 15. Height, weight and BMI based on reported and measured weight, by age group and gender 79

Table 16(A-B) Proximate and essential mineral composition of Yukon First Nations traditional food samples, measured at CINE. 81

Table 17. Contaminant level in Yukon First Nations traditional food measured at CINE. 98

Table 18. Energy and nutrient intake (least square means ± SE), adjusting for season, gender and age group, on days with and without traditional food intake (late winter and fall combined) 106

Table 19. Percentage of energy derived from carbohydrate, protein and fat (mean ± SE) on days with and days without traditional food intake (late winter and fall combined) 107

Table 20. Relative contribution of top ten food item contributors to total energy and nutrient intake, by season 108

Table 21. List of traditional food perceived as particularly good for health . . . 113

Table 22. Answers to the question: “What do you think are the most important advantages of traditional food?” 114

Table 23. Answers to the question: “What do you think are the most important advantages of market food?” 115

Table 24. Percentage agreement on selected attributes of traditional food 116

Table 25. Answers to the question: “Are there traditional food items you avoid because you think they may make you sick?” 117

Table 26. Answers to the question: “Have you noticed any changes in the quality or health of traditional plants or meats, or land animals, fish or birds?” 118

Table 27. Contaminants considered in this report and their abbreviations, and Tolerable or Acceptable Intake levels. 119

Table 28. Factors for converting contaminant values in raw food to baked or dried food, by food type. 120

Table 29. Metal concentration of food-items consumed by Yukon First Nations. 121

Table 30. Organochlorine concentration of food-items consumed by Yukon First Nations. 123

Table 31. The use of community-specific, region-specific and Yukon-specific values for contaminant levels in consumed traditional food-items (as percentages). . . 127

Table 32. Population distribution of heavy metal intake (μg/kg/d). 128

Table 33. Characteristics of 24-hour recalls with As, Cd or Hg greater than the PTDI. 129

Table 34. Population distribution of organochlorine intake (μg/kg/d). 130

Table 35. Characteristics of twenty 24-hour recalls with chlordane or toxaphene greater than the TDI. 131

Table 36. Example of safe yearly intakes of salmon and trout (days per year). 132

Table 37. Answers to the question: “Do you think you are eating more, less or the same amount of traditional food as 5 years ago?” 133

Table 38. Reasons given for not using more traditional food 133

Figure 1. Locations of communities participating in “Yukon First Nations’ Assessment of Dietary Benefit/Risk”. 134

Figure 2. Percentage of days with traditional food consumption, by season . . 135

Figure 3. Percentage of overweight adults (BMI $\geq$ 27) based on measured versus self-reported weight 136

Figure 4. Mean proportion of energy and nutrients contributed by traditional food, by season 137

Figure 5 (A-B). Frequency of consumption of all species of trout and salmon in Yukon First Nations, seasons, sexes and ages combined.. 138

FOREWORD

This technical report is a detailed description of the current food system of Yukon First Nations. The information is presented as combined data for the 10 participating communities. Additional comparisons in dietary intake and contaminant exposure among communities will require further definition between researchers and community leaders. At this time, no formal consent to proceed with comparisons among communities has been expressed.

Information in this report can be readily extracted to support and develop community initiatives to improve nutrition, monitor the presence of contaminants, promote the benefits of traditional food to younger generations, and help individuals make better informed decisions about the food they eat.

Collaborating organizations within each community were provided this summary as well as their own data on paper and computer diskette. The complete data set is archived at the offices of the Council of Yukon First Nations (CYFN, Whitehorse, Yukon) and at the Centre for Indigenous Peoples' Nutrition and the Environment (CINE, Ste-Anne-de-Bellevue, Quebec).

BACKGROUND, PURPOSE AND ACTIVITIES

BACKGROUND

The extent and implications of environmental contamination of traditional food in the Arctic have been addressed in numerous studies recently reviewed in the Canadian Arctic Contaminants Assessment Report (1997). In the Yukon, reports of high levels of cadmium in Finlayson and Tay caribou liver and kidneys, and toxaphene, DDT and PCBs in trout and loche (ling cod or burbot) from Lake Laberge have been of particular concern. Following the Council for Yukon Indians' request for a territory-wide investigation, the Yukon Technical Committee on Contaminants in Northern Ecosystems and Native Diets was created in 1992 (Usher et al, 1995) to further address those concerns.

While it is known that diet is the main source of exposure to most environmental contaminants in the Arctic, data on the concentration of contaminants in traditional food as consumed by Yukon First Nations, and estimates of dietary intake of traditional food were needed. Dietary data, in addition to providing a basis for calculation of exposure to contaminants, also allow an evaluation of other risks related to diet, such as the risk of chronic diseases associated with diets high in saturated fat, and additional benefits (nutritional, cultural, social or economic) that may be associated with traditional food consumption.

The only recent data describing diets of Yukon First Nations have been reported by Dr. E. Wein for the communities of Old Crow, Haines Junction, Teslin and Whitehorse (Wein, 1994; 1995; 1996; Wein and Freeman, 1995). No dietary data were available for other Yukon communities. Harvest studies that have included Yukon communities (e.g., Usher and Staples, 1988) provide yearly estimates of selected traditional food, but analyses of relative benefits and risks of current diets have not been done.

The present study was conducted in collaboration among the Council for Yukon Indians (CYI, now referred to as Council of Yukon First Nations (CYFN)), the Centre for Nutrition and the Environment of Indigenous Peoples (CINE, now referred to as Centre for Indigenous Peoples' Nutrition and Environment) and the Yukon Technical Committee on Contaminants in Northern Ecosystems and Native Diets (YCC).

PURPOSE

The objectives of this research were stated specifically in the project proposal and more generally in each community research agreement as:

1) Project proposal submitted to the Arctic Environmental Strategy (AES), February 5, 1995.

a) Derive quantitative estimates of traditional and market food intake among adults from Yukon First Nations.

b) Identify information gaps and complete a database of nutrient and contaminant contents of traditional food, as prepared and consumed, for quantitative estimates of intake of these items.

c) Investigate benefits of traditional food in terms of nutritional, socioeconomic and cultural significance.

d) Investigate the risks of contaminant intake in the diet.

2) Research Agreement (see Appendix A)

a) To improve the understanding of how food practices convey different benefits or risks with respect to nutrients/contaminants, culture and economy.

b) To establish a baseline dietary intake against which future dietary studies could be compared to assess changes in food intake.

c) To identify food/nutrition related concerns and potential food/nutritional problems in the community.

PROJECT ACTIVITIES

Implementation of this project was done in the following phases (see Table 1):

PHASE I: Community consultation

PHASE II: Data collection (February-March and October-December 1995)

PHASE III: Data management and analysis (May 1995-December 1996)

PHASE IV: Results discussion and report writing (December 1996-March 1998)

METHODS

I. OVERVIEW

This study derived data through individual interviews, measurements of body weight, community food price lists and harvest calendars, and analyses of traditional food samples for contaminants and nutrients. The methods for this study were developed in consultation with Yukon First Nations through a series of three preparatory meetings (see Table 1). In addition, on-going collaboration was maintained between all project team members at CINE, CYFN, and YCC. The present project was approved by McGill University Human Ethics Review Committee and the CINE Governing Board.

Since the communities of Old Crow, Haines Junction, Teslin and Whitehorse had recently participated in a dietary survey (Wein, 1994), the opportunity to participate in the present study was extended to all other Yukon First Nations communities. Ten communities agreed to participate (Figure 1).

In each community, after negotiation of a research agreement (Appendix A) with community leaders, the community was informed through posters and/or radio messages of the intent of the project. In each community, a random sample of 10% of the Yukon First Nations households or 25 households, whichever was the larger, was drawn from existing band membership lists. One man and one woman were

invited to participate within each household. When one man or one woman was not present in the household for interviewing, an additional person from an additional randomly selected household was contacted. In small communities (Beaver Creek, Burwash Landing) all households were asked to participate. Random sampling is the method of choice to assure an equal chance of each member of the community being included in the survey. A random sample of sufficient size is the best guarantee that results will represent the community at large. Nevertheless, bias may occur. For example, traditional food intake may be underestimated if the interviews are conducted at a time when a large number of high consumers of traditional food are out on the land. Care was taken to avoid interviewing at those particular times. Dietary interviews began in February, 1995, and were completed in the first week of April, 1995, for the winter sample. Another sample was drawn in the fall and data collection proceeded from the first week of October to the first week of December, 1995.

Overall participation rate was high with 91% of contacted persons agreeing to participate. Participation was confidential and voluntary, and confirmed with each individual by written consent.

II. INDIVIDUAL DATA

In each community, one to four Yukon First Nations residents were trained to administer interviews in English. A project coordinator from CINE, worked in pair with

the interviewers to provide guidance and quality control (Table 2). Each interview lasted approximately one hour and included: 1) food frequency questionnaire of traditional food; 2) 24-hour dietary recall; 3) self-reported height and weight (with optional body weight measurement); 4) sociocultural questionnaire.

1) Food frequency questionnaire of traditional food.

Respondents were asked the frequency of consumption of 107 traditional food species (from Appendix B, does not include parts) in the three months prior to the visit. To facilitate recalls, each interviewer was provided with an illustrated index of all traditional food species listed in the questionnaire. This list of traditional food species (Appendix B) had been derived in a group exercise where representatives from each Yukon First Nation community participated. For each species, the different modes of food preparation and a list of parts/organs consumed were specified as separate questions. If the respondent reported consuming the particular traditional food species in the previous three months, the interviewer proceeded by asking for the frequency of consumption. The following choices were offered: (1) less than once a week, (2) once to twice a week, (3) every other day, (4) every day or so. In data analysis, these codes were assumed to represent the following number of days per week: (1) = 0.2; (2) = 1.5; (3) = 3.5; (4) = 6.5. This part of the interview lasted approximately 20 minutes.

2) 24-hour dietary recall

After completing the traditional food frequency questionnaire, the respondent was asked to remember in detail the types and quantities of food consumed on the day prior to the visit. Locally available bowls, cups and spoons, as well as a 2-dimensional representation of bannock serving-sizes were used to facilitate serving size estimation. Each interviewer had been trained to administer the interview using standard questions. This part of the interview lasted, on average, 15 minutes.

At the end of each day, the project coordinator checked each record for completeness and calculated the individual energy intake. Respondents reporting an intake of more than 4000 kcal or less than 1000 kcal on their 24-hour recall were contacted again to ensure the correctness of the record; when in doubt, a second recall was completed. Alcohol intake is not included in the present data set. Alcohol consumption is prohibited in some communities and it can therefore be expected that reports of alcohol consumption were not reliable.

Nutrient analyses of dietary data for this report were performed using two food composition databases: a database of the composition of traditional Dene/Métis food derived from published reports (Kuhnlein et al, 1994; Morrison and Kuhnlein, 1993; Appavoo, Kubow and Kuhnlein, 1991) supplemented with traditional food previously analyzed from samples collected in the Eastern Arctic (Kuhnlein, Kubow and Soueida, 1991; Kuhnlein and Soueida, 1992); and a market food composition database (Murphy

and Gross, 1987) derived from Agricultural Handbook No. 8 series adjusted to include Canadian food items and nutrient fortification levels (Thompson and Brulé,1992).

3) Height and weight.

At the end of the 24-hour recall questionnaire, the respondent was asked to report his or her height and weight. A weight measurement was taken if the respondent agreed. Weights were measured without shoes using ordinary personal scales (precision±100g) that had been zeroed prior to measurement.

4) Sociocultural Questionnaire.

The individual interview was completed by a series of 27 questions related to household demography, food preferences and perceptions related to traditional and market food. Each question content and format had been found acceptable by the participants of the Methodology Workshop (see Table 1) and no particular difficulties were encountered during its administration which lasted approximately 10 minutes.

A total of 409 individuals were interviewed in the late winter and 444 in the fall. Incomplete interviews were discarded so that a total of 373 and 429 interviews from the late winter and fall, respectively, were used for this report. Tables 3 and 4 present the sample size used in the analyses.

III. COMMUNITY DATA.

1) Food price list.

A 46 item food price list (Wein, 1994) was compiled in March 1995 in the communities of Dawson City, Mayo, Ross River, Watson Lake, Carmacks, Carcross, and Atlin. This tool allows for comparison of market food cost across northern communities in the Yukon and Northwest Territories.

2) Harvest calendar

The pattern of traditional food harvesting was identified during the Methodology Workshop. For each traditional food species, a monthly calendar was used to identify the months of harvest and peak harvest.

3) Food sample collection

In each community, traditional food samples for which no nutrient or contaminant data were available in the literature, or food samples that community members wanted to have analysed because of concerns, were collected and shipped frozen to CINE's laboratory for analysis. The list of traditional food samples collected in Yukon First Nations is presented in Appendix C.

3.1 Nutrient analysis

3.1.1 Proximate analysis

Moisture was determined in duplicate with homogenized samples with a lyophilizer (Flexi-Dry MP system, FTS Systems Inc, Stone Ridge, NY) at - 80°C for 48 hours. Total crude fat was determined in duplicate using an automatic Soxhlet extraction system (Soxtec HT-6, Tacater AB, Hoganas, Sweden). Nitrogen content was determined by automatic nitrogen analyser (Leco Corp, St Joseph, MI) in triplicate; protein was calculated with a conversion factor of 6.25. Ash was determined in triplicate on freeze-dried, defatted samples in an Isotemp muffle furnace (Fisher Scientific, Montreal, QC) at 550°C. For all assays, a standard of homogenized salmon flesh was used as a control for day-to-day variations. Variations in the standard analyses for all determinations were within 2%.

3.2.2 Mineral analysis

Freeze-dried fish homogenate (0.35 g) was weighed into acid-washed 50 ml boiling tubes (2 replicates per sample). Eight ml of 70% nitric acid (Fisher Scientific, Trace Metal Grade) were added to each tube. Tubes were covered with glass condensers and the samples were pre-digested at room temperature overnight. Digestion was continued for 8 hrs at 120°C. Digests were cooled to room temperature and brought to 25 ml with Nanopure deionized water. Calcium , copper, iron, manganese, and zinc were determined by atomic absorption spectrometry (AAS) on the flame mode. Selenium was determined by graphite-furnace AAS with nickel used as

a modifier. All mineral analyses were performed with a Hitachi Z-8200 Zeeman polarized atomic absorption spectrophotometer (AAS) (Nissei Sanyo Ltd, Mississauga, ON).

Two sample blanks were analyzed together with each sample batch. Concentrations of minerals in blanks were below detection limits in all analyses. A spiked blank was analyzed during each analysis to ensure day-to-day reproducibility. Each standard and sample was measured in duplicate and the sample was re-analyzed if the relative standard deviation of the two measurements was higher than 10%. Standard reference materials from the National Institute of Standards & Technology (oyster tissue SRM 1566a and bovine liver SRM 1577b) and the National Research Council of Canada (dogfish muscle DORM-2) were digested and analyzed with each sample batch. Results of metal concentrations always fell within 1 SD of certified values.

The food composition data obtained in these analyses were not used in the assessment of 24-hr recalls collected in this study. These food composition data need to be further integrated with existing information to complete the food composition table of traditional food items consumed by Yukon First Nations.

3.2 Contaminants analyses

3.2.1 Heavy metals

Four heavy metals (cadmium (Cd), lead (Pb), arsenic (As) and mercury (Hg)) were measured in samples collected from the Yukon. Arsenic, Cd, and Pb were determined by graphite-furnace AAS. Palladium plus ascorbic acid, ammonium phosphate, and palladium plus ammonium phosphate, were used as modifiers for As, Cd and Pb analyses, respectively. Mercury was analysed by the cold vapour method with stannous chloride as the reducing agent. Detection limits are 0.075 μg/100g for Cd, 0.5 μg/100g for Pb, 1.0 μg/100g for As and 0.25 μg/100g for Hg.

3.2.2 Organochlorines

Levels of total PCBs (the sum of 51 congeners) and chlorinated pesticide (chlorobenzene (CBZ), hexachlorocyclohexane (HCH), dieldrin, heptachlor epoxide, chlordane, DDT, mirex, and toxaphene) were measured.

Food samples were slightly thawed and cut into pieces, pooled and homogenized with an Osterizer blender. A modification of the extraction method described by Chan et al. (1995) was used for organochlorine extraction. Five grams (wet weight) of homogenate were spiked with an aliquot of surrogate internal standard solution containing ^{13}C-labelled PCB IUPAC No 3, 28, 77, 118, 153, 202 and 209, $^{13}C_{12}$-p, p'-DDT, dieldrin and $^{13}C_6$-g-lindane. The sample was ground with 60 g of anhydrous sodium sulphate in a mortar until a free flowing powder was obtained. The ground food sample was packed into a glass column (2.5 cm i.d. x 30 cm) filled with 75 ml of

solvent (1:1 methylene chloride/hexane) and soaked for 30 minutes. The solvent was eluted at a flow rate of 3-5 ml/min and further extracted with 150 ml of solvent. The extract was concentrated to 1-2 ml on a rotary evaporator and transferred to a conical tube. The extract was filtered through a 0.45 mm Teflon filter (SPE Ltd, Concord ON.) and made up to 5.3 ml with solvent (1:1 methylene chloride/hexane). Each sample was passed through a SX-3 Biobeads gel permeation column (3 cm i.d. x 70 cm; solvent: 1:1 methylene chloride/hexane; flow rate: 5 ml/min) connected to a Beckmann Gold HPLC system (Beckmann, Fullerton CA). The first 150 ml, containing higher molecular weight lipids, were discarded. The next 150 ml containing the PCB and chlorinated pesticides were collected and concentrated under a gentle stream of dry nitrogen to 300- 500 ml, and made up to approximately 1 ml with 15:85 methylene chloride/hexane. The extract was then applied onto a Florisil (Supelco, Mississauga, ON.) column (1 cm. i.d. x 30 cm) for additional purification and fractionation. Two fractions were collected: the first fraction (50 ml 15:85 methylene chloride/hexane) contained PCB congeners, CBZ, HCH, chlordanes, DDT, and mirex; and the second fraction (50 ml 1:1 methylene chloride/hexane) contained heptachlor epoxide and dieldrin. The two fractions were concentrated to 50 ml, spiked with the volumetric internal standard d_{12}-chrysene and brought to 100 ml with isooctane for GC analysis.

The two fractions were characterized using a Varian Saturn III GC-Ion trap mass spectrometer (Varian Scientific, Mississauga,ON). A DB-5MS (J&W Scientific) (30 m

x 0.25 mm i.d. and 0.25 mm film thickness) capillary column was used. Samples were loaded onto a Varian 8200CX autosampler and 1 ml injections were made with the SPI injector using the sandwich injection technique. The initial injecting temperature was 110 ^{O}C for 1 minute then raised to 280 ^{O}C at 150 ^{O}C/min and held for 50 minutes. Initial column temperature was 80^{O}C and held for 1 minute, raised to 150 ^{O}C at 10 ^{O}C/min, raised to 265 ^{O}C at 3 ^{O}C/min, raised to 300 ^{O}C at 15 ^{O}C/min and held for 5 minutes. Ion trap temperature was kept at 270 ^{O}C with the electron multiplier set at 1800 V over the 10^5 tuning voltage and the transfer line was kept at 260 ^{O}C.

A total of 51 PCBs and 17 chlorinated pesticides was screened in the samples. Levels were measured using the internal standard method in conjunction with the corresponding external standards. Detection limits were 0.1 ng/g for all organochlorine compounds. With each batch of sample, standard reference materials measured were CLB-1 PCB solutions from the National Research Council of Canada and SRM 1588 organics in cod liver oil from the National Institute of Standards and Technology. Results were consistently within 1 SD of certified values. Stringent quality control measures were built in all the analyses. Our laboratory also participated in the QA/QC intercomparison exercise for organochlorine and heavy metals organized by the Northern Contaminants Program of Indian and Northern Affairs Canada.

RESULTS

A. OVERVIEW OF YUKON DATA

1. SAMPLE CHARACTERISTICS

Table 5 presents selected characteristics of the study sample. Households were generally small with an average of two adults and one child per household. This small household size may reflect in part the fact that older children may be away from the communities. On average, one person per household is employed full time (0.7 person/household) or part time (0.3 person/household). Thirty-nine percent of the respondents reported having insufficient resources to afford all the food that would be needed from the store if traditional food was not available, suggesting a widespread problem of food insecurity. Approximately 70% of the households reported hunting or fishing and having access to sufficient equipment to participate in these activities. In this question, "access" to equipment did not necessarily mean ownership and included borrowing and sharing.

One-half of the respondents judged themselves as medium traditional food consumers, 20% as high, and 30% as low.

2. TRADITIONAL FOOD CONSUMPTION

Table 6 shows the percent of the sample that reported consuming each

traditional food species during three months of winter (December-February), and three months of summer (July-September). The extent of traditional food use was greater in summer where the traditional food consumed by more than half the people sampled included moose, salmon (4 species), trout (4 species), whitefish (3 species), arctic grayling, spruce grouse, blueberries and raspberries. In winter, moose and salmon were the only traditional food species reported consumed by more than half the people sampled. In both seasons, however, an extensive variety of traditional food species was consumed.

Figure 2 illustrates the seasonal variation in overall traditional food use. Averaged over the year, traditional food is consumed 57% of the days. Consumption is highest in summer (80% of the days) and lowest in late winter (40% of the days).

Table 7 further documents traditional food use by reporting the percent of the population consuming each traditional food species and the frequency of use (in number of days/week) for each part or organ according to how it is prepared.

Traditional food use varied among generations. Most traditional food (except moose, and a number of plant food items such as berries, wild rhubarb, and mushrooms), appeared to be consumed least by the youngest generation (20-40 years old) (Table 8). These differences were further tested with results shown in Table 9(A-

B). In addition to community-specific differences in traditional food use, which will not be explored in this report, it is clear that the youngest age group reported consuming fewer species of fish, land animals, birds and plants, and less variety of parts or organs compared to the other two age groups.

In Table 10, the average daily serving (grams/person/day) of all traditional food items reported consumed in the 24-hour recalls during late winter and fall combined are listed by gender and age group. When used together with estimates of frequency of consumption from the Food Frequency Questionnaire (Table 7), daily intake estimates for the winter and summer can be calculated. For food items rarely consumed, standard serving sizes are uncertain, but assumptions can be made. Table 11 presents estimates of yearly consumption (per capita) of the main traditional food species using data from Tables 7 and 10, according to gender and age group. For these calculations, standard daily servings were assumed to be identical for all land animals and were estimated to be 242 grams for women and 331 grams for men. The same assumption was made for all fish, with a daily serving size estimated to be 252 grams for women and 321 grams for men. For dried meat, the estimated daily servings were 115 grams for women and 165 grams for men; for dried fish it was 165 grams for both women and men. Multiplied by the total population size of Yukon First Nations, the full year estimates could be used to cross check estimates obtained from harvest studies and would allow for evaluation of the number of animals used for food consumption in the

territory. Table 12 presents the estimated intakes of traditional food using the entire sample, that is, both consumers and non-consumers.

3. DIETARY NUTRIENT INTAKES.

Table 13 shows the intake of selected nutrients and non-nutrients for which a satisfactory food composition database exists. Calcium, and to a lesser extent vitamin A may be provided in amounts that do not meet all the needs of the adult population. Further food composition analyses for fish (a potentially underestimated source of calcium and vitamin A), and stews where animal bones are used (a potentially rich source of calcium) may be necessary to assess more accurately the intake of these two nutrients.

Table 14 presents the average daily intakes of market food by gender and age group.

4. BODY MASS INDEX

The Body Mass Index (BMI) is calculated by dividing body weight (in kg) by the square of the height (in metres). It is used as an indicator of body fatness: values between 20-25 are healthy for most people; values below 20 may indicate excessive thinness and be associated with health problems in some people; values between 25 and 27 may lead to health problems due to excessive body fat; values over 27 are

generally indicative of excessive body fat associated with a risk of developing health problems (Health and Welfare Canada, 1990).

In this study, height was reported by participants (self-reported), not actually measured. Weight was also self-reported except in a small group of volunteers for whom it was both self-reported and measured. Table 15 shows the average self-reported height and weight and average weight measured in this sample population. There were no statistical differences between self-reported and measured weight, suggesting that participants self-reported their weight with adequate accuracy. Height was not measured but self-reported heights appear reasonable, although they are higher than average heights for similar age groups, reported for "Indians" in the Survey of Nutritional Status carried out in 1970-72 (Nutrition Canada, 1980). In that survey, average height for males was 170.2 cm and 157.2 cm in females; average weight was 73.6 kg for males and 67.7 kg for females.

Data on the occurrence of overweight (BMI > 27) in Yukon First Nations are illustrated in Figure 3. They suggest that more women than men are overweight and that overweight increases in both sexes with age. Compared to the overall Canadian population, marked differences appear. In the 20-40 year age group, occurrence of overweight is similar to the Canadian population for Yukon First Nations women and lower for Yukon First Nations men. In the 40-60 year age group, there are more heavy

Yukon First Nations women than in the Canadian population, while fewer Yukon First Nations men in this age group were heavy. In the older age-group, overweight is more common for both men and women from Yukon First Nations than it is in the Canadian population.

Additional data analyses will be performed to investigate the factors associated with overweight in our sample. To date, it appears that the diets of overweight and lean participants are not significantly different in terms of energy, nutrients, and proportion and use of traditional food. Differences in body weight may therefore be more related to differences in physical activity. For example, in our sample of young men (20-40 years), 35% of overweight men (BM$\geq$I27) reported not having enough equipment to hunt versus 15% of leaner men (BMI < 27) (chi-square test for equality of proportions, $p < 0.05$).

5. FOOD SAMPLE ANALYSES.

A total of 319 traditional food samples were collected in two seasons from different communities in the Yukon. Because of budgetary constraints, it was not possible to analyse all the samples for nutrients and contaminants. Species which are consumed more frequently or in larger quantities, or species and parts that are known to contain higher levels of contaminants were chosen for analysis. Nutrients were measured in 183 samples, heavy metals in 169 samples and organochlorines in 180

samples. It is believed that these data will provide adequate information for risk/benefit analysis purposes. Additional samples can be analysed if there are specific community concerns.

5.1. Nutrient composition

Table 16A-B shows the results of food composition analyses for selected nutrients analysed to date. Additional analyses are in process. These data are an important contribution to what is known about the nutritional value of traditional food. Although nutrient values may vary according to place of harvest, season and age of animals and plants, there are certain characteristics that are expected of each type of food. For example, the flesh of traditional animal species is high in water, protein, iron, zinc and copper, and low in fat and carbohydrate; the fat of animals is almost entirely fat, with low levels of all other nutrients. Some interesting findings from the Yukon samples include the high level of fat in black duck intestine and beaver tail, the low level of fat in blue grouse, the relatively high level of calcium and manganese in cranberries, and the very high level of copper in caribou fetus.

More surprising is the amount of variability in the same species, from one animal to another. For example, the amount of fat in Arctic grayling ranged from 0.95 to 3.29 g/100g, fat in chinook salmon ranged from 1.53 to 15.27 g/100g, fat in trout was measured at 2.23 and 7.42 g/100g, iron in arctic grayling ranged from 0.32 to 5.91

mg/100g and copper in chinook salmon ranged from 0.03 to 0.23 mg/100g.

5.2. Contaminants

Based on the understanding of the physical properties of contaminants and patterns of contaminant accumulation in plants and animals, some generalizations can be made. For example, relatively higher levels of metals and lower levels of organochlorines are expected in animal meat than in animal fat. Liver is expected to have relatively high levels of organochlorines and heavy metals. Very low levels of organochlorines in berries and heavy metals in fat are expected, so they often were not measured. The contaminant data collected in this study were intended to be used for the estimation of dietary intake. The design for sample collection did not account for variation due to biological or ecological factors. Therefore, the data cannot be used for consideration of geographical variation.

Four heavy metals, cadmium (Cd), lead (Pb), arsenic (As) and mercury (Hg) were measured in samples collected from Yukon First Nations. Results are presented in Table 17. Guideline levels used by Agriculture Canada and Health Canada are presented for comparison (50 μg/100g for Hg, 100 μg/100g, for Cd, 200 μg/100g for Pb and 300 μg/100g for As, personal communication, Vicki Jerome, Health Canada). Only two samples (halibut flesh, 154 μg/100g and loche flesh, 56.1 μg/100) exceeded the guideline level for Hg. Mercury occurs naturally in the environment and bioaccumulates through the food chain. Therefore, it is common to find elevated levels

in halibut, a large predatory fish. The overall low levels found in freshwater fish and wildlife samples suggest that mercury exposure is not a significant problem in Yukon First Nations communities.

Cadmium accumulates mainly in the liver and kidney of animal species, so it is not surprising to find elevated levels of Cd in kidney samples from lynx, moose and rabbit.

Elevated levels of lead were found in seven samples including moose knee gristle, pike flesh, spruce grouse flesh, arctic squirrel flesh and willow grouse flesh. They may be due to residues of embedded lead shot pellet, particularly for game birds, or to contamination from food preparation equipment.

Arsenic levels were low in all food samples.

Levels of total PCBs (the sum of 51 congeners) and chlorinated pesticides (chlorobenzene (CBZ), lindane (HCH), dieldrin, heptachlor epoxide, chlordane, DDT, mirex and toxaphene) in the samples are summarized in Table 17. PCB concentrations were about 100 times lower than the guideline levels used by Health Canada (2000 ng/g, personal communication, Vicki Jerome, Health Canada). Concentrations of organochlorine pesticides were also at least 100 times lower than the guideline levels (300ng/g for CBZ, 5000ng/g for DDT, 100 ng/g for mirex, and 200ng/g for dieldrin, personal communication, Vicki Jerome, Health Canada). Toxaphene has been a particular concern in Yukon First Nations. We detected toxaphene in nineteen fish samples, with levels below 100 ng/g. These levels are similar to those found by others

(Jensen et al., 1997).

B. DIETARY BENEFITS AND RISKS

In this study, dietary benefits and risks are studied as they relate to traditional food use. Dietary benefits come from the overall nutritional quality of the diet. This study found that nutritional quality depends largely on the amount of traditional food consumed compared to market food. Other benefits of traditional food use arise from lower food costs, the cultural value of food, and activities associated with harvesting and preparing traditional food.

The dietary risks considered in these analyses include: (1) the risks associated with increased market food consumption (for example, fewer of the protective factors associated with traditional food use, lower nutrient intake and higher saturated fat intake), and (2) risks associated with exposure to chemical contaminants from the consumption of traditional food. The chemical contaminants considered in this study (organochlorines and heavy metals) are known to be very low in most market food, but are potentially of concern in traditional food. Our analyses assume therefore that market food does not contain chemical contamination, and that risk from high contaminant intake from traditional food will be related to the level of exposure: the higher the level of exposure, the higher the supposed risk.

1. NUTRITIONAL BENEFITS AND RISKS

Figure 4 illustrates the relative contributions of traditional and market food to the weight of consumed food, energy, and selected nutrients. Based on the food components that we studied, traditional food is particularly important for protein, iron, and zinc. Table 18 shows that on days when traditional food is not eaten, the diet is higher in total fat and saturated fat. Intakes of calcium and vitamin A appear to be less than adequate, in at least part of the population, with or without traditional food in the diet.

In Table 19, the overall diet quality appears to meet dietary guidelines when traditional food is consumed, but is far from recommended levels when market food only is consumed. The very high fat intake (40%) on days without traditional food is of particular concern since this level of fat in the diet is associated with increased risk of heart disease. This study also found that overweight is common in Yukon First Nations, especially among women, and overweight is also linked to increased risk of heart disease as well as other chronic diseases.

Table 20 presents the main sources of energy and other food components in the diet and may be used to plan strategies to reduce overall fat and saturated fat derived from market food. Table 21 lists the traditional food described by respondents as particularly healthy and their reasons for thinking so.

2. OTHER BENEFITS AND RISKS

Tables 22 and 23 show the advantages of traditional and market food given by the respondents. After its health giving properties, cost was the next most frequently mentioned advantage of traditional food. The analysis of market food cost that we carried out in 7 communities revealed that the average minimum cost of a market food basket sufficient to feed a family of four (2 adults, 1 primary school aged child, and one adolescent) would be $164 per week, ranging from $156 to $172 depending on the community. The same food basket costs $128 in Whitehorse and $110 in Edmonton in 1994 (Wein, 1994). For market food, its convenience, reliability and variety were the most often cited advantages.

Values associated with traditional food and its use were further explored in a series of questions where the respondent had a choice of agreeing, disagreeing, or abstaining when presented with a series of statements. Results presented in Table 24 show how traditional food may benefit health through pathways other than those purely nutritional. It is clear that for Yukon First Nations, traditional food has a central role in the life of the individual, the household and the community.

To explore another aspect of risk from traditional food use, respondents were asked if any traditional food items were avoided because they were associated with illness. Thirty percent answered yes (Table 25); problems of biological contamination

were mentioned most often as the reason for avoidance. A change in the health or abundance of traditional plants and animals may warn of problems in the environment; Table 26 lists general observations about the changing condition of some animals and plants. A common concern was a decrease in the numbers of traditional food species.

3.1 EXPOSURE TO CONTAMINANTS

One specific goal of this study was to estimate the level of exposure to selected organochlorines and heavy metals that are likely to be present in traditional food. The 24-hour recall data were used to estimate levels of exposure to eight organochlorines and four heavy metals. These contaminants and their guideline levels are listed in Table 27.

The concentration of contaminants in the various food items was obtained from (1) samples collected in the communities and measured at CINE (see Table 17); (2) samples collected previously in the Yukon and reported in the scientific literature (see Appendix D), and (3) data made available to CINE by the Yukon Contaminants Committee. Levels of contaminants reported in the literature were usually measured in raw food samples. These levels were converted to levels likely to be found in the food in the form in which it was consumed (boiled, dried, etc.) using conversion factors based on the change of water and fat content due to food preparation (Table 28). This method is acceptable, but it would be preferable to have contaminant data on the food

prepared the way it is eaten. Some food items were collected from only one community (e.g., moose fat), while others were collected from numerous communities (e.g., moose flesh). The metal and organochlorine concentrations of only those foods reported in the 24-hour recalls are reported in Tables 29 (metals) and 30 (organochlorines). When concentrations were below detection limits, zero was used for the estimation of intake. When more than one datum was available, the average concentration was calculated and used.

In the estimation of contaminant exposure, contaminant data were drawn from animals harvested in the area of the community in which the respondent resided when available (community-specific values). If these data were not available, contaminant data were drawn from the regional average (region-specific values). Finally, if there were no data available from the respondent's region then a "Yukon-average value", the average from all measurements in the Yukon, was used. There were more data available for metals than organochlorines, so that in the analyses community-specific values were used for approximately 29% of organochlorines and 58% of metals, region-specific values for approximately 11% of organochlorines and 23% of metals and Yukon-average values for approximately 17% of metals and 55% of organochlorines. There were missing values for approximately 2% of metals and 5% of organochlorines (Table 31).

The population distribution of levels of exposure to heavy metals is shown in Table 32. The 99th percentile level of exposure was lower than the PTDI for all four metals. This means that at least 99% of people consumed less than the level considered tolerable for mercury, lead, arsenic and cadmium. Of the 802 food recalls, levels of exposure greater than the Provisional Tolerable Daily Intake (PTDI) were found in 2 recalls for arsenic, 4 for cadmium, 3 for mercury and none for lead. The food items contributing to these intakes are summarized in Table 33. With chemical contaminants we are concerned about long-term exposure since it is only through repeated high daily exposure that health effects may occur. However, exposure levels that we observed in this study are based on single 24-hour recalls and we know that the highest values found with this method are higher than an average day's exposure over the year. Therefore, few, if any, individuals would have usual exposure levels greater than the PTDI, and thus heavy metal toxicity should not be of concern in Yukon First Nation communities.

The population distribution of levels of exposure to organochlorines is shown in Table 34. Of the eight organochlorines studied, only toxaphene and chlordane were of concern. Twenty food recalls exceeded the TDI for chlordane and thirteen of these also exceeded the TDI for toxaphene. The traditional food items reported in these recalls are presented in Table 35. Clearly, the major sources of these contaminants were salmon and trout. Trout (lake, rainbow, brown, Dolly Varden) and salmon (chinook,

chum, coho, sockeye) despite being eaten on only 1% (trout) and 5% (salmon) of the days in the fall and late winter 24-hour recall data, are the source of 99% of the toxaphene intake and 57% of the chlordane intake. Moose flesh and ribs, which have very low levels of chlordane but are consumed frequently and in large amounts, are responsible for most of the remaining chlordane.

Figure 5 shows the mean and 95th percentile of the frequency all species of salmon and trout consumption throughout the year: data for summer and winter were derived from food frequency questionnaires, and data for late winter and fall as the proportion of food recalls with either salmon or trout mentioned. Figure 5B shows that the average frequency of salmon consumption in summer was 2 times per week, while high consumers (95^{th} percentile) ate salmon 9.5 times per week.

Guidelines for safe levels of intake for all species of salmon and trout consumption have been constructed using information gathered in this study and the Tolerable Daily Intakes for chlordane and toxaphene. Chlordane and toxaphene levels vary from fish to fish and from lake to lake; the highest levels are found in Lake Laberge. A safe, but realistic limit can be set using the highest trout and salmon contaminant levels from any lake other than Laberge. These levels are 24 ng/g for salmon and 44 ng/g for trout flesh for chlordane, and 50 ng/g for salmon and 323 ng/g for trout flesh for toxaphene (see Table 30). The TDI for chlordane is 50 ng/kg/d

(nanograms of chlordane per kg body weight per day); for toxaphene it is 200 ng/kg/d. Using this information, the number of days per year that these fish can be consumed by an average adult male (body weight = 78kg, 172 lb), an average adult female (69kg, 152 lb) and a typical 5 yr old child (20kg, 44 lb) is calculated and shown in Table 36. Looking at the table, we can see that if a 69 kg woman consumes salmon (as described above with 24 ng/g of chlordane and 50 ng/g of toxaphene) 156 days per year or about every other day, she could not eat trout without exceeding the safe level.

Generally, trout has twice as much contamination as salmon, so it is safe to eat twice as much salmon as trout. Dried fish has approximately 2.5 times higher levels of contamination than baked fish, but because baked fish serving size is approximately 2.5 times larger than dried fish, the contaminants per serving are approximately the same.

The guidelines for safe yearly intakes in Table 36 can be compared to the estimated yearly intakes in Figure 5. The toxaphene and chlordane intakes of the average consumer, that is, someone consuming trout 15 times per year and salmon 45 times, are well below the TDIs. However, there may be some individuals who eat large amounts of salmon and trout and exceed the TDIs. The expected daily chlordane and toxaphene intakes for an adult man who is a high consumer (eating salmon 190 days per year and trout 90 days), would be approximately 120 ng/kg body weight for

chlordane and 520 ng/kg for toxaphene. Although these intakes are approximately double the TDIs (see page 32) no adverse health consequences have ever been documented for comparable levels in any population.

Toxaphene and chlordane levels in all species of salmon and trout consumed by Yukon First Nations should be monitored to ensure that they do not rise above present levels. These food species are consumed often and a small increase in contaminant concentration would result in a significant increase in exposure levels in the population.

FINDINGS IN PERSPECTIVE

In summary, the diet of the people of Yukon First Nations is rich in traditional food. A large quantity and great variety of traditional food are consumed and bring about better diet quality, and increased physical activity, as well as economic and sociocultural benefits. Importantly, when traditional food is consumed, the diet quality appears to meet recommended levels for fat (< 30% of calories) and saturated fat (< 10% of calories); when market food only is consumed, the percentage of calories from fat in the diet rises to 40% and saturated fat to 14.3%, levels at which increased risk of chronic disease may occur. Furthermore, since overweight is common in Yukon First Nations women and the elderly, it is recommended that immediate attention be given to improving diet quality and increasing physical activity in these groups. Inadequate intakes of calcium and vitamin A were noted in all age groups and additional dietary sources of these important nutrients may also be promoted.

Traditional food is consumed less by those 20-40 years old than by the older age groups. Many individuals also reported eating less traditional food now than five years ago (Table 37). When asked what factors may be responsible for this decrease, respondents reported lack of time, lack of equipment and animal scarcity as principal causes (Table 38). Maintaining the current level of traditional food use by Yukon First Nations will therefore require proactive strategies.

In terms of risk, it appears that risks associated with the presence of contaminants in traditional food are low, especially for heavy metals and most

organochlorines studied. The possibility exists, however, that high consumers of trout and salmon have usual intakes that exceed the TDIs for chlordane and toxaphene. Although the risks associated with these levels of exposure are low (a conservative safety factor of 1000 is used in the calculation of TDIs for chlordane and toxaphene), the importance of trout and salmon in the traditional and contemporary food systems of Yukon First Nations warrants further monitoring, not because contaminant concentrations are high, but because these traditional food species are consumed in large quantity.

This report does not evaluate variation in traditional food use between communities. Traditional food use varies in terms of variety (different communities consuming different traditional food species), and quantity, with percent of total dietary energy from traditional food ranging from 9% in the lowest community to 38% in the highest community. Additional consultation with community councils will consider whether comparisons of traditional food use between communities be pursued. Analyses to date suggest that estimates of benefits and risks presented in this report for all communities combined are unlikely to mask important community differences. In all communities, benefits of traditional food outweigh risks. However, it is important to stress that the quality of traditional food species needs to be constantly monitored. This is especially true for salmon and trout, because of their current levels of consumption, and for moose since it remains the dominant traditional food of Yukon First Nations.

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Table 1: Chronology of research activities

PHASE I: Community consultation

December 3, 1993: Meeting of the Community Health Commissioners
Introduction to CINE and previous work done in the Arctic concerning diet and environment of Indigenous Peoples.

February 1-2, 1994: Training workshop
Participants were introduced to the various phases of study design and methods of data collection. Discussion followed on relevant research questions to be studied in the Yukon. CINE Newsletter (Vol.1, issue 1, Spring 1994) was published to address many questions raised at this workshop.

October 20-21, 1994: Methodology Workshop
Participants from 14 Yukon First Nations met to define the research questions and methods of this study. A traditional food list was compiled for each of the 14 Yukon First Nations.

November 1994-January 1995: Research Agreements negotiation
Research Agreements (Appendix A) were negotiated through meetings with each community's Community Council.

PHASE II. Data collection

February 1-April 8, 1995: Data collection (late winter)
Data collection in 10 communities (Dawson City, Mayo, Carmacks, Ross River, Watson Lake, Lower Post, Beaver Creek, Burwash Landing, Carcross and Atlin: see Figure 1). 409 individual interviews and 38 traditional food samples were collected.

September 20-December 5, 1995: Data collection (fall)
Data collection in the same 10 communities included 444 individual interviews and 281 traditional food samples.

PHASE III. Data management and analysis.

May 1995-September 1997: Food sample analyses
Analyses in CINE's laboratory for nutrients (proximate composition, minerals) and contaminants (mercury, cadmium, lead, arsenic and nine organochlorines)

January-March 1996: Dietary data entry

March 1996-November 1996: Dietary data analysis

PHASE IV: Results discussion and report writing

December 9-10, 1996: Discussion of preliminary results
Discussion of preliminary results with the 26 participants of the short course entitled "Nutrition and Health for Yukon First Nations Families" organized by CINE and held at Yukon College, Whitehorse.

January 1997-January 1998: Development of draft final report

March 1998: Submission of draft final report
The draft of the final report is submitted to Yukon First Nations Chiefs and Councils for final approval before submission to funding agency. A copy (on paper and computer diskette) of the data collected in each community was returned to each respective community.

Table 2: List of project coordinators and interviewers

Community	Project coordinator	Interviewer
Dawson City	Aileen Collier	Debby Nagano
Mayo	Aileen Collier	Maria Hoogland
		Art Hoogland
Ross River	Malek Batal	Sandra Bob
	Laurie Chapman	Mary John
Carmacks	Aileen Collier	Vanessa Charlie
		Joyce Gage
Beaver Creek	Enza Gucciardi	Sid Vandermeer
Burwash Landing	Enza Gucciardi	Kluane Martin
Watson Lake	Enza Gucciardi	Betty Shepherd
	Laurie Chapman	Elizabeth Dickson
		Karen Ceasar
		Josephine Ceasar
Lower Post	Enza Gucciardi	Dennis Porter
Carcross	Malek Batal	Sue Huebschwerlen
		James Kawshuk
Atlin	Malek Batal	Helen Carlick
		Susan Carlick

Table 3. Population and number of individual interviews by site and season

Site	Population [1]	Number of Individual Interviews		
		Late winter	Fall	Total
Dawson City	548	48	48	96
Mayo	413	51	45	96
Ross River	373	28	48	76
Beaver Creek	113	16	32	48
Carmacks	417	37	51	88
Burwash Landing	140	35	30	65
Carcross	428	51	50	101
Lower Post	149	30	43	73
Watson Lake	811	48	48	96
Atlin	339	29	34	63
Total	3731	373	429	802

[1] Minister of Indian Affairs and Northern Development

Table 4. Number of individual interviews by gender and age group

	Age group		
	20-40	41-60	61 +
Male	221	103	56
Female	253	102	67
Total	474	205	123

Table 5. Study sample profile based on sociocultural questionnaire

Number of respondents	802
Number of participating households (HH)	636
Mean number of respondents per HH	1.2
Mean (range) number of adults per HH	2 (1-6)
Mean (range) number of children per HH	1 (0-9)
% HH with children	45
Mean (range) n adults per HH with:	
Full time work	0.7 (0-4)
Part time work	0.3 (0-4)
% HH that could not afford all the food they need from the store if no traditional food was available	39
% HH that hunt/set snares	69
% HH that fish	72
% HH that collect plants	58
% HH that plant a garden	18
% HH with access to sufficient:	
hunting equipment	73
fishing equipment	72
% Respondents that rated themselves at different levels of traditional food consumption:	
high	20
medium	50
low	30

Table 6. Traditional food species consumed in Yukon communities, ranked by the percent of sample consuming each species (Food Frequency Questionnaire)

WINTER (n = 373)		SUMMER (n = 429)	
	% sample		% sample
		LAND ANIMALS	
Moose	90.6	Moose	97.9
Caribou Woodland	38.5	Caribou Woodland	48.0
Caribou Barrenland	26.2	Sheep	29.2
Rabbit	25.1	Rabbit	27.4
Sheep	9.9	Arctic Ground Squirrel	21.3
Beaver	8.3	Caribou Barrenland	18.8
Arctic Ground Squirrel	4.5	Porcupine	16.9
Deer	3.7	Beaver	16.0
Porcupine	3.2	Hoary Marmot	8.6
Mountain Goat	3.2	Muskrat	5.6
Hoary Marmot	2.9	Deer	4.6
Lynx	1.6	Mountain Goat	3.0
Muskrat	1.3	Bear	0.9
Bison	1.1	Lynx	0.2
Bear	0.5		
		FISH	
Chinook Salmon	47.9	Chinook Salmon	65.7
Trout	37.7	Arctic Grayling	56.8
Lake Whitefish	28.1	Trout	49.4
Sockeye Salmon	20.9	Lake Whitefish	45.2
Arctic Grayling	19.5	Sockeye Salmon	33.9
Jackfish	11.0	Jackfish	22.3
Coho Salmon	10.2	Coho Salmon	17.9
Halibut	8.8	Dolly Varden	15.5

Table 6, continued

WINTER (n = 373)	% sample	SUMMER (n = 429)	% sample
Chum Salmon	8.3	Rainbow Trout	15.1
Broad Whitefish	6.4	Chum Salmon	14.6
Loche	5.1	Halibut	13.9
Rainbow Trout	5.1	Eulachon	11.4
Eulachon	4.0	Broad Whitefish	9.0
Dolly Varden	3.7	Round Whitefish	8.4
Round Whitefish	2.9	Connie	7.7
Arctic Char	2.4	Cisco	6.0
Longnose Sucker	1.6	Longnose Sucker	4.9
Connie	1.3	Loche	4.9
Brown Trout	1.1	Arctic Char	1.6
Cisco	0.8	Brown Trout	0.9
		BIRDS	
Spruce Grouse	27.3	Spruce Grouse	61.7
Ducks	10.2	Ducks	25.1
Ptarmigan	6.1	Blue Grouse	17.9
Blue Grouse	5.9	Ptarmigan	11.1
Canada Goose	2.1	Canada Goose	8.6
Sea Gull Eggs	0.5	Swan	1.4
White Fronted Goose	0.3	White Fronted Goose	0.9
Swan	0.3	Sea Gull Eggs	0.5
		Arctic Tern	0.2
		Cranes	0.2
		Brant Goose	0.2

WINTER (n = 373)		SUMMER (n = 429)	
	% sample		% sample
		Plants	
Blueberries	34.5	Blueberries	74.5
Low Bush Cranberries	28.6	Wild Raspberries	51.3
High Bush Cranberries	17.9	Low Bush Cranberries	48.0
Balsam Fir	17.1	Wild Strawberries	39.4
Wild Raspberries	15.2	High Bush Cranberries	32.0
Labrador Tea	11.8	Soapberries	25.3
Soapberries	9.6	Crowberries (Blackberries)	23.7
Crowberries (Blackberries)	9.1	Labrador Tea	23.4
Caribou Weed	7.5	Mushrooms	20.9
Caribou Moss	6.7	Balsam Fir	19.0
Wild Strawberries	6.1	Wild Rhubarb	16.2
Wild Rhubarb	6.1	Rose hips	11.6
Black Spruce	5.6	Caribou Moss	7.2
Rosehips	5.3	Sage	7.0
Mushrooms	4.5	Caribou Weed	6.5
Sage	3.2	Bear Root	6.3
Bear Root	2.9	Wild Chives (Wild Onions)	6.3
Birch	2.9	Rosebuds	6.0
Bog Cranberries	2.4	Black Currants	5.8
Salmonberries	2.4	Saskatoon Berries	5.8
Dandelion	2.4	Willow	5.3
Black Currants	2.4	Black Spruce	5.3
Saskatoon Berries	2.1	Birch	4.4
Lodgepole Pine	1.9	Red Currants	4.2

Table 6, continued

WINTER (n = 373)		SUMMER (n = 429)	
	% sample		% sample
Red Currants	1.9	Bog Cranberries	3.9
Wild Chives (Wild Onions)	1.9	Salmonberries	3.9
Rosebuds	1.9	Juniper	3.9
Poplar	1.6	Gooseberries	3.7
Bearberries (Kinnikinick)	1.6	Poplar	3.5
Juniper	1.6	Cloudberries	2.8
Yarrow (Stink Flower)	1.3	Yarrow (Stink Flower)	1.9
Gooseberries	1.3	Rat Root (Wild Ginger)	1.9
Willow	1.1	Bearberries (Kinnikinick)	1.9
Mint	1.1	Honeysuckle	1.6
Fireweed	0.8	Dandelion	1.4
Honeysuckle	0.8	Lodgepole Pine	1.2
Rice Root (Indian Rice)	0.8	Mint	1.2
Cloudberries	0.5	Fireweed	0.7
Rat Root (Wild Ginger)	0.3	Bristly Black Currants	0.7
Bristly Black Currants	0.3	Arctic Dock	0.2
Arctic Dock	0.3		

Table 7. Frequency of consumption of traditional food (% of population consuming food and average number days per week foods are consumed for consumers only) as measured by the Food Frequency Questionnaire, by season

	WINTER (n = 373)		SUMMER (n = 429)	
Species/parts	**% population**	**days/week**	**% population**	**days/week**
FISH				
Arctic Grayling:				
flesh cooked	20	0.4	57	1.2
flesh smoked	1	0.5	4	0.8
head	2	0.2	6	0.7
eggs	3	0.7	12	0.8
fishpipe	1	0.2	7	0.8
Other parts: liver [1]				
Connie (Inconnu):				
flesh cooked	1	0.5	8	0.6
flesh smoked	0	0	1	0.2
head	0	0.2	1	0.2
eggs	< 1	0.2	3	0.2
fishpipe	1	0.2	2	0.2
Other parts: heart, kidney				
Cisco (Herring):				
flesh cooked	1	0.2	5	0.6
flesh smoked	0	0	1	0.2
head	0	0	1	0.5
eggs	1	0.2	3	0.3
fishpipe	0	0	1	0.2
Lake Trout:				
flesh cooked	38	0.6	49	0.8
flesh smoked	3	0.4	6	0.4
head	8	1.0	10	0.4
eggs	3	1.0	11	0.5
fishpipe	4	1.1	8	0.4
Other parts: heart				

[1] Use of other parts was volunteered by respondents, but not systematically probed for. No estimates of consumption were derived.

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Loche (Ling Cod, Burbot):				
flesh	5	0.3	5	0.5
flesh smoked	< 1	0.2	0	0
head	1	0.2	< 1	0.2
eggs	2	0.4	1	0.2
liver	1	0.2	2	0.2
Northern Pike (Jackfish):				
flesh cooked	11	0.6	20	0.5
flesh smoked	1	0.2	1	0.2
head	2	0.4	1	1.1
eggs	5	1.2	6	0.4
fishpipe	4	1.2	8	0.5
Other parts: liver				
Chinook Salmon (King):				
flesh cooked	43	0.5	65	1.4
flesh smoked	24	0.5	47	1.1
flesh canned	12	0.4	18	0.9
head	10	0.6	34	0.6
eggs	7	0.6	23	0.6
fishpipe	1	0.2	5	0.7
Other parts: heart, tail, sperm, liver				
Coho Salmon (Silver):				
flesh cooked	9	0.4	16	0.5
flesh smoked	3	0.2	8	0.6
flesh canned	4	0.8	3	0.4
head	2	1.3	2	0.3
eggs	2	0.2	2	0.4
fishpipe	0	0	1	0.4
Chum Salmon (Dog, Keta):				
flesh cooked	8	0.5	14	1.2
flesh smoked	3	0.6	7	1.2
head	2	0.9	4	0.9

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Chum Salmon, **continued**:				.
eggs	< 1	0.2	4	1.1
fishpipe	< 1	0.2	1	0.6
Sockeye Salmon (Red):				
flesh cooked	16	0.6	30	0.8
flesh smoked	10	0.6	17	0.5
flesh canned	6	0.7	12	0.4
head	3	0.8	6	0.3
eggs	1	0.5	6	0.4
fishpipe	1	0.5	1	0.4
Eulachon (Ooligan):				
flesh cooked	4	0.5	10	0.5
flesh smoked	1	0.2	2	0.7
oil rendered	< 1	0.2	3	0.9
Broad Whitefish:				
flesh cooked	6	0.5	9	0.3
flesh smoked	1	1.0	2	0.2
head	2	0.2	1	0.2
eggs	1	0.2	4	0.4
fishpipe	1	0.2	2	0.6
Other parts: heart, liver				
Lake Whitefish:				
flesh cooked	28	0.6	45	0.7
flesh smoked	7	0.6	10	0.7
head	5	0.5	8	0.5
eggs	6	0.5	18	0.5
fishpipe	3	0.5	13	0.5
Other parts: heart, kidney, liver				
Round Whitefish:				
flesh cooked	3	0.8	8	0.3
flesh smoked	< 1	1.5	2	0.2
head	1	0.2	3	0.2
eggs	1	0.2	4	0.2

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Rainbow Trout:				
fishpipe	1	0.2	2	0.2
flesh cooked	5	0.5	15	0.6
flesh smoked	1	0.2	1	0.2
head	1	0.2	3	0.4
eggs	1	0.2	3	0.4
fishpipe	< 1	0.2	2	0.5
Dolly Varden Trout:				
flesh cooked	4	0.8	16	0.8
flesh smoked	< 1	1.5	1	0.2
head	< 1	1.5	3	0.2
eggs	< 1	1.5	3	0.6
fishpipe	0	0	1	0.6
Halibut:				
flesh cooked	9	0.2	14	0.6
flesh smoked	1	0.2	1	0.2
head	1	0.2	1	0.5
eggs	0	0	1	0.5
fishpipe	0	0	1	0.6
Brown Trout:				
flesh cooked	1	0.2	1	0.5
flesh smoked	1	0.2	0	0
head	< 1	0.2	< 1	0.2
eggs	< 1	0.2	0	0
fishpipe	< 1	0.2	0	0
Arctic Char:				
flesh cooked	2	0.2	2	0.2
flesh smoked	0	0.2	1	0.2
head	0	0.2	0	0
eggs	1	0.2	< 1	0.2
fishpipe	1	0.2	0	0
Longnose sucker:				
flesh cooked	2	0.4	4	0.3

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Longnose sucker, continued				
flesh smoked	0	0	< 1	0.2
head	0	0.2	1	0.2
eggs	1	0.9	3	0.5
fishpipe	0	0	1	0.5
Other fish: Cod, lake grayling				
LAND ANIMALS				
Caribou Woodland:				
meat cooked	38	1.7	47	1.4
meat smoked	17	1.0	23	1.3
ribs	28	0.6	35	0.7
head	12	0.5	15	0.5
heart	12	0.3	19	0.5
tongue	13	0.3	20	0.4
liver	6	0.5	13	0.5
blood	2	0.4	6	1.7
stomach	6	0.3	10	0.6
intestine	10	0.3	13	0.5
kidney	9	0.2	14	0.5
bone marrow	18	0.6	27	0.6
bone in soup	22	0.9	26	1.0
fat	11	0.8	22	0.9
Other parts : brain, nose				
Caribou Barrenland:				
meat cooked	26	1.1	19	1.4
meat smoked	10	0.3	9	1.0
ribs	20	0.4	15	0.7
head	10	0.4	8	0.3
heart	9	0.4	8	0.5
tongue	10	0.3	9	0.4
liver	5	0.2	4	0.5

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Caribou, Barrenland continued:				
blood	0	0.2	3	1.0
stomach	5	0.2	5	0.3
intestine	7	0.2	6	0.3
kidney	7	0.3	6	0.3
bone marrow	14	0.6	11	0.9
bone in soup	16	0.5	13	1.0
fat	10	0.4	8	1.4
Other parts: hooves, feet				
Moose:				
meat cooked	90	2.1	98	3.4
meat smoked	55	1.0	79	1.7
ribs	66	0.7	87	1.1
head	28	0.4	38	0.4
heart	35	0.4	56	0.4
tongue	38	0.4	55	0.4
liver	25	0.3	42	0.5
blood	7	0.3	18	1.0
stomach	25	0.7	42	0.4
intestine	32	0.6	48	0.4
kidney	26	0.4	46	0.4
bone marrow	50	0.8	62	0.8
bone in soup	54	0.8	68	1.3
fat	38	1.0	55	1.7
Other parts: bones: boiled, roasted, ground; bone fat, brain, hooves, feet, nose, ear,				
meat cooked	25	0.7	27	0.5
meat smoked	0	0	< 1	0.2
head	3	0.5	9	0.2
liver	6	0.5	7	0.2
blood	< 1	0.2	3	0.6
brain	1	0.2	5	0.2
Other parts: kidney,soup with bones,heart				

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Beaver:				
meat cooked	8	0.6	16	0.6
meat smoked	2	0.4	4	1.0
tail & feet	6	0.2	12	0.5
liver	1	0.2	3	0.6
blood	0	0	2	0.8
brain	1	0.2	< 1	0.9
Other parts: ribs				
Muskrat:				
meat cooked	1	0.2	5	0.5
meat smoked	0	0	2	0.7
tail	1	0.2	4	0.4
liver	1	0.2	2	0.3
blood	0	0	< 1	0.2
brain	< 1	0.2	< 1	0
Lynx:				
meat cooked	2	0.2	< 1	0.2
meat smoked	< 1	1.5	0	0
head	< 1	0.2	0	0
liver	< 1	0.2	0	0
blood	< 1	0.2	0	0
Other parts: ribs				
Porcupine:				
meat cooked	3	0.3	17	0.3
meat smoked	< 1	1.5	2	0.3
liver	< 1	0.2	4	0.2
blood	< 1	0.2	1	0.2
brain	< 1	0.2	< 1	0.2
Other parts: ribs, kidney				
Sheep:				
meat cooked	10	0.6	29	0.7
meat smoked	1	0.9	3	0.6

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Sheep, continued				
blood	< 1	0	1	0.7
liver	< 1	0.2	2	0.3
brain	< 1	0	1	0.2
fat	2	1.1	10	0.5
Other parts: ribs, soup with bones, bone marrow, hump bone				
Black Bear:				
meat cooked	1	1.5	1	0.2
meat smoked	< 1	1.5	1	0.2
fat	< 1	1.5	< 1	0.2
Arctic Ground Squirrel:				
meat cooked	5	0.7	21	0.6
meat smoked	1	2.1	2	0.6
fat	2	0.6	8	0.4
blood	< 1	0.2	1	0.7
brain	1	0.9	1	0.4
Other parts: tongue, nose, kidney, heart, liver, gut				
Hoary Marmot (Groundhog):				
meat cooked	3	0.3	9	0.5
meat smoked	1	0.2	2	0.2
fat	1	0.2	6	0.5
blood	0	0	< 1	0.2
brain	0	0	< 1	0.2
Other parts: legs				
Deer:				
meat cooked	4	1.0	5	0.4
meat smoked	< 1	4.0	< 1	0.2
fat	< 1	4.0	1	0.2
blood	< 1	1.5	0	0
brain	< 1	1.5	0	0
Other parts: kidney				

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Bison				
meat cooked	1	0.5	0	0
meat smoked	< 1	0.2	0	0
fat	1	0.2	0	0
Other parts/preparation: sausages				
Mountain Goat:				
meat cooked	3	0.7	3	0.8
meat smoked	1	0.9	< 1	0.2
fat	1	0.6	1	0.2
blood	1	0.9	< 1	0.2
brain	1	0.9	< 1	0.2
Other parts/preparation: sausages, heart, liver, gut, kidney				
Other animals: Elk, Muskox				
BIRDS				
Spruce Grouse:				
meat cooked	27	0.6	61	0.6
meat smoked	< 1	1.5	1	0.5
gizzard	14	0.6	34	0.4
kidney	6	0.5	11	0.3
heart	8	0.6	16	0.4
liver	7	0.5	12	0.4
eggs	1	0.2	2	0.4
Blue Grouse:				
meat cooked	6	0.5	18	0.7
meat smoked	< 1	1.5	2	0.6
gizzard	3	0.3	10	0.3
kidney	2	0.2	5	0.3
heart	2	0.3	6	0.3
liver	1	0.2	3	0.4
eggs	< 1	0.2	1	0.2

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Ptarmigan:				
meat cooked	6	0.3	11	0.4
meat smoked	1	0.2	1	0.2
gizzard	3	0.2	6	0.4
kidney	1	0.2	2	0.2
heart	2	0.2	2	0.6
liver	2	0.2	2	0.7
Other parts: legs				
Ducks:				
meat cooked	10	0.3	25	0.5
meat smoked	< 1	0.2	2	0.3
gizzard	2	0.2	14	0.5
kidney	1	0.2	4	0.7
heart	1	0.2	6	0.6
liver	1	0.2	4	0.6
eggs	< 1	0.2	1	0.2
Sea gull:				
eggs	1	0.2	< 1	0.2
Arctic tern:				
eggs	0	0	< 1	0.2
Cranes:				
meat cooked	0	0	< 1	0.2
meat smoked	0	0	< 1	0.2
White fronted goose:				
meat cooked	< 1	1.5	1	0.2
meat smoked	< 1	0.2	0	0
gizzard	< 1	0.2	< 1	0.2
heart	0	0	< 1	0.2
Canada goose:				
meat cooked	2	0.4	9	0.4
meat smoked	< 1	0.2	< 1	0.2
gizzard	1	0.2	5	0.3
kidney	1	0.2	2	0.2

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Canada goose, continued				
heart	1	0.2	3	0.2
liver	1	0.2	2	0.2
fat	< 1	0.2	3	0.3
eggs	< 1	0.2	< 1	0.2
Brant goose:				
meat cooked	0	0	< 1	0.2
Swan:				
meat cooked	< 1	0.2	1	0.2
meat smoked	0	0	< 1	0.2
gizzard	0	0	< 1	0.2
kidney	0	0	< 1	0.2
heart	0	0	< 1	0.2
liver	0	0	< 1	0.2
PLANTS				
Labrador Tea	12	1.2	23	1.4
Blueberries	34	0.8	74	1.1
Low Bush Cranberries	29	0.5	48	1.0
High Bush Cranberries	18	0.7	32	0.9
Bog Cranberries	2	0.3	4	0.7
Gooseberries	1	1.2	4	0.4
Soapberries	10	1.0	25	0.8
Crowberries (Blackberries)	9	1.1	24	0.7
Bearberries (Kinnikinick)	2	0.2	2	1.6
Wild Raspberries	15	0.6	51	0.9
Wild Strawberries	6	0.4	39	0.6
Cloudberries	1	2.1	3	0.4
Red Currants	2	0.2	4	0.5
Black Currants	2	1.3	6	0.5
Bristly Black Currants	< 1	6.5	1	0.2
Salmonberries	2	0.2	4	0.7
Rosehips	5	0.4	12	0.6

(Table 7 continued)

Species/parts	WINTER (n = 373)		SUMMER (n = 429)	
	% population	days/week	% population	days/week
Saskatoon Berries	2	0.2	6	0.3
Rosebuds	2	0.4	6	0.9
Arctic Dock	< 1	0.2	< 1	1.5
Wild Rhubarb	6	0.4	16	0.7
Wild Chives (Wild Onions)	2	0.2	6	0.4
Fireweed	1	0.2	1	0.2
Honeysuckle	1	0.2	2	0.8
Sage	3	1.0	7	1.3
Mint	1	0.2	1	0.2
Dandelion	2	0.6	1	1.3
Balsam Fir	17	1.4	19	1.4
Black Spruce	6	0.6	5	0.5
Lodgepole Pine	2	0.2	1	0.2
Birch	3	0.7	4	0.9
Poplar	2	0.2	3	0.5
Willow	1	1.2	5	0.6
Juniper	2	0.2	4	1.2
Bear Root	3	0.2	6	0.3
Rice Root (Indian Rice)	1	0.2	0	0
Rat Root (Wild Ginger)	< 1	0.2	2	0.5
Mushrooms	5	0.6	21	0.8
Caribou Moss	7	0.7	7	0.7
Caribou Weed	7	0.8	6	0.7
Yarrow (Stink Flower)	1	0.2	2	0.7

Other plants: Caribou horn, Caribou leaves, Huckleberries, White spruce, Spruce pitch, Fox tail, Tamarak

Table 8. Percentage of population consuming each traditional food species, by age group, as measured by the Food Frequency Questionnaire, winter and summer combined.

	AGE GROUP		
SPECIES	20-40 (n = 472)	41-60 (n = 205)	61 + (n = 123)
		% population	
Fish			
Lake Whitefish	30	47	51
Connie	4	7	5
Cisco	3	5	4
Trout	39	51	50
Loche	4	5	7
Jackfish	15	19	20
Arctic Grayling	36	45	46
Chinook Salmon	54	62	63
Coho Salmon	12	19	16
Chum Salmon	9	16	15
Sockeye Salmon	25	34	29
Broad Whitefish	5	13	11
Eulachon	5	12	12
Round Whitefish	4	9	7
Rainbow Trout	9	12	14
Dolly Varden	8	13	15
Halibut	12	12	11
Brown Trout	0	3	2
Arctic Char	2	2	3
Longnose Sucker	1	5	8
Land Animals			
Caribou Woodland	40	42	58
Caribou Barrenland	21	22	27

(Table 8 continued)

SPECIES	AGE GROUP		
	20-40 (n = 472)	41-60 (n = 205)	61 + (n = 123)
	% population		
Moose	94	96	95
Rabbit	20	35	36
Beaver	8	15	24
Muskrat	4	3	5
Lynx	1	2	0
Porcupine	7	11	22
Mountain Sheep	18	22	25
Bear	< 1	2	1
Arctic Ground Squirrel	10	16	23
Hoary Marmot	4	9	9
Deer	4	6	3
Bison	< 1	1	0
Mountain Goat	3	5	2
BIRDS			
Spruce Grouse	39	52	59
Blue Grouse	11	18	9
Ptarmigan	8	10	9
Ducks	15	21	24
Sea Gull	1	< 1	0
Arctic Tern	< 1	0	0
Cranes	0	< 1	0
White-Fronted Goose	1	< 1	1
Canada Goose	6	5	6
Brant Goose	0	< 1	0
Swan	1	1	0

(Table 8 continued)

SPECIES	AGE GROUP		
	20-40 (n = 472)	41-60 (n = 205)	61 + (n = 123)
	% population		
Plants			
Labrador Tea	14	24	26
Blueberries	54	59	60
Low Bush Cranberries	36	39	51
High Bush Cranberries	23	26	33
Bog Cranberries	3	5	2
Gooseberries	2	4	3
Soapberries	16	21	20
Crowberries	15	19	20
Bearberries	1	4	2
Raspberries	34	37	33
Strawberries	24	25	21
Cloud Berries	1	3	2
Red Currants	2	7	2
Black Currants	4	5	2
Bristly Black Currants	< 1	1	0
Salmonberries	2	6	3
Rosehips	7	13	8
Saskatoon Berries	4	4	2
Rosebuds	4	7	2
Arctic Dock	< 1	0	1
Wild Rhubarb	11	13	11
Wild Chives	3	6	6
Fireweed	1	< 1	2

(Table 8 continued)

	AGE GROUP		
SPECIES	20-40 (n = 472)	41-60 (n = 205)	61 + (n = 123)
		% population	
Plants, continued			
Honeysuckle	1	1	2
Sage	4	9	5
Mint	1	1	2
Dandelion	2	3	0
Balsam Fir	18	17	22
Black Spruce	3	7	13
Lodgepole Pine	1	3	2
Birch	3	4	8
Poplar	2	3	5
Willow	2	6	4
Juniper	1	4	7
Bear Root	4	6	7
Rice Root	0	< 1	2
Rat Root	1	2	0
Mushrooms	13	14	13
Caribou Moss	7	6	10
Caribou Weed	6	7	9
Yarrow	1	2	3

Table 9 (A-B). Number of species and parts consumed (mean ± SE) by season and age group as measured by the Food Frequency Questionnaire

A) Number of species (consumers and non-consumers)

	Winter			Summer		
	age 20-40 (n = 213)	age 41-60 (n = 94)	age 61 + (n = 66)	age 20-40 (n = 261)	age 41-60 (n = 111)	age 61 + (n = 57)
Fish	1.9 ± 0.1	3.0 ± 0.3	2.5 ± 0.3	3.5 ± 0.1	4.7 ± 0.3	5.5 ± 0.4
Land animals	2.0 ± 0.1	2.3 ± 0.2	2.6 ± 0.2	2.6 ± 0.1	3.3 ± 0.2	4.1 ± 0.3
Birds	0.4 ± 0.1	0.6 ± 0.1	0.7 ± 0.1	1.1 ± 0.1	1.5 ± 0.1	1.5 ± 0.2
Plants	2.1 ± 0.2	2.4 ± 0.4	2.7 ± 0.5	4.3 ± 0.3	5.8 ± 0.5	6.1 ± 0.7

Significance of main effects from ANOVA:
Fish : season, community, age group $p = 0.0001$; sex NS.
Land animals: season, community, age group $p = 0.0001$; sex NS.
Birds: season, community, age group $p = 0.0001$; sex NS.
Plants: season, community, age group $p = 0.0001$; sex $p = 0.009$

(Table 9 continued)

B) Number of parts (consumers only)

	Late winter						Fall					
	age 20-40	n	age 41-60	n	age 61 +	n	age 20-40	n	age 41-60	n	age 61 +	n
Fish	3.9 ± 0.3	152	7.1 ± 0.9	80	5.9 ± 0.6	49	7.0 ± 0.4	242	9.7 ± 0.8	108	12.7 ± 1.5	56
Land animals	10.0 ± 0.6	197	12.0 ± 1.1	92	12.2 ± 1.1	65	13.2 ± 0.7	257	16.4 ± 1.2	111	19.0 ± 1.5	57
Birds	3.1 ± 0.4	57	4.4 ± 0.8	35	3.4 ± 0.5	30	3.8 ± 0.3	157	4.9 ± 0.6	87	5.1 ± 0.6	46

Significance of main effects from ANOVA:
Fish : season, community, age group $p = 0.0001$; sex NS.
Land animals: season, community, age group $p = 0.0001$; sex NS.
Birds: community $p = 0.0001$; age group $p = 0.008$; season, sex NS.

Table 10. Daily intake (mean g ± SE) for consumers of traditional food recorded by 24 hour-recall, as consumed in late winter and fall combined, by gender and age group

Food	FEMALE						MALE					
	age 20-40 (n = 253)	n[1]	age 41-60 (n = 102)	n	age 61 + (n = 67)	n	age 20-40 (n = 221)	n	age 41-60 (n = 103)	n	age 61 + (n = 56)	n
Moose meat	245 ± 18	66	216 ± 27	40	266 ± 45	31	333 ±26	67	351 ± 35	35	309 ± 38	36
Moose ribs[2]	199 ± 66	6	246 ± 67	6	297 ± 74	6	682 ±103	8	402 ± 64	7	584 ± 106	4
Caribou meat	258 ± 63	11	174 ± 60	6	270 ± 91	4	271 ± 88	6	411 ± 104	5	117 ± 53	2
Rabbit meat	133 ± 36	4	338 ± 112	3	249 ± 69	5	226 ± 64	7	213 ± 83	4	263 ± 99	3
Salmon flesh	202 ± 18	6	169 ± 56	2	225 ± 83	4	338 ± 107	5	324 ± 92	5	225	1
Moose dry meat	115 ±15	10	111 ± 73	3	150 ± 30	2	167 ± 33	15	240	1	50	1
Trout flesh	187 ± 37	2	309 ± 54	4	112	1	480	1	450	1	225	2
Moose fat	114 ± 75	4	69 ± 52	4	-	0	155 ± 57	8	89 ± 82	3	-	0
Grayling flesh	187 ± 37	3	122 ± 11	4	135 ± 47	3	100	1	-	0	123 ± 57	2
Salmon, canned	105 ± 7	4	220		-	0	170 ± 50	2	161 ± 132	2	55	1
Beaver meat	-	0	113	1	562 ± 337	2	-	0	-	0	-	0
Salmon, smoked	295 ± 155	2	168	1	-	0	196	1	-	0	-	0
Salmon head flesh	500	1	-	0	-	0	-	0	450	1	-	0
Whitefish flesh	-	0	225	1	-	0	225 ± 0	2	-	0	-	0

Food	FEMALE						MALE					
	age 20-40 (n = 253)	n[1]	age 41-60 (n = 102)	n	age 61 + (n = 67)	n	age 20-40 (n = 221)	n	age 41-60 (n = 103)	n	age 61 + (n = 56)	n
Moose bone marrow	56	1	30 ± 15	2	225	1	60	1	7	1	225	1
Porcupine meat	-	0	450	1	-	0	112	1	-	0	-	0
Mountain sheep meat	225	1	225	1	-	0	-	0	84	1	-	0
Whitefish eggs	-	0	-	0	225	1	-	0	-	0	225	1
Moose lungs	450	1	-	0	-	0	-	0	-	0	-	0
Moose nose	225	1	225	1	-	0	-	0	-	0	-	0
Spruce hen meat	-	0	-	0	-	0	112 ± 0	2	-	0	169	1
Cranberries	330	1	-	0	-	0	28	1	5	1	-	0
Black duck meat	113	1	-	0	-	0	225	1	-	0	-	0
Blueberries	23 ± 7	2	112	1	-	0	-	0	-	0	112	1
Moose liver	-	0	112	1	-	0	-	0	112	1	-	0
Moose tongue	-	0	-	0	-	0	210	1	-	0	-	0
Onions	-	0	-	0	-	0	-	0	200	1	-	0
Salmon, canned	98 ± 14	2	-	0	-	0	-	0	-	0	-	0
Soapberries	-	0	-	0	150	1	-	0	-	0	-	0
Cisco, canned	125	1	-	0	-	0	-	0	-	0	-	0

Food	FEMALE						MALE					
	age 20-40 (n = 253)	n[1]	age 41-60 (n = 102)	n	age 61 + (n = 67)	n	age 20-40 (n = 221)	n	age 41-60 (n = 103)	n	age 61 + (n = 56)	n
Caribou dry meat	45	1	-	0	28	1	-	0	47	1	-	0
Raspberries	27 ± 13	2	-	0	-	0	20	1	-	0	-	0
Saskatoonberry	-	0	60	1	-	0	-	0	-	0	-	0
Moose heart	-	0	-	0	-	0	-	0	56	1	-	0
Moose bone fat	-	0	-	0	-	0	-	0	45	1	-	0
Strawberries	40	1	-	0	-	0	-	0	-	0	-	0
Mountain sheep fat	-	0	-	0	-	0	-	0	14	1	-	0
Caribou fat	-	0	5	1	-	0	-	0	-	0	-	0
Moose fat dry	5	1	-	-	-	0	-	0	-	0	-	0

[1] Number of individuals consuming this food.

[2] Weight of moose ribs shown is for the meat only

Table 11. Average yearly consumption (kg/person/yr) of main fish and land animal traditional food species[1] among Yukon First Nations, by gender and age-group

	Female			Male		
	20-40 (n = 253)	41-60 (n = 102)	61 + (n = 67)	20-40 (n = 221)	41-60 (n = 103)	61 + (n = 56)
FISH[2]						
Salmon	9.5	10.1	10.2	13.8	17.7	11.2
Trout	2.4	6.9	6.5	3.7	5.5	5.7
Grayling	2.9	4.7	4.1	3.3	4.3	5.0
Whitefish	1.3	3.1	4.8	2.9	5.3	3.4
Jackfish	0.3	1.0	0.6	0.6	0.7	2.1
Others	1.1	2.0	1.4	1.0	2.2	0.8
kg/person/yr	17.5	27.8	27.6	25.3	35.7	28.2
LAND ANIMALS[3]						
Moose	33.4	42.1	53.4	50.7	58.1	76.0
Caribou	8.8	9.1	10.1	10.1	16.5	12.8
Rabbit	1.1	2.7	4.9	2.1	3.6	4.6
Dall sheep	1.0	1.3	1.0	1.7	2.6	1.1
Squirrel	0.4	1.3	1.0	0.8	0.5	0.9
Beaver	0.2	0.3	3.7	0.5	1.9	1.7
Porcupine	0.1	1.0	0.5	0.4	0.4	0.5
Others	1.3	1.6	0.5	0.5	1.3	0.6
kg/person/yr	46.3	59.4	75.1	66.8	84.9	98.2

[1] Main food species were defined as having a yearly consumption > 1kg/pers/yr in at least one age/gender group. Yearly consumption was calculated using estimates of flesh/meat intakes (including cooked/dried/canned with dried and canned food-items converted to wet weight by adjusting for moisture loss) from food frequency questionnaires (winter and summer 1995) and 24-hr recalls (late winter and fall 1995). Coefficients of variation were generally very large (100% or more) and maxima 5-10 times the means.

[2] Within the categories of "salmon", "trout" and "whitefish", all species and sub-species were grouped; "Others" include connie, cisco, loche, eulachon, halibut, arctic char, and sucker.

[3] The categories of "caribou" included woodland and barrenland, and "Dall sheep" included dall sheep and mountain goat; "Others" included muskrat, lynx, bear, hoary marmot, deer, and bison.

Table 12. Estimated intake of traditional food (g/person/day), averaged over late winter and fall, by gender and age group (consumers and non-consumers of traditional food combined).

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Moose meat	60	83	128	97	118	196
Moose ribs[1]	4	14	30	23	26	39
Caribou meat	12	10	14	8	21	5
Rabbit meat	2	9	22	7	8	13
Salmon flesh	5	3	13	7	16	4
Moose dry meat	4	3	6	11	2	1
Trout flesh	2	12	1	2	4	8
Moose fat	2	3	0	5	2	0
Grayling flesh	3	5	5	0.4	0	4
Canned salmon	2	2	0	2	3	1
Beaver meat	0	1	14	0	0	0
Smoked salmon	3	2	0	1	0	0
Salmon head	2	0	0	0	4	0
Whitefish flesh	0	2	0	2	0	0
Moose bone marrow	0.2	1	4	0.3	0.1	4
Porcupine meat	0	4	0	1	0	0
Mountain sheep meat	1	2	0	0	1	0
Whitefish eggs	0	0	4	0	0	4
Moose lungs	2	0	0	0	0	0
Moose nose	1	2	0	0	0	0
Spruce hen meat	0	0	0	1	0	3
Cranberries	1	0	0	0.1	0.1	0

Table 12, continued

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Black duck meat	1	0	0	1	0	0
Blueberries	0.2	1	0	0	0	2
Moose liver	0	1	0	0	1	0
Moose tongue	0	0	0	1	0	0
Wild onions	0	0	0	0	2	0
Soapberries	0	0	2	0	0	0
Canned cisco	1	0	0	0	0	0
Caribou dry meat	0.2	0	0.2	0	0	0
Raspberries	0.2	0	0	0.1	0	0
Saskatoon berries	0	1	0	0	0	0
Moose heart	0	0	0	0	1	0
Moose bone grease	0	0	0	0	0.4	0
Strawberries	0.1	0	0	0	0	0
Mountain sheep fat	0	0	0	0	0.1	0
Caribou fat	0	0.1	0	0	0	0
Moose dry fat	0.1	0	0	0	0	0
Total	106	160	243	169	210	283

[1] Weight of moose ribs shown is for the meat only.

Table 13 (A-B). Daily nutrient intake (mean ± SE), by season, gender, and age group

A) Late winter

	Male			Female		
	age 20-40 (n = 101)	age 41-60 (n = 47)	age 61 + (n = 26)	age 20-40 (n = 112)	age 41-60 (n = 47)	age 61 + (n = 40)
Energy (kcal)	2325 ± 96	2077 ± 129	1859 ± 180	1752 ± 71	1879 ± 107	1736 ± 137
Carbohydrate (g)	230 ± 10	180 ± 14	185 ± 15	186 ± 8	206 ± 14	160 ± 13
Protein (g)	122 ± 7	138 ± 12	127 ± 17	92 ± 5	101 ± 6	124 ± 15
Fat (g)	103 ± 5	88 ± 7	68 ± 9	73 ± 4	73 ± 6	66 ± 8
Saturated fat (g)	37 ± 2	31 ± 3	25 ± 3	26 ± 1	26 ± 2	25 ± 3
Polyunsaturated fat (g)	17 ± 1	15 ± 2	10 ± 2	12 ± 1	13 ± 1	9 ±1
Vitamin A (RE)[1]	**877 ± 109**	1142 ± 296	1052 ± 166	**621 ± 57**	958 ± 260	1118 ± 331
Vitamin A (RE)[2]	**549 (444-679)**	**545 (376-790)**	**698 (456-1067)**	**425 (360-503)**	**444 (313-631)**	**475 (298-758)**
Iron (mg)	18 ± 1	20 ± 2	19 ± 3	14 ± 1	18 ± 2	19 ± 3
Zinc (mg)	20 ± 2	22 ± 3	21 ± 3	15 ± 2	15 ± 1	20 ± 3
Calcium (mg)	**577 ± 42**	**440 ± 43**	**423 ± 57**	**470 ± 29**	**472 ± 53**	**463 ± 55**
Dietary fibre (g)	18 ± 1	15 ± 1	15 ± 1	15 ± 1	18 ± 2	12 ± 1
Sucrose (g)	63 ± 4	44 ± 5	54 ± 9	53 ± 4	55 ± 7	40 ± 6

* Bold values are below Recommended Nutrient Intake (RNI)
[1] Mean ± SE
[2] Geometric mean (95% confidence interval)

Table 13, continued

B) Fall

	Male			Female		
	age 20-40 (n = 120)	age 41-60 (n = 56)	age 61 + (n = 30)	age 20-40 (n = 141)	age 41-60 (n = 55)	age 61 + (n = 27)
Energy (kcal)	2230 ± 100	2160 ± 126	2172 ± 174	1868 ± 69	1709 ± 111	1934 ± 134
Carbohydrate (g)	201± 9	196 ± 13	189 ± 20	185 ± 7	162 ± 11	158 ± 12
Protein (g)	162 ± 10	143 ± 12	178 ± 18	112 ± 6	119 ± 10	149 ± 17
Fat (g)	96 ± 7	88 ± 8	75 ± 9	76 ± 4	64 ± 6	76 ± 10
Saturated fat (g)	35 ± 3	32 ± 3	26 ± 3	28 ± 2	22 ± 2	26 ± 3
Polyunsaturated fat (g)	14 ± 1	14 ± 2	13 ± 2	12 ± 1	11 ± 1	12 ± 2
Vitamin A (RE)[1]	**903 ± 87**	**741 ± 109**	**842 ± 227**	**783 ± 79**	**718 ± 97**	**786 ± 166**
Vitamin A (RE)[2]	**500 (394-634)**	**498 (395-627)**	**383 (221-662)**	**466 (377-576)**	**451 (340-596)**	**483 (329-710)**
Iron (mg)	26 ± 2	22 ± 2	28 ± 3	18 ± 1	20 ± 2	24 ± 3
Zinc (mg)	27 ± 2	24 ± 3	32 ± 4	18 ± 1	20 ± 2	26 ± 4
Calcium (mg)	**479 ± 33**	**508 ± 66**	**413 ± 54**	**505 ± 35**	**413 ± 43**	**389 ± 48**
Dietary fibre (g)	18 ± 1	16 ± 1	15 ± 2	17 ± 1	15 ± 1	12 ± 1
Sucrose (g)	52 ± 4	49 ± 5	37 ± 7	49 ± 3	39 ± 4	34 ± 4

* Bold values are below Recommended Nutrient Intake (RNI)
[1] Mean ± SE
[2] Geometric mean (95% confidence interval)

Table 14. Estimated intake of market food (g/person/day) averaged over late winter and fall, by gender and age group

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Coffee	864	819	423	914	964	537
Tea	267	494	774	214	459	875
Soft drinks	79	49	11	111	42	23
Potatoes	54	65	82	68	65	98
Soup, chicken noodle	52	52	40	86	65	52
Powder drinks	90	36	24	77	29	31
Rice, white	40	51	54	50	56	61
Eggs	32	27	35	48	69	45
Milk, 2%	45	31	38	36	38	17
Beef, hamburger	34	21	19	48	34	4
Bread, white	22	30	34	37	53	26
Chicken	33	26	26	40	29	24
Soup, tomato	26	15	37	30	26	64
Soup, veg & beef	24	14	24	44	35	9
Oats	16	47	31	16	19	74
Potatoes, fried	26	13	7	34	39	15
Sugar, white	23	26	21	24	31	30
Spaghetti	32	23	10	24	19	24
Orange juice, frozen	38	6	3	39	13	0
Macaroni & cheese	27	12	11	34	12	24
Soup, creamed	16	26	23	19	26	24
Bread, whole wheat	16	19	12	21	13	19
Pork, lean cuts	20	13	14	15	2	24
Fruit drinks	10	19	7	29	5	0

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Apples	17	15	7	12	16	9
Carrots	9	13	19	14	13	20
Stew, beef & veg	7	4	9	19	7	56
Frankfurters	7	11	7	18	18	11
Onions	12	15	8	12	10	8
Beef, round broiled	10	9	13	15	7	14
Tomatoes, canned	9	9	3	19	6	8
Bannock	5	19	16	6	15	25
Orange juice, canned	8	15	15	19	0	0
Milk, whole	12	6	2	14	9	11
Milk, evaporated	9	16	14	9	7	12
Vegetables, mixed	7	9	10	13	12	15
Oranges	10	14	7	6	5	11
Pork ham, canned	8	6	5	13	3	8
Meat gravy	8	7	7	8	7	7
Pizza with cheese	10	0	10	13	0	0
Beef, chuck blade	5	6	21	5	11	6
Butter	5	7	11	8	8	8
Spaghetti with meat	12	9	2	1	9	6
Wheat cereal, cooked	5	7	15	6	2	4
Potato chips	9	5	1	9	1	1
Tomatoes, raw	8	6	4	7	4	2
Bacon	4	4	4	7	10	8
Bananas	6	9	8	6	0	8
Lettuce	7	8	5	6	6	1

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Corn, sweet canned	7	9	6	2	6	12
Turkey, roasted	5	5	8	7	4	1
Ice cream	4	4	4	8	5	3
Lard	4	5	3	4	6	7
Pork sausage	4	5	1	8	3	3
Soup, split pea	4	5	0	8	0	0
Peas, green frozen	4	2	4	7	3	5
Pancakes	4	4	2	6	6	0
Cheese, cheddar	6	3	2	4	5	1
Cucumbers	4	3	5	3	4	6
Mushrooms, canned	3	4	3	4	5	0
Noodles, egg	5	5	6	2	1	6
Grapefruit juice	1	4	4	9	0	0
Spaghetti & tomato sauce	6	1	0	2	2	0
Beef, corned	3	6	0	4	1	0
Corn, sweet, frozen	2	1	2	4	2	2
Apple pie	2	4	1	3	5	2
Jell-o desserts	2	5	3	1	5	9
Cream, light	3	4	0.4	3	3	1
Cheese, American	3	2	2	3	2	1
Beans, baked canned	5	5	0	0	1	4
Rice, brown	1	3	4	1	9	1
Crackers, saltine	2	2	4	3	1	1
Grapefruit	2	7	0	2	1	0
Margarine	2	2	1	3	2	2

Food	FEMALE			MALE		
	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Corn, sweet, canned, white + yellow	1	20	2	5	2	0
Broccoli	4	0.4	0	2	1	0
Cake, coffeecake	2	3	1	3	0	1
Cookies, assorted	1	2	2	4	1	2
Orange juice, raw	4	2	0	1	0	0
Catsup	3	2	1	2	1	0.3
Mayonnaise	2	3	1	2	3	0.3
Salmon, canned	0	2	0	0	1	0
Jellies	2	1	3	2	1	1
Maple syrup	2	1	2	2	2	0
Wheat flakes	3	1	1	1	1	1
Corn flakes	1	3	2	2	2	0
Peas, green canned	2	3	1	2	1	0
Chocolate, candy	3	0	0.4	2	1	1
Wheat flour, white	2	2	1	1	1	1
Cabbage, boiled	1	3	5	0.4	1	2
Cream half&half	2	1	2	1	2	1
Fish, battered fried	1	1	0	3	0.4	0
Milk, skim	1	3	3	1	0	0
Chicken chow mein	4	0	0	0	0	0
Tomatoes, boiled	2	0.2	2	0.3	2	2
Beans, snap green	2	2	1	1	1	0
Peaches, canned in syrup	0.4	2	4	0	0	5
Clams, canned	1	4	2	0.3	1	0

Food	age 20-40 n = 253	age 41-60 n = 102	age 61 + n = 67	age 20-40 n = 221	age 41-60 n = 103	age 61 + n = 56
Beans, white	0	6	0	0	4	0
Doughnuts, cake type	1	0	0	2	0	1
Oil, corn	1	1	3	1	1	1
Cake, yellow & icing	2	1	3	1	0	1
Peaches, canned in water	2	0	0	1	1	2
Popcorn	2	0.4	0.4	1	1	0
Shrimp	1	1	0	2	0	0
Salad dressing or mayonnaise	2	1	1	1	1	0
Cornmeal	1	3	0	0.2	0	5
Turnips	1	4	0	0	0	0.3
Chili con carne	0	0	0	3	0	0
Total	2261	2342	2107	2497	2485	2469

The following are market food items for which no age group ate more than an average of 3 grams:

Cheese, cream	Fat, vegetable cooking
Oil, canola	Beans, snap green, frozen
Pineapple canned in syrup	Sweet potatoes
Oysters, canned	Peppers, green
Peaches	Pudding
Cheese, cottage	Chili con carne, with beans
Muffins	Cookies, fig bars

The following are market food items for which no age group ate more than an average of 3 grams:

Corn, on-cob

Cantaloupes

Granola

Halibut

Mustard

Pineapple

Chocolate

Applesauce, canned

Pineapple juice, canned

Salami

Peanut butter

Chicken chow mein, canned

Peppers, sweet green, boiled

Cocoa mix for hot drink

Doughnuts, yeast type

Beef pot pie

Hash, corned beef

Tuna, canned

Coconut

Honey

Frozen dinner, turkey

Shrimp fried, dipped in eggs

Cake, angel food

Sardines, canned

Beans, red kidney, canned

Bread, raisin

Bread, rye

Pickles, dill

Cabbage, raw

Wheat bran

Onions, boiled

Cream, whipped

Raisins, uncooked

Soy sauce

Lemon juice, canned

Corn syrup

Sugar, brown

Spinach, canned

Cake, devils food

Peanuts

Lamb leg

Chocolate syrup

Cake, pound

Peas, green, boiled

Frozen dinner, meatloaf

Bread, cracked wheat

Caramels

Veal loin

Table 14, continued

The following are market food items for which no age group ate more than an average of 3 grams:

Tortilla

Cheese sauce

Beef, cured

Milk, dry

White sauce

Salt, table

Beets, canned

Cake, fruitcake

Salad dressing, Italian

Beans, snap green, boiled

Soup, beef broth

Pickles, sweet

Oil, olive

Oil, soybean

Graham crackers

Table 15. Height, weight and BMI based on reported and measured weight, by age group and gender

	Age group		
	20-40	41-60	61 +
	Female		
	mean ± SE (n)	mean ± SE (n)	mean ± SE (n)
Height (metres)	1.62 ± 0.01(138)	1.61 ± 0.01 (52)	1.59 ± 0.01 (26)
Weight (kg)			
Measured	62.56 ± 1.63 (22)	74.01 ± 4.27 (12)	69.68 ± 11.01 (4)
Reported	66.24 ± 0.93 (122)	72.66 ± 1.76 (48)	72.41 ± 2.66 (25)
BMI using:			
Measured wt	23.98 ± 0.63 (22)	28.71 ± 1.50 (12)	27.12 ± 3.89 (4)
Reported wt	25.23 ± 0.40 (122)	28.28 ± 0.75 (47)	28.47 ± 1.08 (24)
BMI ≥ 27 using:	n (%)[1]	n (%)	n (%)
Measured wt	4 (18)	6 (50)	3 (75)
Reported wt	33 (27)	23 (49)	16 (67)

[1] The number of individuals (and percent of the gender-age group) with BMI ≥ 27 using (1) measured, and (2) reported weight.
Significance of main effects from ANOVA: BMI calculated with self-reported weight; MBMI calculated with measured weight
Male:BMI: age group p = 0.0001; site NS. MBMI: age group p = 0.005; site NS.
Female:BMI: age group p = 0.002; site NS. MBMI: age group p = 0.05; site NS.
The difference between MBMI and BMI, and between measured weight and reported weight were not statistically different, based on a paired T-test.

Table 15, continued

	Age group		
	20-40	41-60	61 +
		Male	
	mean ± SE (n)	mean ± SE (n)	mean ± SE (n)
Height (metres)	1.74 ± 0.01 (117)	1.74 ± 0.01 (54)	1.71 ± 0.01 (29)
Weight (kg):			
Measured	72.61 ± 2.08 (22)	73.68 ± 4.48 (9)	85.91 ± 6.35 (10)
Reported	76.70 ± 1.14 (104)	79.20 ± 1.53 (46)	81.20 ± 3.07 (22)
BMI using:			
Measured wt	24.60 ± 0.63 (22)	24.54 ± 1.03 (9)	29.15 ± 1.72(10)
Reported wt	25.07 ± 0.30 (104)	25.97 ± 0.42 (46)	28.51 ± 0.97 (22)
BMI ≥ 27 using:	n (%)[1]	n (%)	n (%)
Measured wt	4 (18)	3 (30)	6 (60)
Reported wt	23 (22)	14 (30)	13 (59)

[1] The number of individuals (and percent of the gender-age group) with BMI ≥ 27 using (1) measured, and (2) reported weight.
Significance of main effects from ANOVA: BMI calculated with self-reported weight; MBMI calculated with measured weight
Male:BMI: age group $p = 0.0001$; site NS. MBMI: age group $p = 0.005$; site NS.
Female:BMI: age group $p = 0.002$; site NS. MBMI: age group $p = 0.05$; site NS.
The difference between MBMI and BMI, and between measured weight and reported weight were not statistically different, based on a paired T-test.

Table 16 A. Proximate composition of Yukon food samples, listed alphabetically

Food Sample				Proximate Composition and Energy Values per 100g						
									Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Arctic Grayling	flesh	raw	Watson Lake	77.76	1.69	19.32	1.24	0.00	92	386
Arctic Grayling	flesh	poached	Watson Lake	74.37	2.03	22.28	1.32	0.00	107	449
Arctic Grayling	flesh	raw	Watson Lake	75.81	1.07	21.73	1.39	0.00	97	404
Arctic Grayling	flesh	raw	Watson Lake	77.03	0.86	20.53	1.58	0.00	90	376
Arctic Grayling	flesh	cooked	Beaver Cr.	73.19	1.78	23.65	1.15	0.24	112	466
Arctic Grayling	flesh	boiled	Carcross	75.60	1.42	21.50	1.09	0.40	100	419
Arctic Grayling	flesh	raw	Carcross	75.61	1.99	21.08	1.33	0.00	102	427
Arctic Grayling	flesh	raw	Lower Post	79.12	0.95	18.22	1.45	0.25	82	345
Arctic Grayling	flesh	raw	Dawson	75.72	3.29	19.66	1.33	0.00	108	453
Arctic Grayling	flesh	raw	Dawson	75.34	2.81	20.56	1.29	0.00	108	449
Arctic Grayling	flesh	raw	Mayo	77.40	2.44	18.93	1.23	0.00	98	408
Arctic Ground Squirrel	flesh	raw	Carcross	73.24	2.19	23.36	1.10	0.10	114	475
Arctic Ground Squirrel	flesh	boiled	Beaver Cr.	67.64	3.28	28.03	0.64	0.41	143	599
Arctic Ground Squirrel	flesh	raw	Carcross	75.21	0.86	20.23	1.19	2.51	99	413
Barrenland Caribou	meat	raw	Dawson	73.31	1.14	23.14	1.30	1.11	107	448
Beaver	fat	raw	Watson Lake	15.68	69.41	14.77	0.14	0.00	684	2858
Beaver	tail	raw	Mayo	47.76	42.44	9.44	0.36	0.00	420	1755
Black Duck	intestine	raw	Carmacks	66.80	11.87	19.76	1.58	0.00	186	777
Black Duck	liver	raw	Carmacks	70.13	2.71	23.81	1.31	2.03	128	534

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Blackberry	berry	raw	Carcross	86.86	1.18	0.39	0.21	11.37	58	241
Blue Grouse	whole	raw	Carcross	72.38	0.20	26.24	1.08	0.10	107	448
Blueberry	berry	raw	Carmacks	82.69	1.10	0.80	0.24	15.17	74	308
Blueberry	berry	raw	Mayo	83.62	0.76	0.58	0.27	14.77	68	285
Blueberry	berry	raw	Mayo	84.81	1.31	0.79	0.26	12.83	66	277
Blueberry	berry	jam	Carcross	35.67	1.81	0.39	0.02	62.11	266	1113
Caribou	ground meat	raw	Mayo	63.55	14.00	19.98	0.06	2.41	216	901
Caribou	meat	boiled	Carcross	65.33	1.59	31.04	0.03	2.00	147	613
Caribou	meat	raw	Carcross	75.01	0.59	21.87	0.11	2.41	102	428
Caribou	meat	raw	Dawson	75.32	0.82	21.69	1.12	1.05	98	411
Caribou	meat	raw	Mayo	75.84	0.78	22.01	0.86	0.51	97	406
Caribou	liver	raw	Carmacks	71.65	1.98	23.60	1.23	1.55	118	495
Caribou Fetus	amniotic sac	raw	Beaver Cr.	72.98	0.86	22.18	0.93	3.05	109	454
Caribou Fetus	hind quarter	boiled	Beaver Cr.	77.61	2.07	15.56	0.95	3.80	96	402
Chinook Salmon	eggs	raw	Dawson	56.74	12.47	28.39	1.50	0.89	229	959
Chinook Salmon	eggs	raw	Mayo	58.03	12.06	27.57	1.26	1.08	223	933
Chinook Salmon	flesh	poached	Ross River	76.58	3.25	19.19	0.98	0.00	106	443
Chinook Salmon	flesh	raw	Beaver Cr.	64.93	15.27	18.03	1.77	0.00	210	876
Chinook Salmon	flesh	raw	Dawson	80.61	1.53	17.12	0.75	0.00	82	344
Chinook Salmon	flesh	raw	Dawson	72.99	6.55	19.54	0.93	0.00	137	573
Chinook Salmon	flesh	raw	Mayo	68.23	8.55	22.10	1.12	0.00	165	691

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Chinook Salmon	flesh	raw	Mayo	79.50	3.88	15.62	1.00	0.00	97	407
Chinook Salmon	flesh	smoked	Carmacks	75.22	2.69	20.39	1.25	0.45	108	450
Chinook Salmon	flesh	dry/smoked	Ross River	21.31	17.58	56.8	3.80	0.47	387	1619
Chinook Salmon	flesh	smoked	Dawson	14.63	5.88	74.94	4.55	0.00	353	1474
Chinook Salmon	flesh	smoked	Mayo	37.55	13.84	42.98	4.06	1.57	303	1266
Chinook Salmon	flesh	raw	Carmacks	75.83	4.77	17.79	0.09	1.52	120	502
Chum Salmon	flesh	raw	Carmacks	77.33	2.36	18.95	1.36	0.00	97	406
Chum Salmon	flesh	smoked	Dawson	52.61	7.01	36.86	3.37	0.14	211	882
Chum Salmon	fillet	boiled	Burwash	70.97	5.87	22.22	0.94	0.00	142	592
Coho Salmon	flesh	raw	Atlin	73.60	4.34	19.96	0.09	2.01	127	531
Coho Salmon	flesh	fried in lard	Atlin	68.51	7.01	21.28	0.11	3.09	161	671
Cranberry	berry	raw	Mayo	84.32	1.28	0.63	0.25	13.51	68	285
Dall Sheep	brisket	raw	Ross River	13.31	81.70	2.57	0.07	2.35	755	3156
Dall Sheep	meat	raw	Watson Lake	70.81	2.07	21.65	1.34	4.13	122	509
Sheep (mountain)	back flesh	raw	Ross River	65.41	9.25	24.14	1.20	0.00	180	752
Sheep	leg meat	boiled	Burwash	54.13	5.47	38.76	0.75	0.90	208	869
Deer	meat	raw	Burwash	60.36	4.65	34.32	0.67	0.00	179	749
Dolly Varden	flesh	raw	Lower Post	79.58	1.01	18.26	1.16	0.00	82	343
Goat	ribs	baked	Carcross	14.08	42.90	38.93	0.09	4.00	558	2332
Halibut	flesh	raw	Burwash	71.32	1.24	26.34	1.10	0.00	117	487
Herring	flesh	raw	Carcross	73.11	5.39	19.57	1.89	0.05	127	531

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Highbush Blueberry	berry	preserved	Carcross	60.53	1.03	0.78	0.12	37.54	163	679
Highbush Cranberry	berry	raw	Beaver Cr.	83.88	2.21	0.84	0.36	12.71	74	310
Highbush Cranberry	berry	raw	Carcross	86.88	0.72	0.95	0.47	10.98	54	227
Highbush Cranberry	berry	raw	Mayo	81.27	3.00	0.90	0.46	14.36	88	368
Lake Trout	flesh	boiled	Burwash	73.93	3.75	21.28	1.04	0.00	119	497
Lake Trout	flesh	partly smkd	Atlin	77.20	1.73	19.35	1.36	0.36	94	395
Lake Trout	flesh	raw	Mayo	82.53	0.70	15.77	1.01	0.00	69	290
Lake Trout	intestines	raw	Carmacks	75.36	5.78	12.91	0.28	5.67	126	528
Lake Trout	flesh	raw	Atlin	77.81	1.07	18.67	0.11	2.34	94	392
Lake Trout	flesh	baked	Atlin	68.39	2.65	26.19	0.14	2.63	139	582
Lake Trout	flesh	fried in lard	Atlin	70.30	2.57	25.34	0.08	1.72	131	549
Lake Whitefish	flesh	raw	Mayo	78.68	2.17	17.65	1.10	0.40	92	383
Loche	flesh	raw	Carmacks	80.20	0.45	18.14	0.06	1.15	81	339
Loche	flesh	raw	Mayo	82.00	0.86	15.64	1.02	0.48	72	302
Longnose Sucker	flesh	raw	Carmacks	80.22	0.97	16.71	0.12	1.99	83	349
Longnose Sucker	flesh	boiled	Carcross	76.17	0.88	22.05	0.91	0.00	96	402
Longnose Sucker	head w/bones etc.	raw	Carcross	73.03	5.43	13.93	5.75	1.86	112	468
Lowbush Cranberry	berry	frozen	Carcross	79.90	0.40	0.60	0.16	18.93	82	342
Lowbush Cranberry	berry	raw	Carcross	80.24	1.14	0.64	0.26	17.73	84	350
Lowbush Cranberry	berry	raw	Mayo	84.57	0.91	0.59	0.22	13.72	65	273

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Lowbush Cranberry	berry	raw	Mayo	83.45	1.25	0.58	0.23	14.48	72	299
Lynx	flesh	raw	Carcross	74.75	0.60	22.42	1.15	1.07	99	415
Lynx	kidney	raw	Carcross	69.89	8.52	16.83	1.23	3.53	158	661
Lynx	liver	raw	Carcross	67.26	3.23	20.99	1.19	7.34	142	595
Moose	bone marrow	raw	Mayo	41.75	49.85	3.63	0.68	4.09	480	2004
Moose	bone marrow	raw	Dawson	72.63	0.99	23.32	1.08	1.97	110	460
Moose	bone marrow	raw	Carcross	17.76	81.12	0.00	0.00	1.12	735	3070
Moose	bone marrow	boiled	Beaver Cr.	7.73	90.81	0.85	0.00	0.61	823	3441
Moose	brain	raw	Mayo	76.00	9.34	10.83	1.58	2.25	136	570
Moose	fat	raw	Carcross	3.96	93.43	2.56	0.00	0.00	851	3558
Moose	fat	raw	Mayo	5.67	91.32	2.63	0.00	0.38	834	3486
Moose	fat	raw	Mayo	0.33	98.59	1.09	0.00	0.00	892	3727
Moose	fat	raw	Mayo	0.25	98.48	1.27	0.00	0.00	891	3726
Moose	fat	raw	Watson Lake	3.23	95.02	0.99	0.00	0.76	862	3604
Moose	fat	boiled	Carcross	10.52	86.87	1.79	0.00	0.82	792	3312
Moose	fat, kidney	dried	Ross River	0.53	98.81	0.67	0.00	0.00	892	3728
Moose	fat, kidney	raw	Carcross	21.16	75.97	2.43	0.00	0.44	695	2906
Moose	fat, liner	raw	Mayo	0.60	93.90	5.28	0.22	0.00	866	3621
Moose	fat, stomach	raw	Dawson	7.20	83.78	0.93	0.00	8.09	790	3303
Moose	heart	raw	Mayo	76.94	1.32	17.66	0.97	3.11	95	397
Moose	kidney	raw	Beaver Cr.	76.80	1.62	17.97	1.28	2.32	96	400

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Moose	kidney	raw	Mayo	80.43	1.53	16.35	1.13	0.57	81	340
Moose	kidney	raw	Mayo	76.00	0.88	19.94	1.18	2.00	96	400
Moose	kidney	raw	Mayo	82.87	1.12	13.15	1.05	1.82	70	292
Moose	liver	raw	Mayo	71.58	1.30	22.14	1.31	3.67	115	481
Moose	liver	raw	Mayo	70.39	2.77	20.50	1.24	5.10	127	532
Moose	liver	raw	Mayo	72.31	0.85	20.80	1.20	4.84	110	461
Moose	liver	fried in lard	Atlin	59.08	4.11	28.22	0.34	8.25	183	764
Moose	liver	raw	Atlin	68.04	2.81	22.17	0.31	6.67	141	588
Moose	meat	raw	Carcross	75.62	0.61	21.51	0.10	2.18	100	419
Moose	meat	roasted	Carcross	57.14	1.75	38.16	0.10	2.84	180	752
Moose	meat	dried	Ross River	5.11	7.17	77.37	4.14	6.21	399	1667
Moose	meat	dried	Watson Lake	9.81	2.10	83.99	4.09	0.00	355	1484
Moose	meat	raw	Dawson	75.18	0.35	22.03	0.99	1.45	97	406
Moose	meat	raw	Mayo	75.15	0.71	22.21	1.24	0.69	98	410
Moose	meat	raw	Mayo	75.46	0.37	22.62	1.22	0.32	95	398
Moose	meat, neck	raw	Mayo	73.14	1.15	24.15	0.07	1.49	113	472
Moose	meat, ground	fried	Carcross	65.16	11.74	21.28	0.04	1.77	198	827
Moose	meat	stew	Dawson	73.35	1.94	23.66	1.05	0.00	112	469
Moose	ribs	boiled	Burwash	58.70	10.87	29.24	0.59	0.61	217	908
Moose	ribs	raw	Burwash	63.24	13.72	22.00	0.79	0.25	213	888
Moose	ribs	raw	Dawson	75.10	1.56	19.75	0.91	2.67	104	434

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Moose	ribs	raw	Carcross	67.92	8.81	21.44	0.07	1.75	172	719
Moose	tongue	raw	Mayo	76.36	4.39	16.22	0.90	2.13	113	472
Northern Pike	flesh	raw	Carmacks	75.83	0.88	21.45	1.42	0.42	95	399
Northern Pike	tail end	poached	Ross River	79.74	0.99	18.27	1.00	0.00	82	343
Northern Pike	flesh	raw	Carcross	78.26	0.73	19.73	1.28	0.00	85	357
Northern Pike	flesh	raw	Carcross	79.38	0.62	18.54	0.07	1.39	85	356
Northern Pike	flesh	boiled	Carcross	75.65	0.76	22.41	1.18	0.00	97	403
Northern Pike	flesh	raw	Mayo	77.46	0.85	20.40	1.08	0.20	90	376
Ooligan	flesh	raw	Carcross	71.70	12.86	13.10	0.14	2.21	177	740
Ooligan	flesh	boiled	Burwash	62.30	18.31	16.67	2.08	0.64	234	978
Porcupine	flesh	boiled	Carcross	66.25	3.10	27.39	1.18	2.07	146	609
Rabbit	flesh	cooked	Beaver Cr.	64.62	1.28	31.31	1.20	1.59	143	598
Rabbit	flesh	raw	Burwash	75.27	0.46	21.85	1.15	1.28	97	404
Rabbit	flesh	raw	Carmacks	73.42	0.84	22.40	1.17	2.17	106	442
Rabbit	flesh	raw	Mayo	74.37	0.57	22.37	1.11	1.57	101	422
Rabbit	flesh	raw	Mayo	74.18	0.50	22.52	1.17	1.62	101	423
Rabbit	kidneys	raw	Mayo + Burwash	75.34	2.21	18.33	1.22	2.90	105	438
Rabbit	liver	cooked	Beaver Cr.	71.36	1.65	21.58	1.28	4.13	118	492
Rabbit	liver	raw	Burwash	73.88	1.56	19.39	1.15	4.01	108	450
Rabbit	liver	raw	Mayo	74.31	0.90	20.53	1.10	3.16	103	430

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Rabbit	liver	raw	Mayo	74.58	0.77	20.09	1.11	3.45	101	423
Raspberry	berry	raw	Mayo	76.88	3.23	1.24	0.48	18.16	107	446
Raspberry	berry	raw	Mayo	80.96	2.12	1.08	0.42	15.42	85	356
Red Currant	berry	jam	Burwash	16.23	0.00	0.12	0.06	83.59	335	1400
Salmon	eggs	raw	Atlin	60.21	6.22	25.80	0.33	7.44	189	790
Salmon	flesh	raw	Beaver Cr.	77.85	1.22	19.96	0.97	0.00	91	380
Salmon	flesh	smoked	Atlin	77.06	1.54	19.47	0.08	1.85	99	414
Salmon	head	raw	Mayo	50.54	24.70	18.30	4.48	1.98	303	1268
Saskatoon Berry	berry	raw	Mayo	74.80	1.78	1.21	0.70	21.51	107	447
Soapberry	berry	raw	Burwash	78.41	2.05	3.77	0.57	15.20	94	394
Soapberry	berry	raw	Carcross	76.30	1.61	2.68	0.47	18.93	101	422
Soapberry	berry	preserved	Carcross	86.58	0.34	1.87	0.22	11.00	54	228
Sockeye Salmon	flesh	dry/smoked	Burwash	30.81	7.07	58.94	3.19	0.00	299	1251
Sockeye Salmon	flesh	jarred	Burwash	68.82	6.45	23.41	1.32	0.00	152	634
Sockeye Salmon	flesh	canned	Atlin	64.69	9.30	22.52	0.26	3.23	187	781
Sockeye Salmon	head	raw	Atlin	60.78	17.90	13.82	4.22	3.28	230	959
Spruce Grouse	flesh	raw	Mayo	72.82	0.22	24.62	1.29	1.05	105	438
Spruce Grouse	flesh	raw	Carcross	72.28	0.43	23.49	1.31	2.49	108	451
Spruce Grouse	flesh	boiled	Carcross	69.42	0.90	27.23	1.13	1.33	122	511
Spruce Grouse	flesh	boiled	Beaver Cr.	70.23	0.54	26.29	1.17	1.77	117	490
Trout	eggs	raw	Carcross	62.93	3.13	26.60	0.24	7.10	163	681

Food Sample				Proximate Composition and Energy Values per 100g					Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Trout	flesh	raw	Carcross	71.24	7.31	20.32	1.14	0.00	147	614
Trout	flesh	raw	Mayo	77.24	2.23	19.40	1.14	0.00	98	408
Trout	flesh	boiled	Carcross	63.32	13.90	21.78	1.00	0.00	212	887
Trout	head w/bones, etc.	raw	Ross River	65.24	13.82	14.28	4.40	2.27	191	796
Whitefish	flesh	baked	Atlin	68.59	5.37	22.72	0.13	3.19	152	635
Whitefish	flesh	raw	Carcross	76.61	2.38	19.34	0.09	1.59	105	439
Whitefish	flesh	raw	Beaver Cr.	72.82	3.26	22.62	1.30	0.00	120	501
Whitefish	flesh	raw	Dawson	63.35	3.73	31.03	1.89	0.00	158	659
Whitefish	flesh	raw	Mayo	77.59	3.58	17.68	1.16	0.00	103	430
Willow Grouse	flesh	raw	Mayo	73.59	0.88	23.83	0.97	0.73	106	444
Willow Grouse	flesh	raw	Carcross	72.59	0.22	25.11	1.23	0.85	106	443
Willow Grouse	heart	raw		72.54	8.53	-	1.25	-	-	-
Woodland Caribou	fat	raw	Watson Lake	1.76	97.24	1.00	0.00	0.00	879	3675
Woodland Caribou	fat	raw	Watson Lake	20.76	65.12	14.10	0.03	0.00	642	2685
Woodland Caribou	liver	raw	Carmacks	68.88	3.09	19.33	0.47	8.24	138	577
Woodland Caribou	meat, hindquarter	boiled	Watson Lake	58.44	1.83	36.41	0.08	3.24	175	732
Woodland Caribou	meat, hindquarter	raw	Watson Lake	73.27	1.15	23.04	0.11	2.43	112	469
Woodland Caribou	ribs	raw	Carmacks	72.42	3.29	21.68	0.10	2.50	126	528

Food Sample				Proximate Composition and Energy Values per 100g						
									Calculated Energy	
Species	Part	Preparation	Community	Moisture (g)	Crude Fat (g)	Protein (g)	Ash (g)	CHO (g)	kcal	kj
Woodland Caribou	stomach& intestines	raw	Carmacks	68.13	16.59	13.39	0.06	1.83	210	878

Table 16B. Mineral composition of Yukon food samples, listed alphabetically.

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Arctic Grayling	flesh	boiled	Carcross	26	0.17	1.02	0.10	0.01	0.05	14
Arctic Grayling	flesh	cooked	Beaver Cr.	45	0.58	1.73	0.09	0.02	0.07	185
Arctic Grayling	flesh	poached	Watson Lake	46	0.96	1.14	0.06	0.03	0.07	19
Arctic Grayling	flesh	raw	Watson Lake	14	0.19	0.75	0.03	-[1]	-	-
Arctic Grayling	flesh	raw	Watson Lake	21	0.61	1.34	0.03	-	-	-
Arctic Grayling	flesh	raw	Watson Lake	38	0.55	0.69	0.06	0.03	0.07	27
Arctic Grayling	flesh	raw	Carcross	28	0.98	1.21	0.08	0.02	0.05	17
Arctic Grayling	flesh	raw	Lower Post	57	5.91	0.41	0.06	0.04	0.12	219
Arctic Grayling	flesh	raw	Dawson	17	1.21	0.76	0.06	0.06	0.1	28
Arctic Grayling	flesh	raw	Dawson	55	0.41	0.65	0.04	0.03	0.27	-
Arctic Grayling	flesh	raw	Carmacks	6	0.62	0.70	0.04	-	-	-
Arctic Grayling	flesh	raw	Mayo	42	0.32	0.70	0.05	0.02	0.15	22
Arctic Ground Squirrel	flesh	raw	Carcross	9	3.90	2.61	0.21	0.02	0.05	28
Arctic Ground Squirrel	flesh	boiled	Beaver Cr.	53	4.77	3.51	0.28	0.03	0.04	9
Arctic Ground Squirrel	flesh	raw	Carcross	13	5.23	2.00	0.23	0.22	0.04	25
Barrenland Caribou	meat	raw	Dawson	3	4.96	6.70	0.30	0.03	0.03	17
Beaver	fat	raw	Watson Lake	6	0.49	0.61	nd	-	-	-
Beaver	tail	raw	Mayo	12	0.23	0.41	nd	0.01	nd	1
Black Duck	intestine	raw	Carmacks	53	10.08	2.59	0.31	0.29	0.05	21
Black Duck	liver	raw	Carmacks	5	24.31	2.44	0.75	0.45	0.06	15
Blackberry	berry	raw	Carcross	12	0.20	0.14	0.04	1.03	nd	4
Blue Grouse	whole	raw	Carcross	5	0.80	0.56	0.07	0.02	0.04	26
Blueberry	berry	raw	Mayo	12	0.22	0.28	0.06	2.04	nd	6
Blueberry	berry	raw	Mayo	13	0.19	0.24	0.07	1.21	nd	7

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Blueberry	berry	raw	Carmacks	21	0.76	0.19	0.05	0.93	nd	7
Blueberry	berry	jam	Carcross	6	0.59	0.12	0.12	0.71	nd	4
Caribou	meat	boiled	Carcross	12	2.11	2.37	0.08	-	-	-
Caribou	meat	fried in lard	Carcross	6	2.20	3.34	0.13	-	-	-
Caribou	meat, ground	raw	Mayo	10	4.12	4.97	0.23	-	-	-
Caribou	meat	raw	Dawson	3	3.18	5.63	0.16	0.02	0.04	18
Caribou	meat	raw	Carcross	1	1.05	1.15	0.04	-	-	-
Caribou	meat	raw	Mayo	5	4.58	6.26	0.19	0.01	0.03	11
Caribou	liver	raw	Carmacks	4	18.53	3.21	1.50	0.4	0.02	17
Caribou Fetus	amniotic sac	raw	Beaver Cr.	15	14.01	4.83	0.17	0.15	0.02	15
Caribou Fetus	hind quarter	boiled	Beaver Cr.	11	7.19	8.86	16.13	0.18	0.02	15
Chinook Salmon	flesh	raw	Dawson	10	0.41	0.48	0.04	0.01	0.03	17
Chinook Salmon	flesh	raw	Mayo	6	2.01	0.82	0.11	0.02	0.03	17
Chinook Salmon	flesh	raw	Mayo	6	0.40	0.42	0.23	0.01	0.02	17
Chinook Salmon	flesh	raw	Mayo	5	1.16	0.55	0.09	0.01	0.03	207
Chinook Salmon	flesh	raw	Beaver Cr.	7	0.82	0.52	0.03	0.01	0.03	55
Chinook Salmon	flesh	raw	Carmacks	2	1.83	0.77	0.21	-	-	-
Chinook Salmon	flesh	dry/smoked	Ross River	28	5.17	2.63	0.42	0.09	nd	52
Chinook Salmon	flesh	smoked	Dawson	32	2.19	1.98	0.13	0.11	0.05	91
Chinook Salmon	flesh	smoked	Mayo	11	4.23	2.23	0.46	0.13	0.07	419
Chinook Salmon	flesh	smoked	Carmacks	5	1.09	0.63	0.10	0.01	0.03	23
Chinook Salmon	eggs	raw	Dawson	56	2.32	2.79	0.29	0.03	0.09	55
Chinook Salmon	eggs	raw	Mayo	47	1.82	2.36	0.28	0.03	0.06	51
Chinook Salmon	flesh	poached	Ross River	5	0.69	0.45	0.10	0.01	0.02	23
Chinook Salmon	flesh	raw	Dawson	4	0.63	0.38	0.07	0.01	0.03	45

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Chum Salmon	fillet	boiled	Burwash	22	1.13	0.75	0.06	0.01	0.03	21
Chum Salmon	flesh	raw	Carmacks	15	0.54	0.36	0.05	0.02	0.03	192
Chum Salmon	flesh	smoked	Dawson	75	0.92	1.21	0.07	0.01	0.04	37
Coho Salmon	flesh	raw	Atlin	1	0.19	0.14	0.02	-	-	-
Coho Salmon	flesh	fried in oil	Atlin	2	0.10	0.19	0.01	-	-	-
Cranberry	berry	raw	Mayo	24	0.27	0.13	0.06	2.14	nd	7
Dall Sheep	brisket	raw	Ross River	9	0.38	0.33	nd	nd	0.02	-
Dall Sheep	meat	raw	Watson Lake	2	6.20	4.07	2.50	0.41	0.01	18
Dall Sheep	leg meat	boiled	Burwash	10	5.85	8.01	0.58	0.03	nd	15
Sheep (mountain)	back flesh	raw	Ross River	3	5.17	3.18	0.29	0.02	0.01	18
Deer	meat	raw	Burwash	14	5.97	9.67	0.22	0.02	0.01	15
Dolly Varden	flesh	raw	Lower Post	11	0.47	0.52	0.06	0.01	0.06	18
Goat	ribs	baked	Carcross	5	9.42	5.08	0.09	-	-	-
Halibut	flesh	raw	Burwash	8	0.11	1.18	0.05	0.01	0.08	28
Herring	flesh	raw	Carcross	153	1.47	6.83	0.10	0.08	0.06	242
Highbush Blueberry	berry	preserved	Carcross	4	nd	0.09	0.01	-	-	-
Highbush Cranberry	berry	raw	Mayo	32	0.45	0.24	0.09	0.05	nd	18
Highbush Cranberry	berry	raw	Beaver Cr.	35	0.42	0.16	0.05	0.05	nd	15
Highbush Cranberry	berry	raw	Carcross	28	0.46	0.13	0.06	0.09	nd	8
Lake Trout	flesh	boiled	Burwash	51	0.60	0.89	0.03	0.02	0.09	19
Lake Trout	flesh	partly smkd	Atlin	15	0.47	0.51	0.04	0.02	0.06	-
Lake Trout	flesh	raw	Mayo	13	0.56	0.33	0.02	0.01	0.03	37
Lake Trout	flesh	raw	Atlin	1	0.17	0.11	0.00	-	-	
Lake Trout	flesh	baked	Atlin	20	0.36	0.26	0.03	-	-	-
Lake Trout	flesh	fried in lard	Atlin	3	0.09	0.25	0.00	-	-	-

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Lake Trout	intestines	raw	Carmacks	6	3.06	5.09	0.47	-	-	-
Lake Whitefish	flesh	raw	Mayo	16	0.35	0.46	0.03	0.02	0.02	19
Loche	flesh	raw	Carcross	2	nd	0.11	0.00	-	-	-
Loche	flesh	raw	Mayo	5	0.31	0.98	0.03	0.02	0.02	-
Loche	flesh	raw	Carmacks	17	0.53	0.92	0.02	-	-	-
Longnose Sucker	flesh	raw	Carmacks	27	0.42	0.79	0.01	-	-	-
Longnose Sucker	flesh	boiled	Carcross	28	0.30	1.01	0.06	0.01	0.05	50
Longnose Sucker	head w/ bones, etc.	raw	Carcross	1764	2.21	2.41	0.09	2.06	0.04	50
Longnose Sucker	organs	raw	Carcross	37	2.45	4.78	0.16	0.51	0.1	-
Lowbush Cranberry	berry	frozen	Carcross	2	nd	0.08	0.01	-	-	-
Lowbush Cranberry	berry	raw	Carcross	18	0.74	0.24	0.07	4.91	nd	9
Lowbush Cranberry	berry	raw	Mayo	18	0.21	0.20	0.04	2.73	nd	7
Lowbush Cranberry	berry	raw	Mayo	15	0.16	0.16	0.05	2.97	nd	6
Lynx	flesh	raw	Carcross	3	2.17	3.07	0.13	0.02	0.03	25
Lynx	kidney	raw	Carcross	6	5.94	2.31	0.29	0.20	0.12	15
Lynx	liver	raw	Carcross	5	12.33	4.15	0.56	0.43	0.10	22
Moose	bone marrow	raw	Mayo	120	2.87	0.38	nd	nd	nd	-
Moose	bone marrow	boiled	Beaver Cr.	13	nd	0.06	0.01	nd	0.01	76
Moose	bone marrow	raw	Dawson	6	2.75	3.34	0.14	nd	0.01	25
Moose	bone marrow	raw	Carcross	6	0.48	0.05	nd	-	-	-
Moose	brain	raw	Mayo	10	4.19	1.12	0.26	0.03	0.02	15
Moose	heart	raw	Mayo	2	8.05	3.78	0.51	0.03	0.07	49
Moose	fat, kidney	raw	Carcross	2	2.16	0.32	nd	-	-	-
Moose	kidney	raw	Mayo	6	5.13	2.13	0.3	0.11	0.1	14

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Moose	kidney	raw	Mayo	3	6.22	2.36	0.49	0.04	0.01	23
Moose	kidney	raw	Mayo	5	5.29	2.24	0.25	0.07	0.06	16
Moose	kidney	raw	Beaver Cr.	8	6.21	3.71	0.46	0.42	0.04	16
Moose	knee gristle	raw	Beaver Cr.	27	1.05	1.27	0.04	0.01	0.01	10
Moose	liver	raw	Mayo	3	16.05	2.39	0.45	0.42	0.05	16
Moose	liver	raw	Mayo	3	25.33	2.53	6.99	0.14	0.54	15
Moose	liver	raw	Mayo	3	10.14	2.57	0.89	0.52	0.08	14
Moose	liver	raw	Atlin	1	6.98	0.99	2.68	-	-	-
Moose	liver	fried in lard	Atlin	1	10.14	1.57	4.11	-	-	-
Moose	meat	dried	Ross River	11	18.09	13.71	0.64	0.25	0.09	80
Moose	meat	dried	Watson Lake	8	17.59	16.45	0.67	0.08	0.1	81
Moose	meat	raw	Carcross	8	3.32	4.64	0.07	-	-	-
Moose	meat	raw	Mayo	3	3.7	4.07	0.14	0.02	0.02	20
Moose	meat	raw	Dawson	2	3.21	4.53	0.12	0.02	0.01	21
Moose	meat	raw	Mayo	3	4.18	4.79	0.15	0.02	0.02	21
Moose	meat	roasted	Carcross	3	1.96	7.23	0.03	-	-	-
Moose	meat	stew	Dawson	3	4.55	4.4	0.11	0.02	0.01	21
Moose	meat, ground	fried	Carcross	1	0.77	1.76	0.03	-	-	-
Moose	meat, neck	raw	Mayo	3	2.52	5.73	0.07	-	-	-
Moose	ribs	boiled	Burwash	10	3.13	5.64	0.18	-	0.04	16
Moose	ribs	raw	Dawson	6	3.36	5.81	0.14	0.02	0.05	45
Moose	ribs	raw	Burwash	11	2.56	5.41	0.14	0.02	0.04	57
Moose	ribs	raw	Carcross	9	2.12	2.00	0.02	-	-	-
Moose	tongue	raw	Mayo	5	3.17	2.35	0.21	0.02	0.03	156
Northern Pike	flesh	boiled	Carcross	13	0.42	0.65	0.04	0.01	0.04	21

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Northern Pike	flesh	raw	Carcross	30	0.26	0.20	0.04	0.03	0.04	29
Northern Pike	flesh	raw	Carcross	12	0.22	0.53	0.00	-	-	-
Northern Pike	flesh	raw	Carcross	2	nd	0.11	0.00	-	-	-
Northern Pike	flesh	raw	Mayo	9	0.14	0.55	0.03	0.01	0.07	26
Northern Pike	flesh	raw	Carmacks	41	0.22	0.48	0.04	0.03	0.03	30
Northern Pike	liver	raw	Carcross	13	21.43	33.98	0.43	0.07	0.31	-
Northern Pike	tail end	poached	Ross River	21	0.48	0.47	0.06	0.01	0.07	21
Ooligan	flesh	boiled	Burwash	202	2.51	2.23	0.11	0.14	0.02	19
Ooligan	flesh	raw	Carcross	5	0.32	0.37	0.02	-	-	-
Porcupine	flesh	boiled	Carcross	12	5.62	3.92	0.22	0.03	0.02	40
Rabbit	flesh	raw	Mayo	4	3.01	1.4	0.19	0.03	0.01	27
Rabbit	flesh	raw	Mayo	10	3.03	1.41	0.33	0.03	0.01	28
Rabbit	flesh	cooked	Beaver Cr.	23	4.91	2.74	0.33	0.03	0.01	23
Rabbit	flesh	raw	Carmacks	5	3.66	1.64	0.21	0.03	0.02	53
Rabbit	flesh	raw	Burwash	4	2.54	1.57	0.2	0.02	0.05	23
Rabbit	kidney	cooked	Beaver Cr.	11	17.18	3.06	0.27	0.27	0.07	22
Rabbit	kidneys	raw	Mayo + Burwash	10	15.35	2.71	0.39	0.30	0.1	17
Rabbit	liver	cooked	Beaver Cr.	9	30.19	2.79	0.50	0.25	0.02	17
Rabbit	liver	raw	Mayo	7	39.48	2.65	0.31	0.22	0.05	14
Rabbit	liver	raw	Mayo	8	37.33	2.46	0.37	0.23	0.02	13
Rabbit	liver	raw	Burwash	7	39.49	3.04	0.45	0.15	0.09	13
Raspberry	berry	raw	Mayo	45	2.87	0.84	0.12	2.21	nd	27
Raspberry	berry	raw	Mayo	34	0.89	0.73	0.10	0.97	nd	23
Salmon	eggs	boiled	Atlin	10	0.38	0.55	0.05	-	-	-
Salmon	eggs	raw	Atlin	18	0.69	0.88	0.91	-	-	-

Food Sample	Part	Preparation	Community	per 100 grams Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Salmon	flesh	raw	Beaver Cr.	8	1.05	0.58	0.10	0.03	0.02	38
Salmon	flesh	smoked	Carcross	2	0.34	0.18	0.21	-	-	-
Salmon	head	raw	Mayo	215	1.55	3.58	0.06	0.07	0.04	28
Saskatoon Berry	berry	raw	Mayo	60	2.26	0.66	0.08	1.22	0.01	28
Soapberry	berry	raw	Burwash	23	1.66	0.56	0.15	0.26	nd	12
Soapberry	berry	raw	Carcross	16	0.22	0.20	0.13	0.19	nd	35
Soapberry	berry	preserved	Carcross	1	0.27	0.03	0.00	-	-	-
Sockeye Salmon	flesh	canned	Atlin	12	0.24	0.28	0.01	-	-	-
Sockeye Salmon	flesh	dry/smoked	Burwash	22	1.40	1.25	0.28	0.03	0.08	93
Sockeye Salmon	flesh	jarred	Burwash	87	0.79	0.98	0.09	0.12	0.04	24
Sockeye Salmon	head	raw	Atlin	178	1.15	2.19	0.12	nd	0.02	19
Spruce Grouse	flesh	raw	Mayo	2	3.71	0.84	0.20	0.03	0.01	30
Spruce Grouse	flesh	raw	Carcross	4	6.66	0.62	0.46	0.12	0.03	37
Spruce Grouse	flesh	boiled	Carcross	6	4.36	1.08	0.37	0.06	0.03	37
Spruce Grouse	flesh	boiled	Beaver Cr.	63	3.79	1.00	0.29	0.03	0.02	31
Trout	eggs	raw	Carcross	11	1.01	0.73	0.09	-	-	-
Trout	flesh	boiled	Carcross	16	0.86	0.68	0.05	0.10	0.03	23
Trout	flesh	raw	Mayo	28	0.37	0.47	0.03	0.01	0.02	25
Trout	flesh	raw	Carcross	10	0.50	0.64	0.04	0.00	0.03	20
Trout	head w/bone, etc	raw	Ross River	1313	2.05	1.83	0.04	0.39	0.04	30
Trout	liver	raw	Carcross	6	4.91	13.07	0.19	0.03	0.05	11
Whitefish	flesh	baked	Atlin	2	nd	0.34	0.00	-	-	-
Whitefish	flesh	fried in lard	Atlin	2	0.16	0.31	0.00	-	-	-
Whitefish	flesh	raw	Atlin	1	0.10	0.13	0.00	-	-	-

Food Sample	Part	Preparation	Community	per 100 grams						
				Calcium (mg)	Iron (mg)	Zinc (mg)	Copper (mg)	Manganese (mg)	Selenium (µg)	Magnesium (mg)
Whitefish	flesh	raw	Carcross	2	0.16	0.15	0.00	-	-	-
Whitefish	flesh	raw	Dawson	36	0.86	1.55	0.10	0.01	0.03	39
Whitefish	flesh	raw	Mayo	29	0.29	0.89	0.02	0.02	0.02	27
Whitefish	flesh	raw	Beaver Cr.	26	0.49	1.04	0.03	0.02	0.03	30
Willow Grouse	flesh	raw	Mayo	1	1.10	1.45	0.07	0.03	0.04	26
Willow Grouse	flesh	raw	Carcross	3	5.04	0.82	0.36	0.06	0.01	31
Woodland Caribou	liver	raw	Carmacks	2	10.78	2.80	2.64	-	-	-
Woodland Caribou	meat, hindquarter	boiled	Watson Lake	8	9.68	4.28	0.48	-	-	-
Woodland Caribou	meat, hindquarter	raw	Watson Lake	1	6.22	3.08	0.27	-	-	-
Woodland Caribou	fat	raw	Watson Lake	8	0.18	0.25	nd	-	-	-
Woodland Caribou	ribs	raw	Carmacks	4	4.47	6.30	0.17	-	-	-
Woodland Caribou	stomach& intestines	raw	Carmacks	7	3.50	1.95	0.15	-	-	-

[1] not analysed

Table 17. Contaminant concentrations in Yukon food samples, listed alphabetically (see Table 27 for pesticide abbreviations)

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Arctic Grayling flesh	boiled	Carcross	3.0	1.1	nd	nd	4.0	1.1	1.7	0.7	4.6	nd	2.9	nd	nd
Arctic Grayling flesh	cooked	Beaver Cr.	13.1	0.6	nd	nd	2.0	nd	0.3	1.0	3.9	0.7	1.4	nd	nd
Arctic Grayling flesh	raw	Carcross	5.1	2.7	nd	1.9	5.7	0.9	1.5	0.2	4.1	nd	2.6	nd	nd
Arctic Grayling flesh	raw	Dawson	0.6	0.5	nd	3.8	0.2	0.3	0.3	0.5	2.9	nd	0.7	nd	nd
Arctic Grayling flesh	raw	Dawson	3.7	1.4	nd	nd	1.9	nd	0.8	2	2.3	0.6	1.4	0.3	nd
Arctic Grayling flesh	raw	Lower Post	3.9	1.5	nd	5.8	0.3	0.3	0.8	0.5	8.7	nd	0.7	nd	nd
Arctic Grayling flesh	raw	Mayo	6.8	0.2	nd	nd	5.1	0.3	0.3	2.8	3.6	1	1.2	nd	nd
Arctic Grayling flesh	poached	Watson Lake	3.7	0.3	nd	nd	-[1]	-	-	-	-	-	-	-	-
Arctic Grayling flesh	raw	Watson Lake	7.4	0.2	1.1	nd	0.8	0.4	nd	1.6	5	nd	1.2	nd	nd
Arctic Grayling flesh	raw	Watson Lake	nd	0.8	nd	nd	nd	nd	nd	nd	0.3	nd	nd	nd	-
Arctic Grayling flesh	raw	Watson Lake	nd	0.3	nd	nd	0.3	0.7	2.1	nd	0.2	nd	nd	nd	-
Arctic Grayling flesh	raw	Watson Lake	-	-	-	-	0.3	nd	2.5	nd	0.3	nd	nd	nd	-
Arctic Grayling flesh	raw	Carmacks	-	-	-	-	2.6	1.3	1.3	nd	2.7	nd	1.1	nd	-
Arctic Ground Squirrel flesh	boiled	Beaver Cr.	nd	0.2	269.5	4.5	7.9	nd	1.4	0.7	6.1	1.9	4.5	0.5	nd
Arctic Ground Squirrel flesh	raw	Carcross	0.6	1.3	468.9	10.3	0.3	nd	0.7	8.0	4.3	0.3	2.2	nd	nd
Arctic Ground Squirrel flesh	raw	Carcross	0.5	7.4	245.2	nd	3.5	0.9	2.9	1.5	6	nd	2.7	nd	nd
Barrenland Caribou flesh	raw	Dawson	1.1	0.1	2.1	nd	nd	0.3	0.3	0.7	2.1	nd	0.3	nd	nd
Beaver fat	raw	Watson Lake	nd	1.4	nd	nd	1.6	1.9	15.9	nd	1.2	nd	nd	nd	-
Beaver tail	raw	Mayo	nd	1.3	nd	nd	2.8	2.2	0.5	0.7	3.2	0.7	3.2	nd	nd
Black Duck backbone	raw	Ross River	-	-	-	-	1	0.5	0.8	nd	1.9	nd	0.7	nd	nd
Black Duck intestine	raw	Carmacks	4.6	0.2	nd	2.0	2.4	3.8	1.9	nd	6.1	0.3	2	0.7	nd
Black Duck liver	raw	Carmacks	20.2	0.6	nd	2.0	3.4	0	1.5	1.4	1.1	nd	0.5	nd	nd
Blackberry	raw	Carcross	nd	0.1	5.7	nd	-	-	-	-	-	-	-	-	-
Blue Grouse flesh	raw	Carcross	1.8	0.4	nd	nd	nd	nd	nd	0.2	0.8	nd	nd	nd	nd

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Blueberry	raw	Carmacks	nd	3.5	nd	nd	-	-	-	-	-	-	-	-	-
Blueberry	raw	Mayo	nd	1.9	1.1	nd	-	-	-	-	-	-	-	-	-
Blueberry	raw	Mayo	nd	2.2	1.5	nd	-	-	-	-	-	-	-	-	-
Blueberry	jam	Carcross	nd	nd	nd	nd	-	-	-	-	-	-	-	-	-
Caribou Fetus amniotic sac	raw	Beaver Cr.	0.9	3.3	4.2	4.7	7.4	2	0.3	1.7	0.5	nd	0.7	nd	nd
Caribou Fetus flesh	boiled	Beaver Cr.	0.8	3.6	2.2	5.2	0.5	1.7	1.1	0.9	2.4	nd	0.8	nd	nd
Caribou meat	boiled	Carcross	nd	2.4	384.0	nd	26.8	35.4	1.4	0.6	21.1	0.6	10.2	nd	-
Caribou meat	fried in lard	Carcross	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Caribou meat	raw	Carcross	nd	0.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Caribou ground meat	raw	Mayo	nd	0.9	1.7	nd	nd	nd	0.4	nd	nd	nd	nd	nd	-
Caribou meat	raw	Dawson	1.9	0.2	nd	nd	0.8	1.1	0.3	0	3.1	nd	1.4	0.9	nd
Caribou meat	raw	Mayo	1.1	0.4	nd	1.3	0.8	0.9	0.6	0.8	1.8	nd	nd	nd	nd
Caribou liver	raw	Carmacks	3.7	64.6	nd	nd	nd	0.3	1.1	0.9	2.7	nd	0.3	nd	nd
Caribou rib	raw	Carmacks	1.4	2.8	nd	nd	0.8	1.1	2.0	1.6	1.3	0.5	1.3	0.2	nd
Chinook Salmon egg	raw	Dawson	nd	1	nd	9.0	25.8	6.7	3.9	1.1	23.8	0.2	10.3	0.7	35.1
Chinook Salmon egg	raw	Mayo	0.9	0.2	3.5	9.2	25.3	12.0	2.9	1.1	16.4	0.3	9.1	nd	30.1
Chinook Salmon flesh	raw	Carmacks	nd	1.2	nd	5.9	6.2	59.1	nd	1.2	9.1	nd	6.6	nd	-
Chinook Salmon flesh	raw	Beaver Cr.	4.9	0.5	nd	18.2	30.4	10	3.0	3.7	44.3	0.2	19.4	0.9	58
Chinook Salmon flesh	raw	Dawson	4.6	0.4	0.6	11.1	2.4	1	0.3	0.7	5.6	nd	2.4	nd	nd
Chinook Salmon flesh	raw	Dawson	3.5	0.9	nd	4.2	20.3	7.2	0.9	nd	21.3	nd	13.4	nd	30.7
Chinook Salmon flesh	raw	Mayo	3.5	nd	16.5	23.1	30.7	9.9	25.4	5.8	37.7	0.7	18.3	5.6	33.8
Chinook Salmon flesh	raw	Mayo	nd	5.0	1.0	nd	23.8	3.4	0.5	nd	3	nd	0.3	nd	30.3
Chinook Salmon flesh	raw	Mayo	5.4	0.9	0.9	6.6	20.4	4.6	0.8	1.1	33.4	0.5	10.5	0.4	24.9
Chinook Salmon flesh	dried/smkd	Ross River	13.2	4.3	4.2	125.5	86.7	11	22.8	1.7	94.6	2.3	39.5	0.8	nd
Chinook Salmon flesh	smoked	Carmacks	5.2	0.8	nd	25	16	4.7	2.3	0.7	13.2	0.4	7.7	0.4	25.8
Chinook Salmon flesh	smoked	Dawson	14.6	nd	5.1	67.8	30.3	5.5	32.0	0.8	21.5	1.1	13.4	0.2	36.4
Chinook Salmon flesh	poached	Ross River	4.6	0.5	1.4	16.7	19.8	4.7	1.4	1.4	19.6	0.2	10.9	0.2	33.4

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Chinook Salmon flesh	smoked	Mayo	11.8	nd	1.9	nd	25.3	25	0.2	0.9	4	nd	nd	nd	nd
Chum Salmon flesh	raw	Carmacks	3	1.8	nd	17	5.95	2.3	2.8	1.3	4.1	nd	3.1	0.2	nd
Chum Salmon flesh	smoked	Dawson	13.4	nd	2.0	nd	38.6	19.4	100.5	0.5	22.7	nd	14.8	nd	36.4
Chum Salmon fillet	boiled	Burwash	6.4	1.4	nd	10.6	12.4	7.1	1.5	2.1	8.4	nd	8.6	0.5	28.2
Coho Salmon	raw	Atlin	nd	0.7	nd	nd	3.25	1.4	4.5	nd	2.8	nd	1.3	nd	-
Coho Salmon	fried in oil	Atlin	nd	1.1	nd	nd	4.5	1.7	nd	nd	5.4	nd	2.2	0.5	-
Cranberry	raw	Mayo	nd	0.1	nd	nd	-	-	-	-	-	-	-	-	-
Dall Sheep brisket	raw	Ross River	nd	nd	2.5	nd	1.6	4.9	3.8	0.2	1.1	nd	0.7	nd	nd
Dall Sheep meat	raw	Watson Lake	1.5	71.8	3.0	nd	0.5	1.2	3	0.9	2	nd	1	nd	nd
Sheep(mtn) back meat	raw	Ross River	nd	0.3	nd	nd	7.5	6.3	4.1	0.5	4.9	0.2	3.3	nd	nd
Sheep leg meat	boiled	Burwash	nd	nd	1.4	nd	15.1	nd	1.8	2.1	0.5	nd	0.5	nd	nd
Deer meat	raw	Burwash	2.1	0.9	nd	nd	2.15	1.3	1.8	0.5	2.8	nd	0.3	nd	nd
Dolly Varden flesh	raw	Lower Post	12.3	0.1	nd	1.2	2.6	0.8	2.5	0.4	3.4	0.6	0.9	nd	nd
Goat ribs	baked	Carcross	nd	1.8	4.0	nd	2.0	15.6	13.1	0.5	0.4	nd	0.3	nd	-
Halibut flesh	raw	Burwash	154.3	nd	nd	40.1	15.3	1.4	1.8	0.9	18.3	0.4	5.6	nd	18.2
Herring flesh	raw	Carcross	1.7	45.6	nd	nd	1.5	0.3	1.1	0.4	3.3	0.4	2.5	0.2	nd
Highbush Blueberry	preserved	Carcross	nd	1.1	nd	nd	0.3	nd	1	nd	0.3	nd	0.1	nd	-
Highbush Cranberry	raw	Beaver Cr.	nd	0.3	1.5	nd	-	-	-	-	-	-	-	-	-
Highbush Cranberry	raw	Carcross	nd	0.5	1	nd	-	-	-	-	-	-	-	-	-
Highbush Cranberry	raw	Mayo	nd	1.1	1.3	nd	-	-	-	-	-	-	-	-	-
Lake Trout flesh	boiled	Burwash	4.2	nd	nd	3.6	8.9	5.1	3.4	1.4	2.7	nd	2.9	0.2	nd
Lake Trout flesh	partly smkd	Atlin	11.7	nd	nd	nd	16.2	0.4	2.2	1	10.3	1	18.7	0.3	nd
Lake Trout flesh	raw	Mayo	12.1	nd	1.6	nd	0.7	0.3	0.3	0.2	0.9	nd	0.2	nd	nd
Lake Trout flesh	baked	Atlin	nd	1.0	nd	nd	9.4	1.2	1.9	3.2	13.7	0.4	14.5	0.5	-
Lake Trout flesh	raw	Atlin	nd	0.2	nd	nd	6.8	2.0	1.3	1.1	10.3	0.2	10.8	0.4	-
Lake Trout flesh	fried in lard	Atlin	nd	0.9	nd	nd	3.5	0.5	0.8	0.6	5.5	0.2	5.7	0.2	-
Lake Trout intestines	raw	Carmacks	nd	1.3	nd	nd	13.1	nd	1.2	0.3	22.1	0.3	4.4	nd	-
Lake Whitefish flesh	raw	Mayo	4.9	nd	nd	2.9	8.1	nd	1.8	2.1	2.7	nd	2.4	nd	nd

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Loche flesh	raw	Carmacks	nd	0.2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Loche flesh	raw	Mayo	56.1	nd	2	3	3.3	1.6	1.9	1.5	1.3	0.3	1	nd	nd
Longnose Sucker flesh	raw	Carmacks	nd	4.1	nd	nd	0.2	0.9	2.6	nd	0.2	nd	nd	nd	-
Longnose Sucker flesh	boiled	Carcross	12.9	nd	nd	nd	nd	nd	nd	nd	0.9	nd	nd	nd	nd
Longnose Sucker head	raw	Carcross	2.1	3	6.9	7.6	0.3	nd	nd	0.2	1.4	nd	nd	nd	nd
Longnose Sucker organs	raw	Carcross	2.1	1.6	3.8	3.7	nd	nd	nd	0.3	2.2	nd	nd	nd	nd
Lowbush Cranberry	raw	Carcross	nd	0.4	nd	nd	6.1	0.5	1.5	nd	1.3	nd	0.5	nd	-
Lowbush Cranberry	raw	Carcross	nd	nd	2.9	1.3	-	-	-	-	-	-	-	-	-
Lowbush Cranberry	raw	Mayo	nd	0.1	1	nd	-	-	-	-	-	-	-	-	-
Lowbush Cranberry	raw	Mayo	nd	0.2	1.2	nd	-	-	-	-	-	-	-	-	-
Lynx meat	raw	Carcross	10.1	0.8	3.9	nd	3.2	nd	0.5	0.5	8.9	0.5	0.7	0.3	nd
Lynx kidney	raw	Carcross	15.1	115	2.4	nd	26.4	1.5	1.2	1.6	92.4	9.1	3.8	1.9	nd
Lynx liver	raw	Carcross	21	60.2	nd	nd	14.9	0.3	0.5	1.3	36.3	2.1	0.8	1.1	nd
Moose bone marrow	raw	Carcross	nd	1.3	nd	nd	0.8	nd	3.7	nd	nd	nd	nd	nd	-
Moose bone marrow	raw	Mayo	nd	2.4	nd	4.8	-	-	-	-	-	-	-	-	-
Moose bone marrow	boiled	Beaver Cr.	1.8	nd	nd	nd	2.8	1.9	1.6	0.7	2.4	nd	0.9	nd	nd
Moose bone marrow	raw	Dawson	nd	0.2	nd	nd	5.3	nd	1.4	1.6	1.8	nd	0.6	nd	nd
Moose brain	raw	Mayo	0.5	2.1	nd	nd	nd	nd	3.1	0.5	4.1	nd	0.5	nd	nd
Moose burger	fried	Carcross	nd	0.9	1.1	nd	0.1	0.5	8.8	nd	0.2	nd	nd	nd	-
Moose fat	raw	Mayo	3.1	0.4	nd	18	4.3	3.9	2.1	nd	8.3	0.5	6.6	0.3	nd
Moose fat	raw	Mayo	-	-	-	-	3.5	1.8	1.3	1.4	2.6	nd	1.3	nd	nd
Moose fat	raw	Mayo	-	-	-	-	2.7	4.8	58.5	2.2	20.5	nd	-	-	nd
Moose fat	raw	Watson Lake	-	-	-	-	2.6	1.6	3.4	1	2.3	nd	0.3	nd	nd
Moose fat, kidney	raw	Carcross	nd	3.6	7.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Moose fat, kidney	dried	Ross River	-	-	-	-	2.1	nd	12.9	3.0	3.2	0.5	0.5	nd	nd
Moose fat, liner	raw	Mayo	-	-	-	-	0.8	1.5	17.6	0.8	5.1	nd	0.8	nd	nd
Moose fat, stomach	raw	Dawson	-	-	-	-	7.5	1.4	1.8	1.3	8.0	1.8	11.5	2.1	nd
Moose heart	raw	Mayo	0.5	4.5	nd	8.1	6.1	nd	1	2.1	3.4	nd	1.7	-	nd

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Moose knee gristle	raw	Beaver Cr.	0.7	2	158.3	nd	3.1	0	1.1	3.1	11	nd	1.7	nd	nd
Moose kidney	raw	Beaver Cr.	1.1	188.4	nd	nd	nd	nd	0.3	0.6	1.6	nd	nd	-	nd
Moose kidney	raw	Mayo	4.9	159.4	1.5	14.3	1.2	nd	0.8	0.4	4.9	nd	1.1	-	-
Moose kidney	raw	Mayo	nd	2.2	1.3	nd	6.9	1.3	1	1.3	5.1	nd	1.1	-	nd
Moose kidney	raw	Mayo	4.1	148.2	nd	nd	1.5	-	-	-	-	-	-	-	-
Moose liver	fried in lard	Atlin	nd	76.3	1.0	nd	0.2	0.7	nd	nd	nd	nd	nd	nd	-
Moose liver	raw	Atlin	nd	55.1	1.0	nd	nd	0.3	0.43	nd	nd	nd	nd	nd	-
Moose liver	raw	Mayo	0.8	84.7	nd	nd	1.1	0.5	nd	1.5	2.9	nd	0.7	nd	nd
Moose liver	raw	Mayo	1.2	126	2.3	nd	3.4	nd	3.6	1.2	4.1	nd	0.9	nd	nd
Moose liver	raw	Mayo	1.2	22	1.9	nd	0.4	0.3	2.1	0.7	9	0.2	11.6	nd	nd
Moose meat	dried	Ross River	1.6	1.6	19.3	nd	2.1	0.2	16.63	0.5	3.1	0.2	1.4	0.7	nd
Moose meat	dried	Watson Lake	nd	3.6	10	nd	10.6	1.9	4.75	2.3	9.6	0.3	4.2	nd	nd
Moose meat	raw	Dawson	0.6	0.9	nd	nd	3.4	0.4	0.5	0.5	3.7	nd	0.9	nd	nd
Moose meat	raw	Mayo	0.7	0.7	nd	nd	0.7	nd	0.2	nd	3.1	nd	0.6	nd	nd
Moose meat	raw	Mayo	0.8	0.4	nd	nd	nd	nd	8.8	0.7	12.9	0.3	7.7	nd	nd
Moose meat	raw	Carcross	nd	5.7	nd	nd	1.3	1.4	0.8	nd	1.3	nd	1.7	nd	-
Moose meat	roasted	Carcross	nd	1.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Moose meat (neck)	raw	Mayo	nd	3.4	1.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Moose meat	stew	Dawson	nd	1.6	nd	nd	6.6	nd	1.15	2.1	2.5	nd	0.3	nd	nd
Moose ribs	raw	Carcross	nd	1.6	nd	nd	0.4	1.1	nd	nd	nd	nd	nd	nd	-
Moose ribs	boiled	Burwash	1.0	nd	3.8	nd	0.2	0.2	1.0	0.4	1.4	nd	0.5	nd	nd
Moose ribs	raw	Burwash	0.7	2	3.4	nd	3.5	0.3	0.3	1.3	1.8	nd	0.5	nd	nd
Moose ribs	raw	Dawson	0.5	2	nd	nd	0.5	0.3	0.2	0.5	1.3	nd	1	nd	nd
Moose tongue	raw	Mayo	0.5	1.5	1.3	nd	0.3	0.3	0.2	1	4.5	nd	0.6	nd	nd
Ooligan	raw	Carcross	nd	0.3	nd	nd	32.4	13.6	348.0	11.8	45.4	0.4	42.5	3.2	-
Ooligan flesh	boiled	Burwash	nd	2.6	nd	25.3	10.2	7.1	12.4	1	17.3	0.3	8.9	0.7	nd
Northern Pike tail end	poached	Ross River	29.9	0.3	nd	1.4	0.3	0.3	0.3	nd	3.7	nd	nd	nd	nd
Northern Pike flesh	raw	Carmacks	38.9	nd	nd	3	4.1	0.5	0.9	0.7	3.9	nd	1.2	nd	

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Northern Pike flesh	boiled	Carcross	13.7	nd	0.5	nd	5.9	0.3	nd	0.7	2.7	nd	1.2	nd	nd
Northern Pike flesh	raw	Carcross	11.9	nd	180.5	2.8	nd	nd	nd	0.2	0.5	nd	nd	nd	nd
Northern Pike flesh	raw	Carcross	nd	0.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-
Northern Pike flesh	raw	Mayo	20.9	nd	nd	1.6	2.2	0.3	1.4	0.7	4.2	nd	1.3	nd	nd
Northern Pike liver	raw	Carcross	6.1	3.1	30.7	nd	-	-	-	-	-	-	-	-	-
Porcupine flesh	boiled	Carcross	0.6	0.5	4.3	nd	0.2	0.3	1.6	nd	3.7	nd	0.7	nd	nd
Rabbit flesh	cooked	Beaver Cr.	nd	9.3	1.1	nd	13.1	nd	nd	nd	3.3	0.4	1.5	nd	nd
Rabbit flesh	raw	Burwash	nd	nd	1.5	nd	0.7	0.3	1	nd	4.6	nd	1.5	nd	nd
Rabbit flesh	raw	Carmacks	nd	0.5	nd	nd	1.1	0.3	0.7	1.1	0.8	nd	nd	0.2	nd
Rabbit flesh	raw	Mayo	nd	2	0.8	nd	4.8	0	0.7	0.7	5	nd	1.4	nd	nd
Rabbit flesh	raw	Mayo	nd	nd	nd	nd	1	0	7	0.8	2.8	0.6	8.8	nd	nd
Rabbit kidney	cooked	Beaver Cr.	11.5	414	3.2	nd	-	-	-	-	-	-	-	-	-
Rabbit liver	cooked	Beaver Cr.	1.6	65.6	3.8	nd	-	-	-	-	-	-	-	-	-
Rabbit liver	raw	Burwash	2.6	17.2	2.1	nd	-	-	-	-	-	-	-	-	-
Rabbit liver	raw	Mayo	3.5	62.9	9.4	nd	nd	nd	0.3	1.1	4	nd	0.9	0.6	nd
Rabbit liver	raw	Mayo	0.6	6.4	3.9	nd	7	2.1	2.2	0.4	6.7	0.2	4.1	0.2	nd
Raspberry	raw	Mayo	nd	2.3	2	nd	-	-	-	-	-	-	-	-	-
Raspberry	raw	Mayo	nd	8	1.4	nd	-	-	-	-	-	-	-	-	-
Salmon eggs	boiled	Atlin	nd	0.1	1.3	nd	6.3	4.3	6.9	0.8	5.9	0.1	5.0	0.5	-
Salmon eggs	raw	Atlin	nd	0.2	1.6	nd	7.3	8.5	7.7	1.4	7.1	nd	5.3	0.8	-
Salmon flesh	raw	Beaver Cr.	6.3	0.5	1.6	7.5	11.7	1.5	nd	nd	6.6	0.4	7.1	nd	nd
Salmon head	raw	Mayo	2.8	2.2	3.5	11.8	-	-	-	-	-	-	-	-	-
Saskatoon Berry	raw	Mayo	0.8	0.4	2.2	nd	-	nd	1.1	1	36.1	0.8	14.1	0.5	nd
Soapberry	preserved	Carcross	nd	0.2	nd	nd	0.9	0.2	10.0	nd	0.5	nd	0.3	nd	-
Soapberry	raw	Burwash	nd	nd	1.5	nd	-	-	-	-	-	-	-	-	-
Soapberry	raw	Carcross	0.5	nd	2.5	nd	-	-	-	-	-	-	-	-	-
Sockeye Salmon	canned	Atlin	nd	0.1	nd	nd	6.9	2.4	4.7	0.5	6.3	0.1	3.1	0.3	-
Sockeye Salmon flesh	dried/smkd	Burwash	13.1	3.7	nd	3	10.6	1.2	22	4.5	9.2	nd	2.3	0.4	nd

			Trace Metals (ug/100g)				PCB ng/g	Pesticides (ng/g)							
Food sample	Preparation	Community	Mercury	Cad-mium	Lead	Arsenic		CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Sockeye Salmon flesh	jarred	Burwash	2.9	0.8	5.3	4.3	7.1	1.9	0.7	0.7	11.9	0.5	5.4	0.2	nd
Sockeye Salmon head	raw	Atlin	1.2	nd	38.2	nd	0.5	nd	nd	0.2	1.7	nd	0.5	nd	40.4
Spruce Grouse flesh	boiled	Beaver Cr.	nd	nd	nd	2.8	3.9	0.9	6.9	1.9	3.1	nd	1.7	nd	nd
Spruce Grouse flesh	boiled	Carcross	0.6	2.2	nd	nd	1.8	0.6	9.7	1.4	1	nd	0.5	nd	nd
Spruce Grouse flesh	raw	Carcross	0.8	1.6	170.7	4.2	1.5	0.3	0.5	0.9	0.7	nd	0.2	nd	nd
Spruce Grouse flesh	raw	Mayo	nd	0.9	1.1	nd	nd	nd	nd	0.7	2.6	nd	0.5	nd	nd
Trout eggs	raw	Carcross	nd	1.5	14.3	nd	22.3	4.4	2.8	nd	5.1	0.1	2.9	0.2	-
Trout flesh	boiled	Carcross	11.6	nd	2.5	3.9	27.3	1.1	2.5	0.2	15.2	0.3	25.7	nd	86.2
Trout flesh	raw	Carcross	11	nd	1.4	nd	51	2.7	3.3	0.7	22.6	0.3	37.1	nd	90.6
Trout flesh	raw	Mayo	14.6	nd	nd	nd	4.6	0.3	1.3	0.7	8.6	0.2	4.4	0.2	nd
Trout liver	raw	Carcross	4.8	5.8	nd	nd	27.1	0.3	0.6	0.9	8.3	0.2	10.2	0.5	107.3
Whitefish flesh	baked	Atlin	nd	0.5	nd	nd	1.9	1.1	1.4	0.4	1.6	0.2	4.0	0.6	-
Whitefish flesh	fried in lard	Atlin	nd	1.5	nd	nd	3.0	2.1	2.9	0.4	2.1	0.2	5.3	0.4	-
Whitefish flesh	raw	Atlin	nd	0.2	nd	nd	0.7	0.5	0.7	nd	0.7	nd	1.8	0.2	-
Whitefish flesh	raw	Carcross	nd	0.1	nd	nd	1.8	2.8	nd	nd	1.2	nd	1.2	0.3	-
Whitefish flesh	raw	Beaver Cr.	18.9	nd	nd	nd	2.7	2.2	3.9	nd	5.5	nd	5.7	nd	nd
Whitefish flesh	raw	Dawson	6.4	nd	0.9	3.2	10.7	0.6	2.2	0.7	13.8	0.5	4.2	0.2	nd
Whitefish flesh	raw	Mayo	5.4	nd	4.9	3	6.9	1.6	19.9	0.6	8.7	nd	0.2	nd	24.1
Willow Grouse flesh	raw	Carcross	nd	nd	307.7	nd	2.6	0.3	5.5	1.6	3.6	nd	1.7	nd	nd
Willow Grouse flesh	raw	Mayo	nd	4	nd	nd	1	nd	1.8	0.6	1.9	nd	0.7	nd	nd
Woodland Caribou fat	raw	Watson Lake	nd	nd	nd	nd	0.7	3.7	4.9	0.5	nd	nd	nd	nd	-
Woodland Caribou hind-quarter	boiled	Watson Lake	nd	3.1	5.6	nd	nd	5.3	nd	nd	nd	nd	nd	nd	-
Woodland Caribou hind-quarter	raw	Watson Lake	nd	2.1	nd	nd	0.3	0.6	nd	nd	nd	nd	nd	nd	-
Woodland Caribou liver	raw	Watson Lake	nd	52.8	12.5	nd	1.4	9.1	5.1	nd	nd	nd	1.0	nd	-
Woodland Caribou ribs	raw	Carmacks	nd	4.0	7.7	nd	0.5	9.9	1.7	nd	nd	nd	nd	nd	-

Food sample	Preparation	Community	Trace Metals (ug/100g) Mercury	Cad-mium	Lead	Arsenic	PCB ng/g	Pesticides (ng/g) CBZ	HCH	DIE	DDT	MIR	CHL	HE	TOX
Woodland Caribou stomach + intestines	raw	Carmacks	nd	258.2	1.8	nd	0.7	11.9	9.7	nd	nd	nd	nd	nd	-
Canadian guideline levels			**50**	**100**	**200**	**300**	**2000**	**300**	**-**	**200**	**5000**	**100**	**-**	**-**	**-**
Detection limit			**0.25**	**0.1**	**0.5**	**1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

[1] not analysed

nd = not detectable

Table 18. Energy and nutrient intake (least square means ± SE) adjusting for season, gender and age group, on days with and without traditional food intake (late winter and fall combined)[1]

	Days with traditional food (n = 413)	Days without traditional food (n = 389)	Effects of diet p value
Energy (kcal)	2047 ± 46	1900 ± 63	NS
Carbohydrate (g)	184 ± 5	188 ± 7	NS
Protein (g)	158 ± 4	89 ± 4	0.0001
Total fat (g)	74 ± 3	89 ± 4	0.0001
Polyunsaturated fat (g)	12 ± 1	14 ± 1	0.004
Saturated fat (g)	26 ± 1	32 ± 2	0.0001
Vitamin A (RE)[2]	1010 ± 74	**786 ± 65**	NS
Vitamin A (RE)[3]	**500 (430-582)**	**462(395-540)**	NS
Calcium (mg)	**457 ± 19**	**497 ± 30**	NS
Iron (mg)	25 ± 1	13 ± 1	0.0001
Zinc (mg)	28 ± 1	12 ± 1	0.0001
Sucrose (g)	45 ± 2	50 ± 3	0.04
Dietary fibre (g)	15 ± 1	16 ± 1	NS

[1] Bold values are below Recommended Nutrient Intakes for Canadian adults over 18 years of age
[2] Least squares mean ± SE (standard error)
[3] Geometric least squares mean (95% CI)

Table 19. Percentage of energy derived from carbohydrate protein and fat (mean ± SE) on days with and days without traditional food intake (late winter and fall combined)

% energy	Days with traditional food (n = 413)	Days without traditional food (n = 389)	Effects of diet p value
Carbohydrate	37.2 ± 0.6	42.3 ± 0.7	0.0001
Sucrose	9.2 ± 0.3	11.5 ± 0.4	0.0004
Protein	31.6 ± 0.6	18.4 ± 0.3	0.0001
Total fat	30.4 ± 0.6	40.0 ± 0.5	0.0001
Polyunsaturated fat	5.0 ± 0.2	6.5 ± 0.2	0.0001
Saturated fat	10.7 ± 0.3	14.3 ± 0.2	0.0001

Table 20. Relative contribution (%) of top ten food items to total energy and nutrient intake by season

	Late winter		Fall	
	Food	% of total intake	Food	% of total intake
Energy	beef hamburger	5	moose meat	10
	moose meat	5	sugar	5
	chicken	5	bread, white	4
	sugar	5	beef hamburger	4
	potatoes, fried	5	eggs	4
	bread, white	5	rice, white	3
	potatoes	3	potatoes, fried	3
	pork lean cuts	3	potatoes	3
	eggs	3	chicken	3
	rice, white	3	macaroni/cheese	3
Carbohydrate	sugar	13	sugar	14
	bread, white	9	bread, white	9
	rice, white	6	rice, white	8
	potatoes	6	potatoes	7
	potatoes, fried	6	bread, whole wheat	5
	soft drinks	4	spaghetti	5
	bread, whole wheat	4	potatoes, fried	5
	drinks, crystals	3	bannock	4
	spaghetti	3	drinks, crystals	4
	macaroni/cheese	2	soft drinks	3
Protein	moose meat	20	moose meat	32
	chicken	10	moose ribs	8
	beef hamburger	8	moose meat, dried	6
	pork lean cuts	6	beef hamburger	5
	caribou meat	5	chicken	5
	beef round	4	eggs	4
	eggs	4	rabbit meat	3

(Table 20 continued)

	Late winter		Fall	
	Food	% of total intake	Food	% of total intake
Protein (con't)	bread, white	3	beef chuck blade	2
	bacon	2	pork lean cuts	2
	macaroni/cheese	2	bread, white	2
Total fat	beef hamburger	9	butter	8
	chicken	7	beef hamburger	7
	butter	6	lard	6
	potatoes, fried	6	eggs	6
	lard	5	moose fat	6
	eggs	5	frankfurters	4
	frankfurters	4	potatoes, fried	4
	pork lean cuts	4	chicken	4
	bacon	4	beef chuck blade	4
	beef round	4	macaroni/cheese	4
Saturated fat	butter	11	butter	13
	beef hamburger	10	beef hamburger	8
	lard	5	lard	7
	chicken	5	macaroni/cheese	5
	potatoes, fried	5	eggs	5
	frankfurter	5	moose fat	5
	beef round	5	frankfurters	5
	macaroni/cheese	5	beef check blade	4
	eggs	4	potatoes, fried	4
	bacon	4	cheese, cheddar	4
Polyunsaturated fat	potatoes, fried	17	potatoes, fried	14
	potato chips	9	bannock	8

(Table 20 continued)

	Late winter		Fall	
	Food	% of total intake	Food	% of total intake
	chicken	9	potato chips	8
Polyunsaturated	mayonnaise	6	mayonnaise	6
fat (con't)	pork lean cuts	4	oil, corn	6
	oil, corn	4	chicken	5
	margarine	3	lard	5
	lard	3	eggs	4
	bannock	3	margarine	3
	eggs	3	moose meat	3
Sucrose	sugar	46	sugar	54
	soft drinks	14	soft drinks	11
	drinks, crystals	6	drinks, crystals	7
	ice cream	2	jellies	2
	orange juice, frozen	2	cookies, assorted	2
	fruit drinks	2	fruit drinks	1
	maple syrup	2	chocolate	1
	banana	1	maple syrup	1
	jellies	1	ice cream	1
	cookies, assorted	1	cake	1
Vitamin A	carrots	37	carrots	42
	eggs	7	eggs	10
	moose liver	7	butter	7
	vegetables, mixed	6	macaroni/cheese	4
	butter	6	vegetables, mixed	4
	macaroni/cheese	3	sweet potatoes	3
	soup, vegetables/beef	3	margarine	3
	margarine	3	soup,	3
	milk, 2%	3	milk, 2%	3

(Table 20 continued)

	Late winter		Fall	
	Food	% of total intake	Food	% of total intake
	soup, chicken noodle	2	soup, chicken	2
Calcium	milk, 2%	12	milk, 2%	11
	macaroni/cheese	8	macaroni/cheese	10
	milk, evaporated	7	cheese, cheddar	7
	bread, white	6	bannock	7
	cheese, cheddar	5	coffee	6
	coffee	5	bread, white	6
	soup, creamed	5	eggs	5
	eggs	4	milk, evaporated	5
	pizza/cheese	4	cheese, slices	3
	cheese, slices	3	bread, whole wheat	3
Iron	moose meat	19	moose meat	29
	caribou meat	5	moose ribs	7
	beef hamburger	5	moose meat, dried	7
	bread, white	5	coffee	4
	coffee	5	rice, white	4
	rice, white	4	bread, white	4
	chicken	4	rabbit meat	3
	clams, canned	3	beef hamburger	3
	beef round	3	bread, whole wheat	3
	eggs	3	eggs	2
Zinc	moose meat	26	moose meat	42
	beef hamburger	10	moose ribs	10
	oysters, canned	7	beef hamburger	7
	caribou meat	6	moose meat, dried	4
	pork lean cuts	5	beef chuck blade	4

(Table 20 continued)

	Late winter		Fall	
	Food	% of total intake	Food	% of total intake
	beef round	4	eggs	2
	chicken	4	chicken	2
	eggs	2	rabbit meat	2
	moose ribs	2	pork lean cuts	2
	bread, whole wheat	1	bread, whole wheat	2
Dietary fibre	bread, whole wheat	11	bread, whole wheat	14
	potatoes	9	potatoes	10
	potatoes, fried	8	peas, green	7
	bread, white,	8	bread, white,	7
	potato chips	7	potato, fried	6
	vegetables, mixed	4	potato chips	5
	carrots	3	bannock	4
	apples	3	carrots	4
	wheat flakes	3	rice, white	4
	rice	3	oats	3

Table 21. List of traditional food perceived as particularly good for health

(84% responded)

Food	%	Some reasons that were mentioned
All traditional food	42	Is healthy; is good for blood; has no chemicals; is natural; is fresh; has a lot of vitamins; is better than store bought food; has good nutritive value
Moose	31	Has no steroids; has no antibiotics; is natural; has vitamins; has no chemicals; is fresh; has a lot of proteins; has a lot of iron; is low in fat; has good nutritive value; makes you strong; it fills you up; has more energy
Fish	18	Is good for cholesterol; has a lot of vitamins; is natural; has a lot of proteins; is low in fat; is healthy; has good nutritive value; has no chemicals
Berries and plants	13	Are good for colds; they clean our system; are good for digestion; have vitamins; traditional medicine
All wild meat	5	Is low in fat; is natural; have vitamins; have a lot of protein; have no chemicals
Caribou	4	Has no steroids; has no chemicals; is healthy; is low in fat; has a lot of vitamins; have good proteins; has good nutritive value; is fresh
Internal organs	2	
Don’t know	1	
Dry meat	1	Has a lot of vitamins; is filling
Sheep	1	
Birds	1	
Rabbit	0.4	
Squirrel	0.3	
Beaver	0.2	
Porcupine	0.2	
Gopher	0.1	
Soup broth	0.1	

Blank space indicates that no reason was given

Table 22. Answers to the question: “What do you think are the most important advantages of traditional food?”

(96% provided 1 to 4 answers. First answers only are tabulated.)

Advantages	% of population
Healthy and nutritious	24
Low cost	18
Clean, free of chemicals	17
Taste	13
Natural	9
Going hunting	4
Good, like it	3
Cultural and social benefits	3
Always available	2
Ease and familiarity of preparation	2
Used to it, grew up on it	2
Accessibility	1
Lasts longer	0.3
Feeds my family	0.1
Variety	0.1

Table 23. Answers to the question: “What do you think are the most important advantages of market food?”

(85% provided 1 to 4 advantages. First answers only are tablulated.)

Advantages	% of population
Convenient, ease of preparation	26
Always available	23
Accessibility	15
Fresh produce and staples	12
Variety	6
Complements traditional food	3
Food inspected, safe	2
Taste	1
Don’t have to hunt	1
Food supplemented with vitamins	0.3
Feed the population	0.1
Money can buy it	0.1

Table 24. Percentage agreement on selected attributes of traditional food

Harvesting and using traditional food by the family:	
	%
Contributes to physical fitness and good health	95
Is a favourite outdoor recreation activity	89
Provides people with healthy food	97
Keeps people "in tune with" nature	96
Favours sharing in the community	90
Saves money	95
Is an essential part of the culture here	95
Is an occasion for adults to display responsibility for their children	93
Is one way to practice spirituality	79
Contributes to humility	74
Brings respect from others	89
Builds one's pride and confidence	94
Provides education on natural environment	97
Contributes to children's education	97
Provides skills in survival	99
Provides skills in food preparation at home	98
Is an opportunity to teach spirituality	83
Is an opportunity to learn patience and other personality qualities	96

Table 25. Answers to the question: “Are there traditional food items you avoid because you think they may make you sick?”

(29% had a traditional food they avoid; percent shown is of this subset)

Food	%	Some reasons that were mentioned
Beaver, porcupine, muskrat squirrel, gopher, ground hog, skunk, lynx	32	causes upset stomach; gives diarrhea; too rich; strong taste; taboo
Fish	22	causes upset stomach; too rich; contamination; smell and taste
Bear	18	have parasites; eat in dumps; strong taste; too rich; heart has too much iron; should never eat
Animal fat	14	too rich; unhealthy; causes migraines
Caribou	9	cadmium in liver and kidney
Moose	5	
Certain plants	2	vomiting (blackberries); mushrooms
Internal organs	2	toxins are stored there; liver and intestine
Wolves, wolverine, marten	3	
Dall sheep, Mountain goat	2	
Seagull	1	eat from dumps
All traditional food	1	
Rabbit	1	
Ducks, geese	0.4	
Anything with needles	0.1	
Anything with strong smell	0.1	
Eating too much fresh meat	0.1	
Food from polluted area	0.1	

Table 26. Answers to the question: "Have you noticed any changes in the quality or health of traditional plants or meats, or land animals, fish or birds?"

(20% said yes; percent shown is of this subset)

Observed:	%	Some details that were mentioned
Decrease in number of fish, land animals, birds and plants	49	
Skin of animals is unhealthy, animals have lumps, cysts or are deformed	20	(mostly fish) skin is bruised, have sores, have lumps, is discoloured, fish skin peels off; deformed fish and organs are shaped differently; cysts on caribou flesh; spots on liver of fish and moose; animals look sick
Animals have parasites / ticks	11	worms on gopher's stomach, worms in fish and caribou; moose has more ticks
Contamination, pollution	7	caribou and fish are contaminated; caribou liver and kidney, and burbot liver has cadmium; berries have toxins
Animals are smaller, have less fat	6	skinnier game now then before; fish are smaller in size
Fish have soft flesh	6	fish are a lot softer; flesh is mushy
Plants are smaller	6	berries are smaller; plants are skinny; plants are drying up; berries ripen too soon
Change in taste	2	fish don't taste the same; moose intestine taste different now
Salmon makes us sick	1	
Meat changes	1	

Table 27. Contaminants considered in this report with their abbreviations and Tolerable or Acceptable Intake levels.[1]

CONTAMINANT			Tolerable/AcceptableDaily Intake[2] (µg/kg/day or µg/kg/week)
Organochlorines			
A. Chlorinated industrial organic compounds			
Polychlorinated Biphenyls	PCB	PTDI	1.0
Chlorobenzene	CBZ	PTDI	0.27
B. Organic pesticides			
Chlordane	CHL	TDI	0.05
Dieldrin	DIE	TDI	0.1
Dichlorodiphenyltrichloroethane	DDT	ADI	20
Heptachlor epoxide	HE	TDI	0.05
Hexachlorocyclohexane	HCH	TDI	0.3
Mirex	MIR	PTDI	0.07
Toxaphene	TOX	TDI	0.2
Heavy Metals			
Arsenic	As	PTDI	2.0
Cadmium	Cd	PTWI	7.0
Lead	Pb	PTDI	3.57
Mercury	Hg	PTWI	5.0

[1] Levels used by Health Canada (personal communication, Vicki Jerome, Chemical Health Hazard Assessment Division, Health Canada).

[2] TDI = Tolerable Daily Intake. PTDI = Provisional TDI. ADI = Acceptable Daily Intake. PTWI = Provisional

Tolerable Weekly Intake expressed in ug/kg of body weight/ week.

Table 28. Factors for converting contaminant values in raw food to baked or dried food, by food type.

	Raw to Baked		Raw to Dried	
Food type	Metals	Organochlorines	Metals	Organochlorines
Land animal				
- flesh	1.34	1.51	3.32	3.30
- organ	1.20	1.24		
- fat	1.00	1.00		
Bird				
- flesh	1.11	1.59		
- organ	1.00	1.00		
Fish				
- flesh	1.16	1.70	3.29	4.38
- organ	1.00 *	1.00 *		

* no data, a Conversion Factor of 1.00 is assumed.

Table 29. Metal concentrations of food items consumed by Yukon First Nations in late winter and fall (ng/g).[1] (see Table 27 for heavy metal abbreviations)

SPECIES	TISSUE	PREP	SITE	As	Cd	Pb	Hg
Beaver	Flesh	Baked	Ross	0	0	0	0
Beaver	Flesh	Baked	Teslin	0	0	0	0
Beaver	Flesh	Baked	Watson	0	0	0	0
Berry (various)	Berry	Raw	Beaver	0	3	15	0
Berry (various)	Berry	Raw	Burwash	0	0	15	0
Berry (various)	Berry	Raw	Carcross	4	5	11	14
Berry (various)	Berry	Raw	Carmack	0	35	0	0
Berry (various)	Berry	Raw	Mayo	0	18	11	1
Caribou	Fat	Cooked	Watson	10	.[2]	0	.
Caribou	Flesh	Baked	Alaska	0	0	0	0
Caribou	Flesh	Baked	Carcross	2	13	4	52
Caribou	Flesh	Baked	Dawson	85	21	49	14
Caribou	Flesh	Baked	Mayo	11	6	34	34
Caribou	Flesh	Baked	Ross	20	44	37	0
Caribou	Flesh	Baked	Teslin	0	0	0	0
Caribou	Flesh	Baked	Watson	0	116	63	9
Grayling	Flesh	Cooked	Beaver	0	6	0	131
Grayling	Flesh	Cooked	Carcross	11	21	0	45
Grayling	Flesh	Cooked	Carmack	.	35	58	12
Grayling	Flesh	Cooked	Dawson	22	11	0	25
Grayling	Flesh	Cooked	Lower	68	17	0	46
Grayling	Flesh	Cooked	Mayo	0	2	0	79
Grayling	Flesh	Cooked	Watson	2	10	16	41
Moose	Bone marrow	Boiled	Beaver	0	0	0	18
Moose	Bone marrow	Boiled	Carcross	5	.	.	.
Moose	Bone marrow	Boiled	Dawson	0	2	0	0
Moose	Fat	Cooked	Mayo	182	4	0	31
Moose	Flesh	Baked	Burwash	0	15	8	0
Moose	Flesh	Baked	Carcross	3	52	17	34
Moose	Flesh	Baked	Dawson	3	13	111	29
Moose	Flesh	Baked	Mayo	0	8	0	10
Moose	Flesh	Baked	Old	0	6	3	0
Moose	Flesh	Baked	Ross	45	43	9	20
Moose	Flesh	Baked	Tagish	17	56	7	25
Moose	Flesh	Baked	Teslin	0	39	7	19
Moose	Flesh	Baked	Watson	4	53	14	24
Moose	Flesh	Dried	Burwash	0	37	21	0
Moose	Flesh	Dried	Carcross	7	88	95	86
Moose	Flesh	Dried	Dawson	8	29	276	73
Moose	Flesh	Dried	Mayo	0	7	14	31
Moose	Flesh	Dried	Old	0	14	8	0
Moose	Flesh	Dried	Ross	103	99	35	46
Moose	Flesh	Dried	Tagish	42	138	18	63
Moose	Flesh	Dried	Teslin	0	97	18	46
Moose	Flesh	Dried	Watson	9	116	46	50

Table 29, continued

SPECIES	TISSUE	PREP	SITE	As	Cd	Pb	Hg
Moose	Flesh	Stew	Dawson	0	16	0	0
Moose	Heart	Cooked	Mayo	97	54	0	7
Moose	Liver	Baked	Atlin	5	2076	30	24
Moose	Liver	Baked	Mayo	0	929	17	13
Moose	Ribs	Cooked	Burwash	0	13	41	10
Moose	Ribs	Cooked	Carcross	13	67	27	67
Moose	Ribs	Cooked	Dawson	0	27	0	6
Moose	Tongue	Cooked	Mayo	0	8	7	5
Porcupine	Flesh	Cooked	Carcross	0	5	43	6
Porcupine	Flesh	Cooked	Ross	0	308	0	0
Porcupine	Flesh	Cooked	Watson	0	121	402	0
Rabbit	Flesh	Cooked	Beaver	0	125	15	0
Rabbit	Flesh	Cooked	Burwash	0	0	20	0
Rabbit	Flesh	Cooked	Carmack	0	7	0	0
Rabbit	Flesh	Cooked	Mayo	0	13	5	0
Salmon	Flesh	Cooked	Atlin	17	18	17	29
Salmon	Flesh	Cooked	Beaver	145	6	9	65
Salmon	Flesh	Cooked	Burwash	106	14	0	64
Salmon	Flesh	Cooked	Carmack	278	58	23	23
Salmon	Flesh	Cooked	Dawson	89	7	3	47
Salmon	Flesh	Cooked	Mayo	120	24	65	34
Salmon	Flesh	Cooked	Ross R.	168	5	14	46
Sheep, Dall	Flesh	Cooked	Ross R.	0	1	11	0
Sheep, Dall	Flesh	Cooked	Watson	0	481	20	10
Spruce Grouse	Flesh	Cooked	Carcross	46	53	1895	21
Spruce Grouse	Flesh	Cooked	Dawson	33	89	.	33
Spruce Grouse	Flesh	Cooked	Haines	33	.	.	44
Spruce Grouse	Flesh	Cooked	L.Laberg	44	111	.	33
Spruce Grouse	Flesh	Cooked	Mayo	0	10	13	0
Spruce Grouse	Flesh	Cooked	Old	33	111	.	33
Spruce Grouse	Flesh	Cooked	Watson	.	.	.	33
Spruce Grouse	Whole	Boiled	Beaver	28	0	0	0
Spruce Grouse	Whole	Boiled	Carcross	0	22	0	6
Trout	Flesh	Boiled	Burwash	36	0	0	42
Trout	Flesh	Boiled	Carcross	39	0	25	116
Trout	Flesh	Cooked	Atlin	11	21	33	46
Trout	Flesh	Cooked	Carcross	0	0	16	128
Trout	Flesh	Cooked	Mayo	0	0	9	155
Whitefish	Flesh	Baked	Atlin	3	16	6	41
Whitefish	Flesh	Baked	Beaver	0	0	0	219
Whitefish	Flesh	Baked	Carcross	5	6	5	58
Whitefish	Flesh	Baked	Dawson	38	0	10	74
Whitefish	Flesh	Baked	Mayo	34	0	28	60

[1] The concentrations were obtained from (1) samples collected in the communities and measured at CINE (see table 16); (2) samples collected previously in the Yukon and reported in the scientific literature (see Appendix D); and (3) data made available to CINE by the Yukon Contaminants Committee. [2] Missing data.

Table 30. Organochlorine concentration of food items consumed by Yukon First Nations (ng/g) [1].

SPECIES	TISSUE	PREP	SITE	CBZ	Chl	DDT	Die	HCH	HE	Mir	Tox	PCB
Caribou	Fat	Cooked	Ross R	31	0	0	0	4	0	0	0	0
Caribou	Fat	Cooked	Teslin	18	0	0	0	10	0	.[2]	0	0
Caribou	Fat	Cooked	Watson L	15	0	0	0	5	0	.	1	0
Caribou	Flesh	Dried	Mayo	1	0	4	2	1	0	0	.	2
Caribou	Flesh	Dried	Dawson	1	2	5	1	1	1	0	.	1
Grayling	Flesh	Baked	Beaver Cr	0	1	4	1	0	0	1	0	2
Grayling	Flesh	Baked	Carcross	1	4	6	1	2	0	0	0	7
Grayling	Flesh	Baked	Dawson	0	2	4	2	1	0	0	0	2
Grayling	Flesh	Baked	Laberge	2	1	8	0	0	.	.	.	8
Grayling	Flesh	Baked	Lower Post	0	1	15	1	1	0	0	.	0
Grayling	Flesh	Baked	Mayo	1	2	6	5	0	0	2	0	9
Grayling	Flesh	Baked	Old Crow	2	0	0	0	0	.	.	.	0
Grayling	Flesh	Baked	Watson L	1	2	8	3	0	0	0	0	1
Moose	Bone	Cooked	Dawson	0	1	2	2	1	0	0	.	5
Moose	Fat	Cooked	Carcross	2	2	2	0	1	0	1	.	0
Moose	Fat	Cooked	Mayo	3	3	7	0	8	0	0	.	3
Moose	Fat	Cooked	Ross R	3	0	0	0	3	0	.	0	0
Moose	Fat	Cooked	Watson L	2	0	2	1	3	0	0	.	3
Moose	Heart	Cooked	Mayo	0	2	4	3	1	0	0	.	8
Moose	Liver	Baked	Mayo	0	1	5	1	1	0	0	.	2
Moose	Flesh	Baked	Dawson	1	1	6	1	1	0	0	.	5
Moose	Flesh	Baked	Mayo	0	1	5	0	1	0	0	.	0

(Table 30 continued)

SPECIES	TISSUE	PREP	SITE	CBZ	Chl	DDT	Die	HCH	HE	Mir	Tox	PCB
Moose	Flesh	Dried	Ross R	0	1	3	0	17	1	0	.	2
Moose	Flesh	Dried	Watson L	2	4	10	2	5	0	0	.	11
Moose	Flesh	Stewed	Dawson	0	0	3	2	1	0	0	.	7
Moose	Ribs	Baked	Dawson	0	2	2	1	0	0	0	.	1
Moose	Ribs	Baked	Burwash	0	1	2	1	1	0	0	.	3
Moose	Tongue	Cooked	Mayo	0	1	6	1	0	0	0	.	0
Porcupine	Whole	Boiled	Carcross	0	1	4	0	2	0	0	.	0
Rabbit	Flesh	Baked	Beaver Cr	0	2	5	0	0	0	1	.	20
Rabbit	Flesh	Baked	Burwash	0	2	7	0	1	0	0	.	1
Rabbit	Flesh	Baked	Carmacks	0	0	1	2	1	0	0	.	2
Rabbit	Flesh	Baked	Mayo	0	2	6	2	1	0	0	.	4
Salmon	Flesh	Baked	Beaver Cr	10	23	43	3	3	1	1	49	36
Salmon	Flesh	Baked	Burwash	7	9	8	2	2	0	0	14	12
Salmon	Flesh	Baked	Carmacks	4	5	7	2	5	0	0	.	10
Salmon	Flesh	Baked	Dawson	7	13	23	1	1	0	0	26	19
Salmon	Flesh	Baked	Klukshu	2	1	4	0	0	.	.	.	3
Salmon	Flesh	Baked	Mayo	10	24	61	4	16	4	1	50	42
Salmon	Flesh	Baked	Porcupine	3	1	2	0	0	.	.	.	3
Salmon	Flesh	Poached	Ross R	5	11	20	1	1	0	0	33	20
Sheep, Dall	Flesh	Boiled	Burwash	0	0	0	2	2	0	0	.	15
Sheep, Dall	Flesh	Baked	Ross R	8	3	5	1	6	0	0	.	7
Sheep, Dall	Flesh	Baked	Watson L	2	1	3	1	5	0	0	.	1

(Table 30 continued)

SPECIES	TISSUE	PREP	SITE	CBZ	Chl	DDT	Die	HCH	HE	Mir	Tox	PCB
Spruce Grouse	Whole	Boiled	Beaver Cr	1	2	3	2	7	0	0	.	4
Spruce Grouse	Whole	Boiled	Carcross	1	1	1	1	10	0	0	.	2
Spruce Grouse	Flesh	Baked	Carcross	0	0	1	5	4	0	0	.	1
Spruce Grouse	Flesh	Baked	Dawson	.	.	.	.	.	.	.	.	16
Spruce Grouse	Flesh	Baked	L.Laberge	0	0	0	0	0	.	0	.	0
Spruce Grouse	Flesh	Baked	Mayo	0	1	4	1	0	0	0	.	0
Spruce Grouse	Flesh	Baked	Old Crow	3	.	3	.	.	.	0	.	0
Trout	Flesh	Baked	Quiet	4	9	61	0	1	.	.	.	46
Trout	Flesh	Baked	L. Atlin	3	37	33	1	2	.	0	323	67
Trout	Flesh	Baked	Mayo	3	3	5	0	1	0	0	21	5
Trout	Flesh	Baked	Carcross	4	44	47	2	3	0	1	256	86
Trout	Flesh	Baked	Burwash	3	5	17	.	.	.	.	17	24
Trout	Flesh	Baked	Haines J	9	9	17	0	0	.	1	34	34
Trout	Flesh	Baked	Teslin L	5	17	34	0	0	.	1	102	34
Trout	Flesh	Baked	Watson L	3	3	5831	3	3	.	0	9	68
Trout	Flesh	Baked	Whitehorse	2	17	68	1	1	.	0	204	102
Trout	Flesh	Baked	L.Laberge	17	85	1105	17	17	.	22	799	646
Trout	Flesh	Boiled	Burwash	5	3	3	1	3	0	0	.	9
Trout	Flesh	Boiled	Carcross	1	26	15	0	3	0	0	.	27
Trout	Whole	Baked	Lower Post	1	1	6	1	4	0	1	.	4
Trout	Whole	Baked	Atlin	0	19	10	1	2	0	1	.	16
Whitefish	Flesh	Baked	Squanga	3	1	1	0	1	.	.	.	1
Whitefish	Flesh	Baked	L. Atlin	2	0	1	0	0	.	0	9	1
Whitefish	Flesh	Baked	Dawson	1	7	23	1	4	0	1	0	18
Whitefish	Flesh	Baked	Beaver Cr	4	10	9	0	7	0	0	0	5
Whitefish	Flesh	Baked	Old Crow	1	0	0	0	0	.	.	.	0

(Table 30 continued)

SPECIES	TISSUE	PREP	SITE	CBZ	Chl	DDT	Die	HCH	HE	Mir	Tox	PCB
Whitefish	Flesh	Baked	Mayo	3	4	5	1	1	0	0	42	6
Whitefish	Flesh	Baked	Burwash	2	2	0	0	0	.	0	9	7
Whitefish	Flesh	Baked	Tagish	4	2	5	0	0	.	0	43	4
Whitefish	Flesh	Baked	Watson L	2	5	782	17	17	.	1	17	17
Whitefish	Flesh	Baked	Whitehorse	2	10	9	0	0	.	0	17	9
Whitefish	Flesh	Baked	L. Laberge	2	17	272	1	1	.	10	102	162

[1] The concentration data were obtained from (1) samples collected in the communities and measured at CINE (see Table 16); (2) samples collected previously in the Yukon and reported in the scientific literature (see Appendix D); and (3) data made available to CINE by the Yukon Contaminants Committee. When more than one datum was available, the average concentration was calculated and used.

[2] Missing data.

Table 31. The use of community-specific, region-specific and Yukon-specific values for contaminant levels in consumed traditional food items (as percentages).

Percent of times for which we used:	CBZ	CHL	DDT	DIE	HCH	MIR	PCB	TOX*	As	Cd	Hg	Pb
community-specific values	29	29	29	29	29	29	30	7	57	58	58	58
region-specific values	10	15	11	11	11	11	11	4	21	23	23	23
Yukon-average values	56	5	55	55	55	55	55	2	22	17	17	17
missing values	4	5	5	5	5	5	4	-	2	2	2	2

* The laboratory procedures for measuring toxaphene are different than for the other contaminants. The presence of toxaphene was tested for in the same number of foods as the other organochlorines but in most cases it was below detection limits. Only for those samples for which a detectable level was present was the actual amount quantified.

Table 32. Population distribution of heavy metal intake (µg/kg of body weight /day) (n=802).

Heavy metal	PTDI (µg/kg/d)	n > PTDI	Mean	Median	PERCENTILES			
					75th	95th	99th	99th / PTDI
Arsenic	2	2	0.05	0	0.01	0.29	0.99	0.49
Cadmium	1	4	0.08	0	0.08	0.38	0.73	0.73
Mercury	0.71	3	0.05	0	0.08	0.26	0.50	0.70
Lead	3.57	0	0.05	0	0.05	0.23	0.51	0.14

[1] Cd has a PTWI of 500µg/week which corresponds to ≈ 1 µg/kg of body weight /day

[2] Hg has a PTWI of 5µg/kg/week which corresponds to ≈ 0.71 µg/kg of body weight /day

Table 33. Characteristics of 24-hour recalls with As, Cd or Hg greater than PTDI (or PTWI÷7).

Metal	Sex	Age(y)	Season[1]	Total intake (μg/kg body wt)	TF consumed [2]	amount consumed (g)
Arsenic	M	20-40	F	2.02	Moose flesh Moose fat	900 500
Arsenic	M	40-60	F	2.72	Chum salmon Chinook salmon	337 450
Cadmium	F	40-60	LW	3.14	Moose liver	112
Cadmium	M	40-60	LW	3.15	Moose liver	112
Cadmium	F	40-60	F	1.43	Mountain sheep flesh	225
Cadmium	M	20-40	F	1.14	Moose flesh baked Moose flesh dried	450 500
Mercury	F	40-60	LW	1.10	Trout flesh	450
Mercury	M	40-60	LW	0.78	Trout flesh	450
Mercury	M	20-40	LW	0.95	Trout flesh	480

[1] F=fall, LW=late winter
[2] Traditional food items that contributed more than 10% of total metal intake.

Table 34. Population distribution of organochlorine intake (μvg/kg of body weight /day) (n = 802).

OC	(P)TDI (μg/kg/d)	n > (P)TDI	Mean	Median	PERCENTILES			
					75th	95th	99th	99th / (P)TDI
CBZ	0.27	0	0.00	0	0.00	0.01	0.04	0.10
CHL	0.05	20	0.01	0	0.00	0.02	0.12	2.38
DDT	20	0	0.02	0	0.02	0.05	0.27	0.01
DIE	0.1	0	0.00	0	0.00	0.01	0.02	0.18
HCH	0.3	0	0.00	0	0.00	0.01	0.06	0.19
MIR	0.07	0	0.00	0	0	0.00	0.00	0.06
PCB	1	0	0.01	0	0.01	0.04	0.22	0.22
TOX	0.2	13	0.02	0	0	0.02	0.35	1.78

Table 35. Characteristics of twenty 24-hour recalls with chlordane or toxaphene greater than the TDI.

Sex	Age(y)	Season	Total intake ug/kg body wt Chl	Tox[1]	TF consumed [2]	Amount consumed (g)
F	20-40	LW[3]	0.087		Chinook Salmon	225
M	20-40	F	0.223	0.200	Chinook Salmon	675
M	40-60	LW	0.097	0.454	Chinook Salmon	293
M	40-60	F	0.074		Chinook Salmon	225
F	20-40	F	0.089	0.245	Chinook Salmon	500
M	20-40	F	0.060		Chinook Salmon	450
F	60 +	LW	0.213	0.637	Chinook Salmon	450
F	20-40	LW	0.119	0.355	Chinook Salmon	225
M	20-40	LW	0.100	0.299	Chinook Salmon	220
M	40-60	F	0.089		Salmon	675
F	60 +	LW	0.079		Chinook Salmon	225
F	40-60	F	0.058		Chinook Salmon	225
M	60 +	F	0.085		Chinook Salmon	225
M	40-60	F	0.202	0.545	Chum Salmon Chinook Salmon	337 450
F	40-60	F	0.353	2.054	Trout flesh	450
F	40-60	F	0.112	0.653	Trout flesh	225
F	20-40	F	0.159	0.918	Trout flesh	225
M	40-60	F	0.267	1.560	Trout flesh	450
M	20-40	F	0.292	1.690	Trout flesh	480
F	20-40	LW	0.148	0.345	Chinook Salmon	450

[1] Toxaphene levels not shown if less than theTDI.

[2] Traditional food items that contributed more than 10% of individual's one day chlordane or toxaphene intake.

[3] F = fall, LW = late winter

Table 36. Example of safe yearly intakes of salmon and trout (days per year)[1] based on toxaphene and chlordane contaminations, using conservative(i.e., high) estimates of Chl and Tox of all species of salmon and trout.

Examples of safe combined intakes	Women (69 kg)	Men (78 kg)	Child (5 yrs, 20kg)
1. Salmon Trout	1560	1140	1020
2. Salmon Trout	10625	6425	5225
3. Salmon Trout	5650	1450	250
4. Salmon Trout	78	57	51

[1] For women: Safe intake of baked salmon = (1.4*g of salmon flesh/day/kg x 365d/y). This converted to days per year by dividing by 225g/d, the average daily serving size for women.

For men: Safe intake of baked salmon = (1.4*g of salmon flesh/day/kg x 78 kgx 365d/y). This is converted to days per year by dividing by 350g/d, the average daily serving size.

For children: Safe intake of baked salmon = (1.4* g/d/kg x 20kg x365d/y). This is converted to days per year by dividing by 100g/d, the expected average daily serving size.

Baked and dried salmon and trout can be equated using the following approximations for chlordane and toxaphene contaminat levels and daily servings:
Contaminant Level: Baked Salmon ≈ 2.5 Dried Salmon≈ 2 Baked Trout ≈ 2.5 Dried Trout
Daily Serving Size: Baked Salmon ≈ 2.5 Dried Salmon ≈ Baked Trout ≈ 2.5 Dried Trout

*The safe intake of salmon and trout, in grams per day per kg body weight can be calculated as the lower of the following two equations:

	SALMON	TROUT
TDI toxaphene / toxaphene in salmon, trout	= 200ng/kg/d / 50ng/g = 4g/kg/d	200ng/kg/d / 323ng/g = 0.62g/kg/d
2/3**(TDI) chlordane / chlordane in salmon, trout	= 2/3 (50) ng/kg/d / 24ng/g = 1.4g/kg/d	2/3 (50) ng/kg/d / 44ng/g = 0.75g/kg/d

**Salmon and trout account for nearly 100% of toxaphene exposure. However, they account for only 2/3 of chlordane exposure. Thus to allow for chlordane exposure from other traditional food, the calculations are set to establish the level of salmon and trout intake which will not exceed 2/3 of the TDI for chlordane.

Table 37. Answers to the question: “Do you think you are eating more than, less than or the same amount of traditional food as 5 years ago?” (asked only of those living in same community as 5 years ago)

	Present consumption	
Age group	Greater than 5 years ago	Less than 5 years ago
20-40	24	37
41-60	18	38
61 +	8	25

Table 38. Reasons given for not using more traditional food
(71 % answered, more than one answer allowed per respondent)

Reasons	% Population
No time (due to work, school or other)	29
Nothing	23
No equipment / no transportation	17
Animals are scarce	11
Don’t hunt / no hunter in household	9
Old age and illness	9
Lack of skills and knowledge	4
Laws and regulations	3
Don’t have enough to last / run out of it	1
Eat market food	1
Don’t know/ no comments	1
Single parent	0.4
Laziness / not interested	0.4
Household members don’t like it	0.4
May not be healthy	0.4
Bad reaction to fish	0.2
Environment / weather	0.2
No one to cook for	0.2

Figure 1. Locations of communities participating in "Yukon First Nations' Assessment of Dietary Benefit/Risk"

Figure 2. Percentage of days with traditional food consumption by season

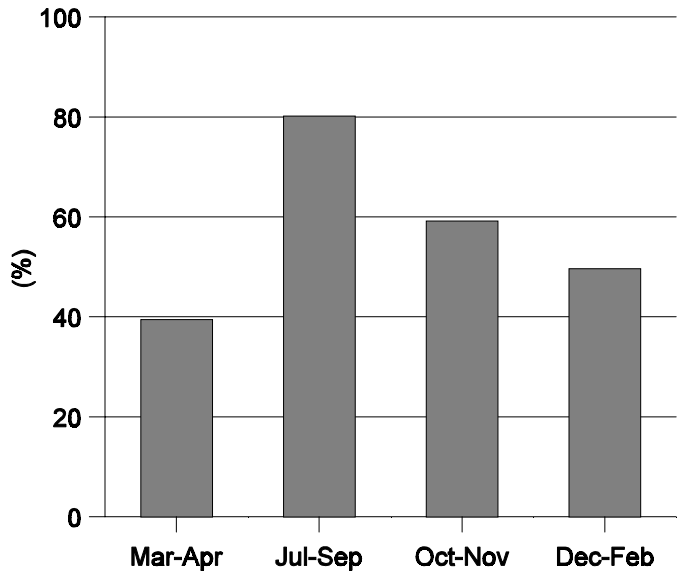


Figure 3.
Percentage of overweight adults (BMI ∃27) based on measured versus self-reported weight, by sex.

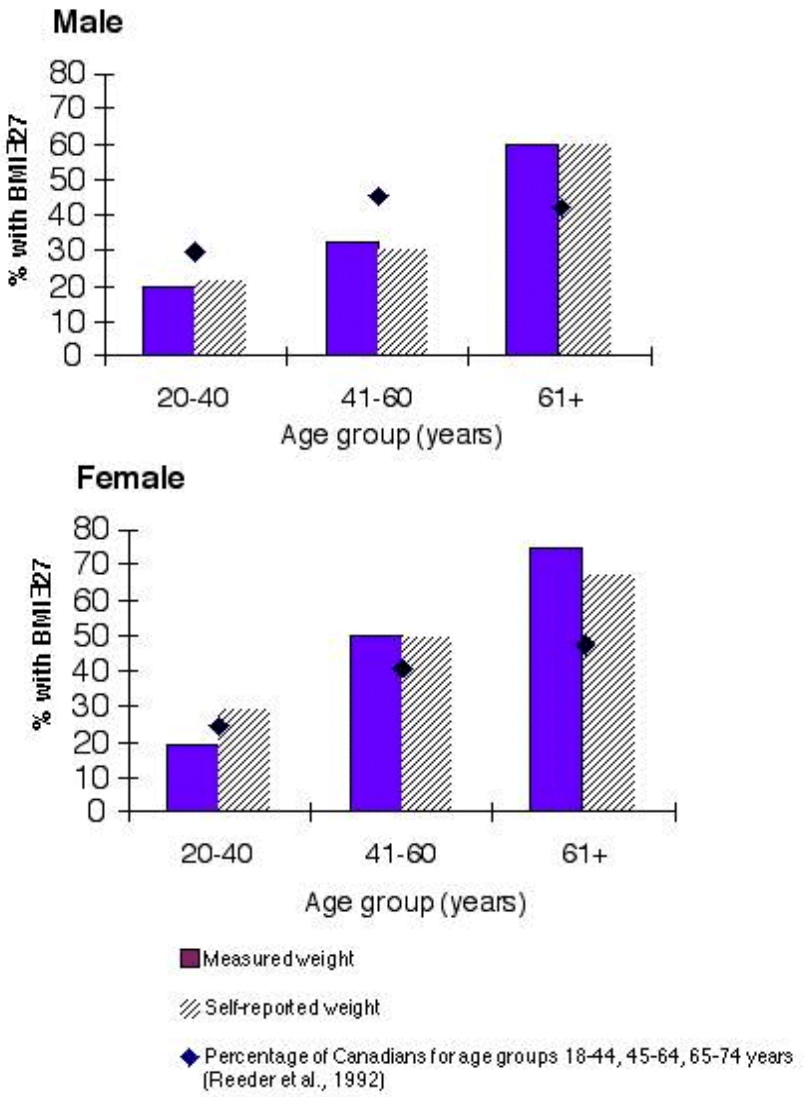


Figure 4. Mean proportion of energy and nutrients contributed by traditional food by season

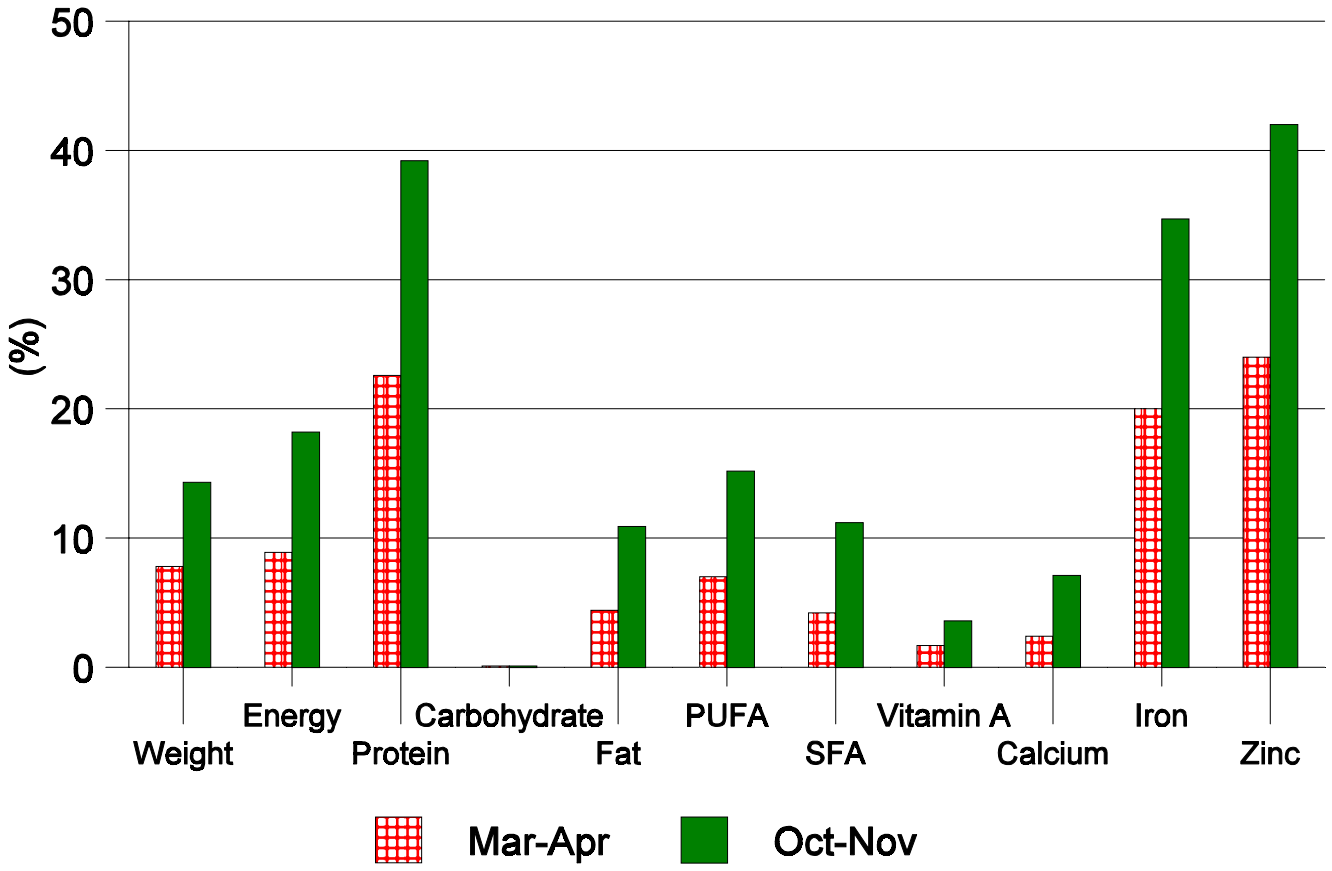


Figure 5(A-B). Frequency of consumption of all species of trout and salmon in Yukon First Nations; seasons, genders and ages combined.

A. Frequency of trout consumption (times per week)

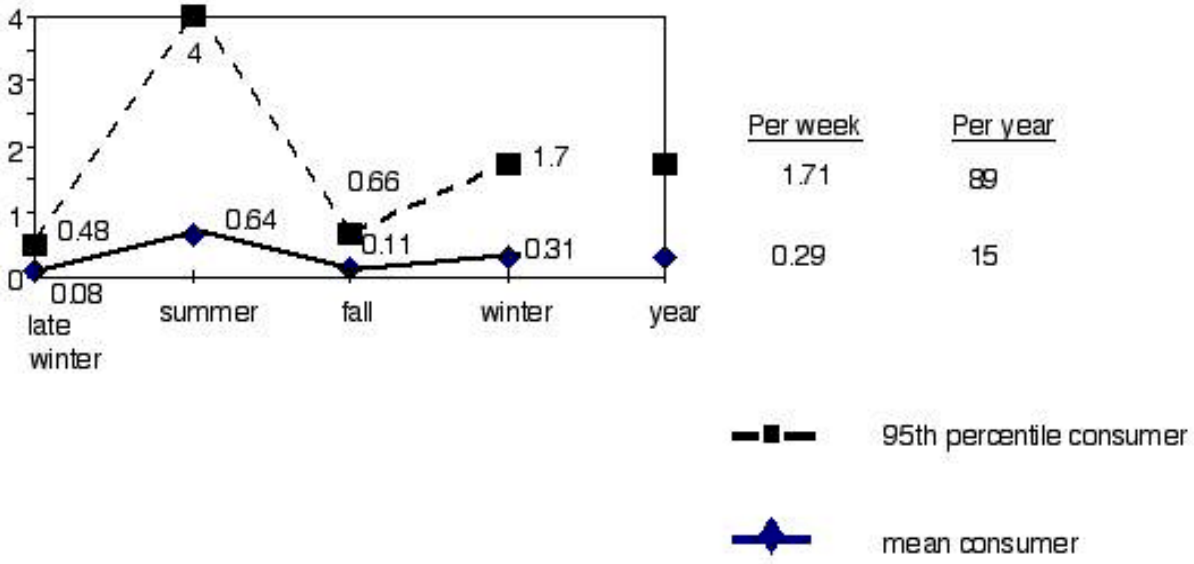
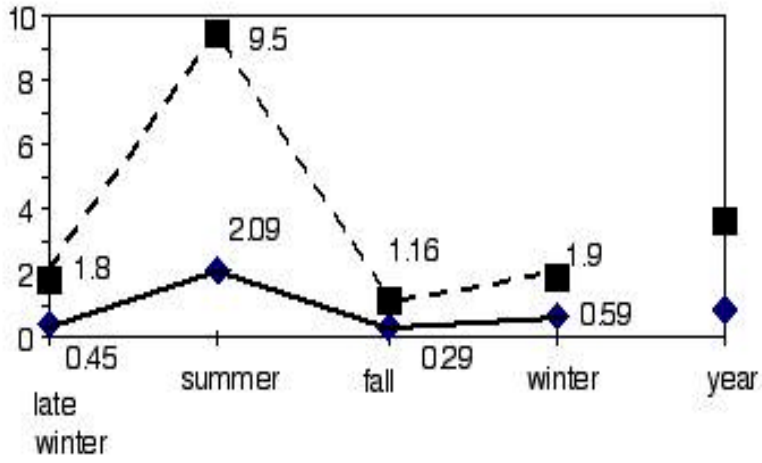


Figure 5, continued

B. Frequency of salmon consumption (times per week)



	Per week	Per year
95th percentile consumer	3.59	187
mean consumer	0.86	45

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Appendix A. Research Agreement

Yukon First Nations'Assessment of Dietary Benefit/Risk

RESEARCH AGREEMENT
(September, 1995)

The Centre for Nutrition and the Environment of Indigenous Peoples (CINE), and the Yukon First Nation agree to conduct the named research project with the following understandings[1]:

1. The purpose of this research project, as discussed with and understood by Yukon First Nation in the community of _____, is:

- To improve the understanding of how food practices convey different benefits or risks from a nutrients/contaminants point of view and also culturally and economically.

- To establish a baseline dietary intake against which future dietary studies could be compared to assess changes in food intake.

- To identify food/nutrition related concerns and potential food/nutritional problems in the community.

2. The scope of this research project (that is, what issue, events, or activities are to be involved, and the degree of participation by community residents), as discussed with and understood by Yukon First Nation in this community, is:

The issues in this project are nutritional and will be addressed through organizational meetings with community members and dietary interviews of a sample of adult men an women which will be conducted in late Winter and Fall 1995.

To participate in this study, the community must select one member who will be employed as interviewer by the project and will be trained to this effect.

Community members who will participate as respondents will

[1] This agreement follows the guidelines of the Dene/Métis model agreement published in: B. Masuzumi and S. Quirk. A participatory research process for Dene/Métis communities: exploring community-based research concerns for Aboriginal Northerners. Dene Tracking, September 1993.

volunteer approximately one hour to participate in the interview.

3. Methods to be used, as agreed by the researchers and the community, are:

A member of the community will be employed by the project to conduct dietary interviews of one adult men and one adult women from approximately twenty five randomly selected households in each season.

The dietary interview takes approximately one hour to administer, is confidential and voluntary. Questions are asked about the frequency of traditional food consumption, the dietary intake in the day preceding the interview, and a series of questions on the family and cultural attributes of traditional foods.

4. Community training and participation, as agreed, is to include:

The interviewer will learn techniques common to any survey's methodology as well as techniques specific to this particular project.

It is also within the goals of this project to develop community capabilities to conduct and analyze their own data.

A software to aid in this process will be made available to community members. Additional training on the use of this software (EpiInfo) will be offered.

The development of this project is based on sincere communication between community members and researchers. All efforts will be made to incorporate and address local concerns and recommendations at each step of the project.

At the end of the project, the researchers will participate in community meetings to discuss the results of the analysis with community members.

5. Information collected is to be shared, distributed, and stored in these agreed ways:

The data collected is confidential and no name is attached to a record. Copies will be kept at CINE where the data will be converted to an electronic form. The data will be kept on diskettes in the community and at CINE. The researchers and CINE will be available to answer questions and assist community members should community members decide to use these data for different purposes, beyond the objectives of this particular project.

A final report will be distributed after approval from the community members.

-In addition to number codes used to protect individual anonymity, number codes will be used in-lieu of community's names for all communities participating in the project. The researchers will not associate data to community's name, or share data with any agency or organization, without prior authorization of the respective First Nation's Chief and Council.

6. Informed consent of individual participants is to be obtained in these agreed ways.

An individual consent form will be read by the interviewer to the respondent. A copy of the consent form will be left with the respondent where the addresses of each researcher can be used at any time, should the respondent wish to contact the researchers for additional information.

7. The names of participants and the community are to be protected in these agreed ways:

As mentioned on the consent form, the interviews are confidential. In no instance will the name of a respondent be attached to a record.

Before distribution of the final report, or any publication, or contact with the media, the community will be consulted once again as to whether the community aggrees to share this data in that particular way.

8. Project progress will be communicated to the community in these agreed ways:

In the fall 1995, the results of the project conducted during the preceding Winter will be presented to participating communities. The researchers will travel to the communities and hold public community meetings to this effect. Similarly, public community meetings will be held in the summer 1996, in all participating communities to report on the overall project results.

Each researcher will also be available during the course of the project to address particular questions that may arise.

9. Communication with the media and other parties (including funding agencies) outside the named researchers and the community will be handled in these agreed ways:

One of the funding agency (AES) organizes two meetings a year during which the project progress is summarized. In these meetings, as well as during any public communication on project progress and findings, the researchers will be aware of their responsibilities and commitments to the welfare of the communities involved.

FUNDING, BENEFITS, & COMMITMENTS

Funding

The main researchers have acquired funding and other forms of support for this research project from:

The main source of funding at this time is the Arctic Environmental Strategy (AES)
Contact:

M. Maki
Research Programs Officer
Indian and Northern Affairs
10 Wellington Street, Room 653
Hull, QC K1A 0H4
Tel: (819) 994-7451, Fax: (819) 953-2590

Additional funding is provided by Health Canada, Medical Service Branch and the Yukon Territorial Government.

The funding agency has imposed the following criteria, disclosures, limitations, and reporting responsibilities on the main researchers.

No limitations have been imposed on this project. The researchers must report the project progress to the funding agency twice/year.

Benefits

The main researchers wish to use this research project for benefit in these ways (for instance, by publishing the report and articles about it):

The researchers will publish a final report to the funding agency (ies) in 1996. Scientific presentations in peer-reviewed conferences and publications will be made. The final report will be reviewed by community members prior to publication. Scientific presentations and articles will be published after discussion with the respective communities' leaders.

Benefits likely to be gained by the community through this research project are:

- Educational

  The community researcher, who will work as interviewer, will be trained in conducting surveys. The community researcher, as well as other community members, will also be trained in the use of a specialized software which can be used to collect and analyze dietary information as well as information from other fields, as needed, within and for the community.

- Informational

  The community at large, by focusing on its dietary practices, will learn about the health and cultural attributes of food practices. The information generated by this project will assist individuals in making informed decisions as to their diets, and food practices. The data generated by this project will be kept in the community, should it be used in the future to address new questions or compare changes in dietary practices.

- Financial

  The community member(s) employed as interviewer will be compensated at the rate of $20.00 per completed interview per person + an additional $20.00/day to double-check the records. A two-day initial training will be provided in the community for which the participant(s) will be compensated at the rate of $100.00/day. The Band Office will invoice CINE for the cost of implementing the project in the community and will receive an administration fee to the extent of 10% of these total expenses.

Commitments

The community's commitment to the researchers is to:

- Recommend capable and reliable community members to collaborate/be employed in this project.

- Keep informed on the project progress, and help in leading the project toward meaningful results.

The researcher's main commitment to the community is to:

- Inform the community as to the project progress in a clear, specific, and timely manner.
- Act as resource to the community for nutrition-related questions.

The researchers agree to stop the research project under the following conditions:

- If community leaders, for example the Chief and Council, decide to withdraw participation.
- If the researchers believe that the project will no-longer benefit the community

Signed by:

Date:	Date: Community:
(Signature (s) of Main Researcher (s))	(Signature(s) of Community Contact Person (s))
Name: Position:	Name: Position:
(Signatures Witnesses)	(Signatures of Witnesses)

Appendix B. List of traditional food species used by Yukon First Nations

Common Name	Scientific Name
MAMMALS	
Bear, Black	*Ursus americanus*
Beaver	*Castor canadensis*
Bison	*Bison bison*
Caribou	
Woodland	*Rangifer tarandus caribou*
Barrenland	*Rangifer tarandus granti* *Rangifer tarandus groenlandicus*
Deer, Mule	*Odocoileus hemionus*
Goat, Mountain	*Oreamnos americanus*
Hare, Snowshoe (Rabbit)	*Lepus americanus*
Hoary Marmot (Groundhog)	*Marmota caligata*
Lynx	*Felis canadensis*
Moose	*Alces alces*
Muskrat	*Ondatra zibethicus*
Porcupine	*Erethizon dorsatum*
Sheep, Mountain (Bighorn)	*Ovis canadensis*
Sheep, Dall	*Ovis dalli dalli (white, Yukon)* *Ovis dalli stonei (black, Northern BC)*
Squirrel, Arctic Ground (Gopher)	*Spermophilus parryii*
BIRDS	
Arctic Tern	*Sterna paradisaea*
Crane	*Grus canadensis*
Ducks	
White-winged Scoter(Black Duck)	*Melanitta fusca*
Surf Scoter (Black Duck)	*Melanitta perspicillata*

Common Name	Scientific Name
Geese	
White Fronted	*Anser albifrons*
Canada	*Branta canadensis*
Snow	*Chen caerulescens caerulescens*
Blue	*Chen caerulescens caerulescens*
Brant	*Branta bernicla*
Grouse	
Spruce	*Dendragus canadensis*
Blue	*Canachites obscuras*
Ptarmigan	
Willow	*Lagopus lagopus*
Rock	*Lagopus mutus*
Swans	
Tundra	*Cygnus columbianus*
Trumpeter	*Cygnus buccinator*
Sea Gull (Herring Gull)	*Larus argentatus*
FISH	
Arctic Grayling (Bluefish)	*Thylallus arcticus*
Arctic Char	*Salvelinus alpinus*
Halibut	*Hippoglossus hippoglossus*
Herring (Least Cisco)	*Coregonus sardinella*
Eulachon (Ooligan)	*Thaleichthys pacificus*
Inconnu (Connie)	*Stenodus leucichthys*
Loche (Burbot or Ling Cod)	*Lota lota*
Longnose Sucker	*Catostomus catostomus*
Northern Pike (Jackfish)	*Esox lucius*

Common Name	Scientific Name
Salmon	
Coho (Silver)	*Oncorhynchus kisutch*
Chinook (King)	*Oncorhynchus tshawytsch*a
Chum (Keta or Dog)	*Oncorhynchus keta*
Sockeye (Red)	*Oncorhynchus nerka*
Trout	
Lake	*Salvelinus namaycush*
Brown	*Salmo trutta*
Dolly Varden	*Salvelinus malma*
Rainbow	*Salmo gairdneri*
Whitefish	
Broad	*Coregonus nasus*
Lake	*Coregonus clupeaformis*
Round	*Prosopium cylindraceum*
PLANTS & BERRIES	
Arctic Dock	*Rumex arcticus*
Balsam Fir	*Abies balsamea*
Bear Root	*Hedysarum alpinum*
Bearberries (Kinnikinick)	*Arctostaphylos uva-ursi*
Birch	*Betula papyrifera*
Black Spruce	*Picea mariana*
Blueberry	
Bog	*Vaccinium uliginosum*
Highbush	*Vaccinium coyrmbosum*
Canada	*Vaccinium myrtilloides*
Low	*Vaccinium vacillans*
Caribou Weed	scientific name not found
Caribou Moss	*Cladonia rangiferina* *Cladina rangiferina*
Cloudberry	*Rubus chamaemorus*

Common Name	Scientific Name
Cranberry	
Bog	*Vaccinium oxycoccus*
Lowbush	*Vaccinium vitis-idaea*
Highbush	*Viburnum edule*
Crowberry / Blackberry	*Empetrum nigrum*
Currants	
Northern Black	*Ribes hudsonianum*
Bristly Black	*Ribes lacustre*
Dandelion	*Taraxacum officinale*
Fireweed	*Epilobium latifolium* *Epilobium augustifolium*
Gooseberry	*Ribes oxyacanthoides*
Honeysuckle	*Lonicera spp.*
Juniper	*Juniperus communis*
Labrador Tea	*Ledum palustre* *Ledum groenlandicum*
Lichen, Spruce	*Sticta amplissima*
Lodgepole Pine	*Pinus contorta*
Mint	*Mentha arvensis*
Mushrooms	*Agaricus spp.*
Poplar	*Populus balsamea*
Rat Root (Wild Ginger)	*Acorus calamus*
Red Currant	*Ribes triste*
Rice Root (Indian Rice)	*Fritillaria camschatensis*
Rosebuds	*Rosa acicularis*
Rosehips	*Rosa nutkana*
Sage	*Artemisia tilesii*
Salmonberry	*Rubus spectabilis*
Saskatoon Berry	*Amelanchier alnifolia*

Appendix B, continued

Common Name	Scientific Name
Soapberry	*Shepherdia canadensis*
Wild Chives (Wild Onions)	*Allium schoenoprasum*
Wild Raspberry	*Rhubus idaeus*
Wild Rhubarb	*Polygonum alaskum* *Rheum rhaponticum*
Wild Strawberries	*Frageria vesca*
Willow	*Salix spp.*
Yarrow (Stink Flower)	*Archillea millefolium*

Appendix C. Food samples collected from Yukon First Nations' communities

					Analyses [1]		
							Organo-
Code	Community	Food	Part	Prep	Nutrients	Metals	chlorines
0609a	Beaver Creek	Alder	outer bark	raw			
0610a	Beaver Creek	Alder	outer bark	raw			
1405a	Watson Lake	Arctic Grayling	flesh	raw	N	M	O
1406a	Watson Lake	Arctic Grayling	flesh	raw	N	M	O
1404a	Watson Lake	Arctic Grayling	flesh	raw	N	M	O
1405a	Watson Lake	Arctic Grayling	flesh	poached	N	M	
1402a	Watson Lake	Arctic Grayling	flesh	raw			O
0708a	Carmacks	Arctic Grayling	flesh	raw		M	O
0327a	Mayo	Arctic Grayling	flesh	raw			
0612a	Beaver Creek	Arctic Grayling	flesh	cooked	N	M	O
1119a	Carcross	Arctic Grayling	flesh	boiled	N	M	O
1120a	Carcross	Arctic Grayling	flesh	raw	N	M	O
1301a	Lower Post	Arctic Grayling	flesh	raw	N	M	O
0332a	Mayo	Arctic Grayling	flesh	raw			
0332b	Mayo	Arctic Grayling	flesh	raw			
0384a	Mayo	Arctic Grayling	flesh	raw			
0384b	Mayo	Arctic Grayling	flesh	raw			
0531a	Ross River	Arctic Grayling	head	raw			
0214a	Dawson	Arctic Grayling	whole fish	raw			
0218a	Dawson	Arctic Grayling	whole fish	raw	N	M	O
0201a	Dawson	Arctic Grayling	whole fish	raw	N	M	O
0313a	Mayo	Arctic Grayling	whole fish	raw	N	M	O
1138a	Carcross	Arctic Grnd Squirrel (Gopher)	flesh	raw	N	M	O
0614a	Beaver Creek	Arctic Grnd Squirrel (Gopher)	intestine broth	cooked			
0613a	Beaver Creek	Arctic Grnd Squirrel (Gopher)	whole animal	boiled	N	M	O
1135a	Carcross	Arctic Grnd Squirrel (Gopher)	flesh	raw	N	M	O
1137a	Carcross	Arctic Grnd Squirrel	flesh	boiled			

		(Gopher)					
0328a	Mayo	Balsam Fir	bark	raw			
0331a	Mayo	Balsam Fir	bark	boiled			
0510a	Ross River	Balsam Fir	bark	raw			
0510b	Ross River	Balsam Fir	bark	raw			
0519a	Ross River	Barrenland Caribou	bone marrow	raw			
0203a	Dawson	Barrenland Caribou	meat	raw	N	M	O
0626a	Beaver Creek	Bear Food	cones/bush	raw			
0627a	Beaver Creek	Bear Food	cones/bush	raw			
0624a	Beaver Creek	Bear Root (peve vine)	root	raw			
1401a	Watson Lake	Beaver	fat	raw	N	M	O
0352a	Mayo	Beaver	tail	raw	N	M	O
0377a	Mayo	Birch	bark	raw			
0605a	Beaver Creek	Birch	inner bark	raw			
0606a	Beaver Creek	Birch	inner bark	raw			
0512b	Ross River	Black Duck	back bone	raw			O
0702a	Carmacks	Black Duck	intestine	raw	N	M	O
0701a	Carmacks	Black Duck	liver	raw	N	M	O
1103a	Carcross	Blackberry	berry	raw	N	M	
0820a	Burwash	Blackberry	berry	jam			
0513a	Ross River	Blue Grouse	back bone	raw			
1125a	Carcross	Blue Grouse	whole	raw	N	M	O
0628a	Beaver Creek	Blueberry	berry	raw			
0807a	Burwash	Blueberry	berry	raw			
0710a	Carmacks	Blueberry	berry	raw	N	M	
0301a	Mayo	Blueberry	berry	raw	N	M	
0323a	Mayo	Blueberry	berry	raw			
0338a	Mayo	Blueberry	berry	raw	N	M	
0379a	Mayo	Blueberry	berry	raw			
0380a	Mayo	Blueberry	berry	raw			
0522a	Ross River	Blueberry	berry	raw			
1106a	Carcross	Blueberry	berry	jam	N	M	
0219a	Dawson	Caribou	flesh	raw	N	M	O
0227a	Dawson	Caribou	flesh	raw			
0357a	Mayo	Caribou	flesh	raw			
0364a	Mayo	Caribou	flesh	raw	N	M	O
0301a	Mayo	Caribou	ground meat	raw	N	M	O
0711a	Carmacks	Caribou	liver	raw	N	M	O
1109a	Carcross	Caribou	meat	boiled	N	M	O

1115a	Carcross	Caribou	meat	fried			
1117a	Carcross	Caribou	meat	raw	N	M	O
0619a	Beaver Creek	Caribou Fetus	hind quarter	boiled	N	M	O
0619a	Beaver Creek	Caribou Fetus	amniotic sac	raw	N	M	O
0526a	Ross River	Caribou Moss	moss	dried			
0330a	Mayo	Caribou Moss	moss	raw			
0205a	Dawson	Chinook Salmon	eggs	raw	N	M	O
0318a	Mayo	Chinook Salmon	eggs	raw	N	M	O
0532a	Ross River	Chinook Salmon	eggs	raw			
0617a	Beaver Creek	Chinook Salmon	flesh	raw	N	M	O
0704a	Carmacks	Chinook Salmon	flesh	smoked	N	M	O
0708a	Carmacks	Chinook Salmon	flesh	brine/smkd			
0712a	Carmacks	Chinook Salmon	flesh	smoked			
0204a	Dawson	Chinook Salmon	flesh	raw	N	M	O
0213a	Dawson	Chinook Salmon	flesh	raw	N	M	O
0216a	Dawson	Chinook Salmon	flesh	raw			
0217a	Dawson	Chinook Salmon	flesh	smoked	N	M	O
0222a	Dawson	Chinook Salmon	flesh	smoked			
0228a	Dawson	Chinook Salmon	flesh	raw			
0311a	Mayo	Chinook Salmon	flesh	raw	N	M	O
0326a	Mayo	Chinook Salmon	flesh	raw	N	M	O
0336a	Mayo	Chinook Salmon	flesh	dried			
0348a	Mayo	Chinook Salmon	flesh	smoked			
0361a	Mayo	Chinook Salmon	flesh	smoked	N	M	O
0363a	Mayo	Chinook Salmon	flesh	raw			
0373A	Mayo	Chinook Salmon	flesh	raw		M	O
0502a	Ross River	Chinook Salmon	flesh	dry/smkd	N	M	O
0503a	Ross River	Chinook Salmon	flesh	poached	N	M	O
0341a	Mayo	Chinook Salmon	head	raw			
0707a	Carmacks	Chinook Salmon	flesh	raw	N	M	O
0508a	Ross River	Chinook Salmon	tail end	dried			
0820a	Burwash	Chum Salmon	eggs	raw			
0819a	Burwash	Chum Salmon	fillet	boiled	N	M	O

0705a	Carmacks	Chum Salmon	eggs	raw			
0703a	Carmacks	Chum Salmon	flesh	raw	N	M	O
0223a	Dawson	Chum Salmon	flesh	smoked	N	M	O
1529a	Atlin	Coho Salmon	meat	raw	N	M	O
1530a	Atlin	Coho Salmon	meat	fried in lard	N	M	O
0812a	Burwash	Cranberry	berry	raw			
0342a	Mayo	Cranberry	berry	raw	N	M	
0358a	Mayo	Cranberry	berry	raw			
0515b	Ross River	Dall Sheep	brisket	raw	N	M	O
1403a	Watson Lake	Dall Sheep	meat	raw	N	M	O
0509a	Ross River	Mountain Sheep	back flesh	raw	N	M	O
0808a	Burwash	Sheep	leg meat	boiled	N	M	O
0809a	Burwash	Deer	meat	raw	N	M	O
1302a	Lower Post	Dolly Varden	flesh	raw	N	M	O
1102a	Carcross	Goat	ribs	baked	N	M	O
0804a	Burwash	Grouse	whole bird	raw			
0815a	Burwash	Halibut	eggs	raw			
0814a	Burwash	Halibut	flesh	raw	N	M	O
1111a	Carcross	Herring	whole fish	raw	N	M	O
1105a	Carcross	Highbush Blueberry	berry	preserved	N	M	O
0625a	Beaver Creek	Highbush Cranberry	berry	raw	N	M	
1102a	Cracross	Highbush Cranberry	berry	raw	N	M	
0346a	Mayo	Highbush Cranberry	berry	raw	N	M	
0607a	Beaver Creek	Juniper/Tamarac	branch	raw			
0608a	Beaver Creek	Juniper/Tamarac	branch	raw			
0344a	Mayo	Labrador Tea	leaves	raw			
0360a	Mayo	Labrador Tea	leaves	raw			
0528a	Ross River	Labrador Tea	leaves	dried			
0307a	Mayo	Labrador Tea	stem & leaves	raw			
0817a	Burwash	Lake Trout	flesh	boiled	N	M	O
0517a	Ross River	Lake Trout	head	raw			
0701a	Carmacks	Lake Trout	intestines	raw	N	M	O
1502a	Atlin	Lake Trout	whole fish	partly smkd	N	M	O

0314a	Mayo	Lake Trout	whole fish	raw	N	M	O
0312a	Mayo	Lake Whitefish	flesh	raw	N	M	O
1523a	Atlin	Lake Trout	flesh	raw	N	M	O
1524a	Atlin	Lake Trout	flesh	baked	N	M	O
1525a	Atlin	Lake Trout	flesh	fried in lard	N	M	O
03687a	Mayo	Loche	flesh	raw	N	M	O
0703a	Carmacks	Loche (Burbot)	flesh	raw	N	M	O
1118a	Carcross	Longnose Sucker	flesh	raw			
1122a	Carcross	Longnose Sucker	flesh	boiled	N	M	O
0702a	Carmacks	Longnose Sucker	flesh	raw	N	M	O
1116a	Carcross	Longnose Sucker	head	raw	N	M	O
1117a	Carcross	Longnose Sucker	organs	raw		M	O
1105a	Carcross	Lowbush Cranberry	berry	raw	N	M	
0382a	Mayo	Lowbush Cranberry	berry	raw			
0521a	Ross River	Lowbush Cranberry	berry	raw			
1101a	Carcross	Lowbush Cranberry	berry	frozen	N	M	O
0302a	Mayo	Lowbush Cranberry	berry	raw	N	M	
0372a	Mayo	Lowbush Cranberry	berry	raw	N	M	
1129a	Carcross	Lynx	flesh	raw	N	M	O
1134a	Carcross	Lynx	flesh	boiled			
1134b	Carcross	Lynx	flesh	boiled			
1130a	Carcross	Lynx	intestine	raw			
1132a	Carcross	Lynx	kidney	raw	N	M	O
1133a	Carcross	Lynx	heart	raw			
1136a	Carcross	Lynx	liver	raw	N	M	O
1131a	Carcross	Lynx	stomach	raw			
0621a	Beaver Creek	Moose	ankle-knee joints	raw			
0622a	Beaver Creek	Moose	ankle-knee joints	raw		M	O
0308a	Mayo	Moose	back bone flesh	raw			
0707a	Carmacks	Moose	bone	raw			
0224a	Dawson	Moose	bone	raw			
0320a	Mayo	Moose	bone	raw			
0623a	Beaver Creek	Moose	bone marrow	boiled	N	M	O

0208a	Dawson	Moose	bone marrow	raw	N	M	O
0316a	Mayo	Moose	bone marrow	raw	N	M	
1111a	Carcross	Moose	bone marrow	raw	N	M	O
0340a	Mayo	Moose	brain	raw	N	M	O
1127a	Carcross	Moose	fat	raw	N		
1128a	Carcross	Moose	fat	boiled	N		
0321a	Mayo	Moose	fat	raw	N	M	O
0345a	Mayo	Moose	fat	raw	N		O
0359a	Mayo	Moose	fat	raw	N		O
0378a	Mayo	Moose	fat	raw			
1406a	Watson Lake	Moose	fat	raw	N		O
1116a	Carcross	Moose	kidney fat	raw	N	M	O
0511a	Ross River	Moose	kidney fat	dried	N		O
0520a	Ross River	Moose	kidney fat	raw			
0309a	Mayo	Moose	liner fat	raw	N		O
0209a	Dawson	Moose	stomach fat	raw	N		O
0229a	Dawson	Moose	flesh	raw			
0306a	Mayo	Moose	flesh	raw	N	M	O
0354a	Mayo	Moose	flesh	raw			
0506a	Ross River	Moose	flesh	dried			
0516b	Ross River	Moose	foot	dried			
1107a	Carcross	Moose	ground meat	fried	N	M	O
0303a	Mayo	Moose	heart	raw	N	M	O
0529a	Ross River	Moose	intestine	dried			
0602a	Beaver Creek	Moose	kidney	raw	N	M	O
0305a	Mayo	Moose	kidney	raw	N	M	O
0335a	Mayo	Moose	kidney	raw	N	M	O
0362a	Mayo	Moose	kidney	raw	N	M	O
1518a	Atlin	Moose	liver	fried in lard	N	M	O
1519a	Atlin	Moose	liver	raw	N	M	O
0221a	Dawson	Moose	liver	raw			

0315a	Mayo	Moose	liver	raw	N	M	O
0337a	Mayo	Moose	liver	raw	N	M	O
0355a	Mayo	Moose	liver	raw	N	M	O
0530a	Ross River	Moose	liver	raw			
0806a	Burwash	Moose	meat	dried			
1111M a	Carcross	Moose	meat	raw	N	M	O
1113a	Carcross	Moose	meat	roasted	N	M	O
0206a	Dawson	Moose	meat	stew	N	M	O
0211a	Dawson	Moose	meat	raw			
0215a	Dawson	Moose	meat	raw	N	M	O
0220a	Dawson	Moose	meat	raw			
0225a	Dawson	Moose	meat	raw			
0226a	Dawson	Moose	meat	raw			
0322a	Mayo	Moose	meat	raw			
0333a	Mayo	Moose	meat	raw	N	M	O
0334a	Mayo	Moose	meat	raw			
0374A	Mayo	Moose	meat	raw			
0375a	Mayo	Moose	meat	raw			
0376a	Mayo	Moose	meat	raw			
0383a	Mayo	Moose	meat	raw			
0501a	Ross River	Moose	meat	dried	N	M	O
1401a	Watson Lake	Moose	meat	dried	N	M	O
0302a	Mayo	Moose	neck meat	raw	N	M	O
0801a	Burwash	Moose	ribs	boiled	N	M	O
0802a	Burwash	Moose	ribs	raw	N	M	O
1114a	Carcross	Moose	ribs	raw	N	M	O
0210a	Dawson	Moose	ribs	raw	N	M	O
0343a	Mayo	Moose	ribs	raw			
0202a	Dawson	Moose	rump steak	raw			
0207a	Dawson	Moose	steak	raw			
0317a	Mayo	Moose	tongue	raw	N	M	O
0371a	Mayo	Naday	trad. medicine				
1114a	Carcross	Northern Pike (Jackfish)	flesh	raw	N	M	O
1121a	Carcross	Northern Pike	flesh	boiled	N	M	O

		(Jackfish)					
1112a	Carcross	Northern Pike (Jackfish)	head	raw			
1113a	Carcross	Northern Pike (Jackfish)	liver	raw		M	
0706a	Carmacks	Northern Pike (Jackfish)	flesh	raw	N	M	O
1110a	Carcross	Northern Pike (Jackfish)	flesh	raw	N	M	O
0504b	Ross River	Northern Pike (Jackfish)	tail end	poached		M	O
0366a	Mayo	Northern Pike (Jackfish)	flesh	raw	N	M	O
0369a	Mayo	Northern Pike (Jackfish)	flesh	raw			
1103a	Carcross	Ooligan	flesh	raw	N	M	O
0818a	Burwash	Ooligan	whole fish	boiled	N	M	O
1139a	Carcross	Porcupine	flesh	boiled	N	M	O
0611b	Beaver Creek	Rabbit	flesh	cooked	N	M	O
0805a	Burwash	Rabbit	flesh	raw	N	M	O
0709a	Carmacks	Rabbit	flesh	raw	N	M	O
0349a	Mayo	Rabbit	flesh	raw	N	M	O
0351a	Mayo	Rabbit	flesh	raw	N	M	O
0310a	Mayo	Rabbit	head	raw			
0507b	Ross River	Rabbit	head	raw			
0611a	Beaver Creek	Rabbit	kidney	cooked		M	
0611a	Beaver Creek	Rabbit	liver	cooked	N	M	
0805a	Burwash	Rabbit	liver	raw	N	M	
0349a	Mayo	Rabbit	liver	raw	N	M	O
0351a	Mayo	Rabbit	liver	raw	N	M	O
0339a	Mayo	Raspberry	berry	raw			
0339b	Mayo	Raspberry	berry	raw	N	M	
0381a	Mayo	Raspberry	berry	raw	N	M	
0523a	Ross River	Raspberry	berry	raw			
0350a	Mayo	Raspberry	berry	raw			
1107a	Carcross	Raspberry	berry	jam			
0821a	Burwash	Red currant	berry	jam			
0325a	Mayo	Rhubarb	stem	raw			
0524a	Ross River	Rose	petals	dried			
1104a	Carcross	Rosehips	fruit	raw			
0518a	Ross River	Round Whitefish	head	raw			

0525a	Ross River	Sage	leaves	dried			
0329a	Mayo	Sage	leaves	raw			
1528a	Atlin	Salmon	eggs	raw	N	M	O
0353a	Mayo	Salmon	head	raw	N	M	
1108a	Carcross	Salmon	meat	smoked	N	M	O
0616a	Beaver Creek	Salmon	midsection	raw		M	O
1527a	Atlin	Salmon	eggs	raw		M	O
0324a	Mayo	Saskatoons	berry	raw	N	M	
0810a	Burwash	Soapberry	berry	raw	N	M	
1101a	Carcross	Soapberry	berry	raw	N	M	
1106a	Carcross	Soapberry	berry	preserved	N	M	O
0803a	Burwash	Sockeye Salmon	flesh	dry/smkd	N	M	O
0813b	Burwash	Sockeye Salmon	flesh	jarred	N	M	O
1501a	Atlin	Sockeye Salmon	head	raw	N	M	O
1526a	Atlin	Sockeye Salmon	flesh	canned	N	M	O
0385a	Mayo	Spruce	bark	raw			
0514a	Ross River	Spruce Grouse	back bone	raw			
0304a	Mayo	Spruce Grouse	flesh	raw	N	M	O
0365a	Mayo	Spruce Grouse	flesh	raw			
1123a	Carcross	Spruce Grouse	whole	raw	N	M	O
1124a	Carcross	Spruce Grouse	whole	boiled	N	M	O
0615a	Beaver Creek	Spruce Grouse	whole bird	boiled	N	M	O
0527a	Ross River	Spruce Lichen	traditional medicine	dried			
1104a	Carcross	Trout	eggs	raw	N	M	O
1109a	Carcross	Trout	flesh	raw	N	M	O
1115a	Carcross	Trout	flesh	boiled	N	M	O
0370a	Mayo	Trout	flesh	raw	N	M	O
1108a	Carcross	Trout	head	raw			
1110a	Carcross	Trout	liver	raw		M	O
0601a	Beaver Creek	Whitefish (fluke)	flesh	raw	N	M	O
0212a	Dawson	Whitefish	flesh	raw	N	M	O

0356a	Mayo	Whitefish	flesh	raw	N	M	O
1520a	Atlin	Whitefish	flesh	raw		M	O
1521a	Atlin	Whitefish	flesh	baked	N	M	O
1522a	Atlin	Whitefish	flesh	fried in lard		M	O
1112a	Carcross	Whitefish	flesh	raw	N	M	O
0505a	Ross River	Whitefish	tail end	poached			
0618a	Beaver Creek	Whitefish	whole fish	boiled			
0319a	Mayo	Willow Grouse	flesh	raw	N	M	O
0319a	Mayo	Willow Grouse	heart	raw	N		
1126a	Carcross	Willow Grouse	whole	raw	N	M	O
1402a	Watson Lake	Woodland Caribou	fat	raw	N		
1403a	Watson Lake	Woodland Caribou	fat	raw	N	M	O
0704a	Carmacks	Woodland Caribou	liver	raw	N	M	O
1407a	Watson Lake	Woodland Caribou	meat - hind quarter	boiled	N	M	O
1408a	Watson Lake	Woodland Caribou	meat - hind quarter	raw	N	M	O
0706a	Carmacks	Woodland Caribou	ribs	raw	N	M	O
0705a	Carmacks	Woodland Caribou	stomach & intestines	raw	N	M	O

[1] N indicates that proximate and essential mineral composition of food sample were measured
M indicates that heavy metal concentrations of food sample were measured
O indicates that organochlorine concentrations of food sample were measured
If the cell is blank, then analyses have not yet been done on the sample

Appendix D. Published and unpublished sources of contaminant values used in report

Canadian Wildlife Services, Wildfoods Database, 1992. Data used with the permission of Ms. Birgit Braune, Canadian Wildlife Service, National Wildlife Research Center, Hull. Tel. (819) 953-5959; fax (819) 953-6612.

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Muir, D., Lockhart, W.L., 1994. Food chain accumulation, biological effects and sediment contamination in Lake Laberge and other Yukon lakes. In: Synopsis of research conducted under the 1993/94 Northern Contaminant Program. Environmental Studies No. 72. J.L. Murray and R.G. Shearer, eds. Indian Affairs and Northern Development, Ottawa, p.276-285.

Muir, D., Grift, B., Metner, D.. et al., 1992. Food chain accumulation and biochemical effects of organochlorine contaminants in fish from Lake Laberge and other Yukon Lakes. In: Synopsis of research conducted under the 1991-92 Northern Contaminants Program. Environmental Studies No. 68. p.173. DIAND.

Muir, D.C.G., unpublished data. Organochlorines in blubber and muktuk of marine mammals analyzed during 1993/94- DFO Winnipeg. Northern Contaminants Program of the Arctic Environmental Strategy.

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